Design Course

Design of Signage

Different Applications of Signage System

by
Prof. Ravi Poovaiah
IDC, IIT Bombay

Source:
http://www.dsource.in/course/design-signage

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http://www.dsource.in/course/design-signage/introduction

Introduction

The course on design of signage Systems gives an overview of this field with details on the design process and methodology along with examples of case studies.

The 'Signage Systems' refers to iconic way of finding representations for public facilities such as Hospitals, Railway stations, Public Buildings, etc.
Introduction to Design of Signage is divided into different sections:

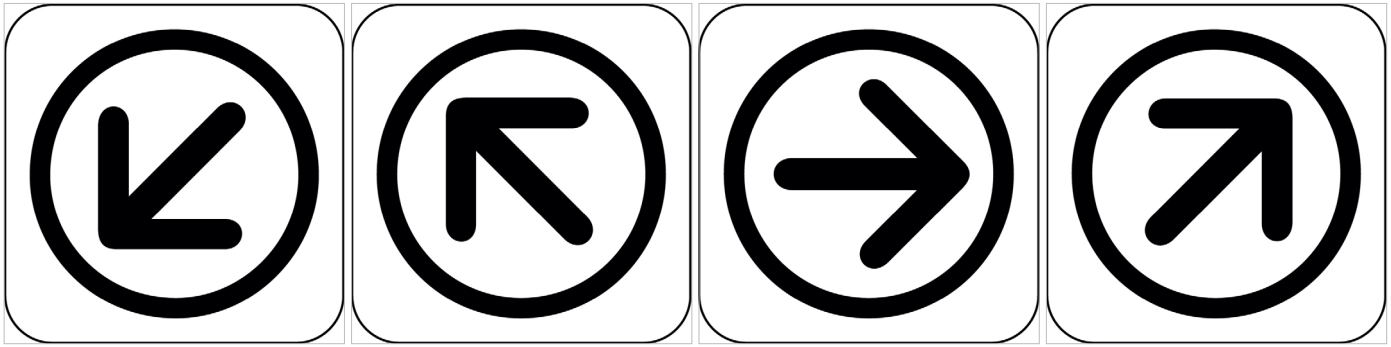
• **Design Process:**
For developing a Directional Signage System like identifying a facility, locating the place, Signage environment, designing the elements etc.

• **Case Study:**
Case Studies on examples of Design of Signage Systems
Hospital Symbols & IOC

• **Symbols:**
Graphic Symbols for Public Signage Systems or for use in the different public environments. The design done from the perspective of the users.

Hospital Symbols, Railway/Bus Stations, Symbols for Buildings, Symbols for Airports, Symbols using Hands, Generic Signage, School Signage

• **Technology**
Specifications of materials commonly used in Signage Systems.
These symbols are part of the open source resources free for download and use. Few examples are given below:



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Design Process

The Design Process is defined from:

- **A Design Perspective:**
  Steps of a general design process.

- **Corporate Identity:**
  Steps of the design process for a building a Corporate Identity Programme.

- **Directional Signage:**
  Steps of the design process for directional signage systems.

For more details check below:


Design Perspective


Corporate Identity


Directional Signage

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Design Perspective

Design Process from a Design Perspective involves 6 stages as below:

• **Stage One:** Data Collection:
- What is the brief from the Client?
- Is it a new design or a redesign?
- By interacting
  . with users - very important (sampled?) - is there a focused group?
  . with users to talk to them, narrate their experiences and getting their feedback.
  . with experts to seek their opinion
  . through emails, discussion forums, e-groups, etc.
- By observing and studying
  . the users navigate through different spaces
  . the different interactions the users have with the environment and how they use the facilities
  . the environment, artifact, building or the facility for the signage
  . external space? internal space? public space??
- By documenting
  . all the facilities along with the users
  . using photography, sketches, video-taping
- By conducting
  . experiments (controlled?) ex. for visibility, recognisability, etc.
- By referring to
  . previous works, examples, etc.
  . literature, papers, books, magazines, project reports, etc.
  . web documents

• **Stage Two:** Understanding the 'Design Problem for Investigation':
- Physical factors?
  . shape, form, colour, number, size, texture, etc.
  . sound, smell, growth, repetition, etc.
  . realistic, Abstract.
- Organising factors?
  . sequence and hierarchy of information, spatial organisation, flow, structure, etc.
  . activities, interactions, interactivity, etc.
- Semantic factors?
  . expressions, meaning, content, feeling, etc.

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. macro view, micro view, etc.
- Functional factors?
. educational, entertainment, emotional, promotional
. to Identify, to differentiate, to focus, etc.
. to inform, to direct, to warn, etc.
- Influencing factors?
. cultural factors, local idioms and conventions
. aesthetics, trends, etc.
- Usability factors?
. visibility, readability, etc.
. human factors, etc.
. human Product Interactions
- Technology factors?
. materials and processes
. method of manufacture - batch, mass, hand fabrication?

• **Stage Three:** Analysis of the 'topic under Investigation':
- Compare, cross-relate, evaluate
- Locational factors?
. mapping, way -finding, tracing
. human movement analysis
- Identification factors
. identifying functions, grouping, connecting, etc.
. compare symbols, labels, typography, text, etc.
- Structuring your factors?
. classification, grouping of similar factors, chunking, etc.
. differentiating factors, identifying unique features, etc.
. assigning hierarchy, ordering factors, etc.
- Graphical analysis?
. graphs, charts, mapping of factors.
. chart of 'time - activity - senses - spaces -function'.
. visualization of Information/ factors.
- Experimental analysis?
. set up constraints and conduct experiments.

• **Stage Four:** Synthesis and problem solving:
- Converge, redefine, brainstorm, idea generation, alternate solutions.

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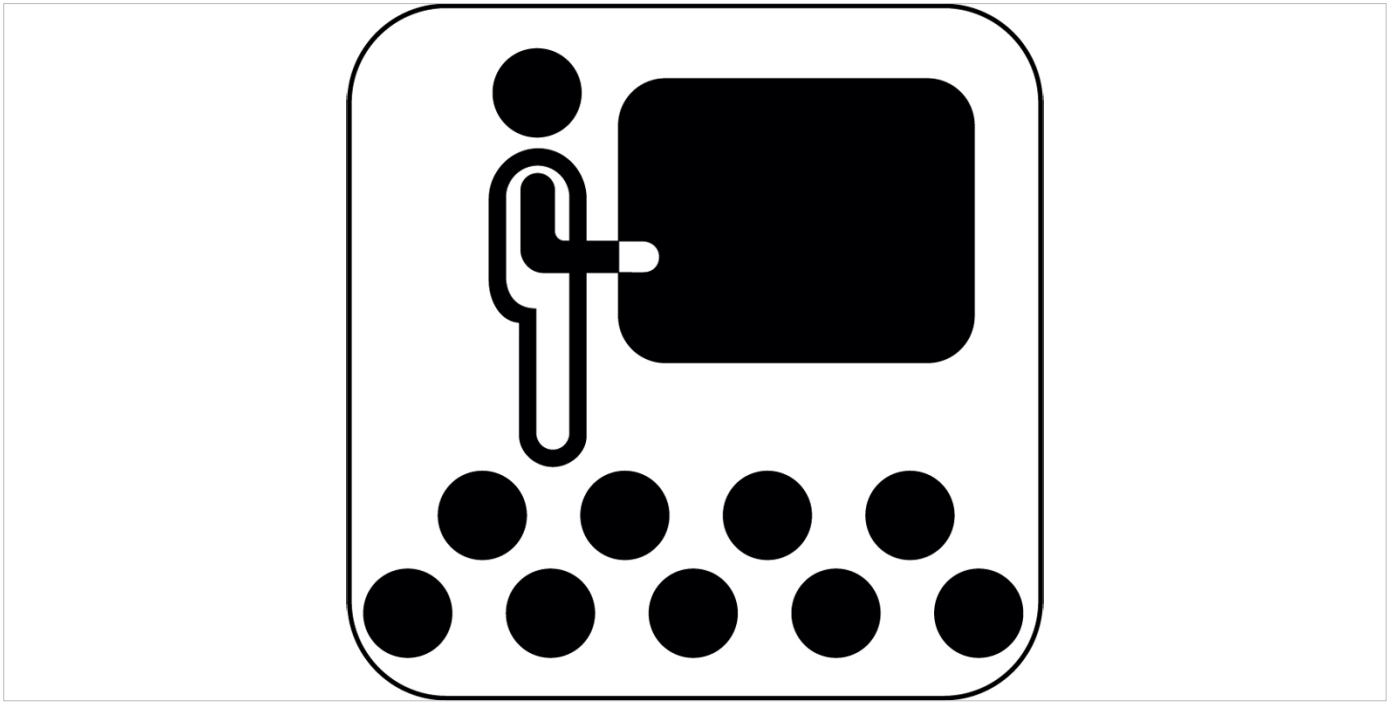
- **Stage Five:** Rapid Prototyping, Models and feedback:
  - Mock-ups, sketches, models, scenarios, presentations, user and client feedback.

- **Stage Six:** Refine, implementation, prototyping and standards:
  - Detailing, drawings, materials, processes, prototyping.
  - Vision statement, standards, specifications, manuals, roll-out programme.



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Corporate Identity

The Design Process for developing an Identity Programme involves 6 stages as below:
- What is the brief from the Client?
- Is it a new design or a redesign?

• Stage One: Understanding the Organisation:
 - What is the name of the Organisation?
 - What are the major activities of the Organisation
 - List the activities specific to the Organisation?
 - What are the Artifacts specific to the Organisation? (buildings, structures, vehicles, etc.)
 - Where all the Corporate Identity can be applied? (visiting cards to fascia to vehicles, etc.)

• Stage Two: Understanding the Users::
 - How to increase user satisfaction?
   . Multiple choices,
   . focus on user,
   . transparency,
   . inviting retail outlets,
   . seek the customer.
 - Identify instances of the interaction of the user with the Company? (Can these be sequenced in terms of the level of interaction?)

• Stage Three: Semantic associations of the Organisation:
 - What are the expressions connected with the Organisation? (Expressions, meanings, symbols, metaphors)
 - What colours can be associated with the activities of the Organisation?
 - What cultural factors can be associated with the Organisation?
 - What aesthetic factors can be associated with the Organisation?

• Stage Four: Designing the Elements of Corporate Identity:
 - The Corporate mark: Think of variations of the Visual Mark.
 - The Name of the Organisation: Think of variations of the how to represent the Name of the Organisation.
 - The Corporate Typeface for the Organisation: Chose a typeface to be associated with the organisation - it can have a connection with the organisation.
 - The Corporate Colour for the Organisation: Chose a colour to be associated with the organisation - it can have a connection with the organisation
 - Think of a fifth element for the Organisation: (example are the rainbow band for IOC, just do it for Nike, grill

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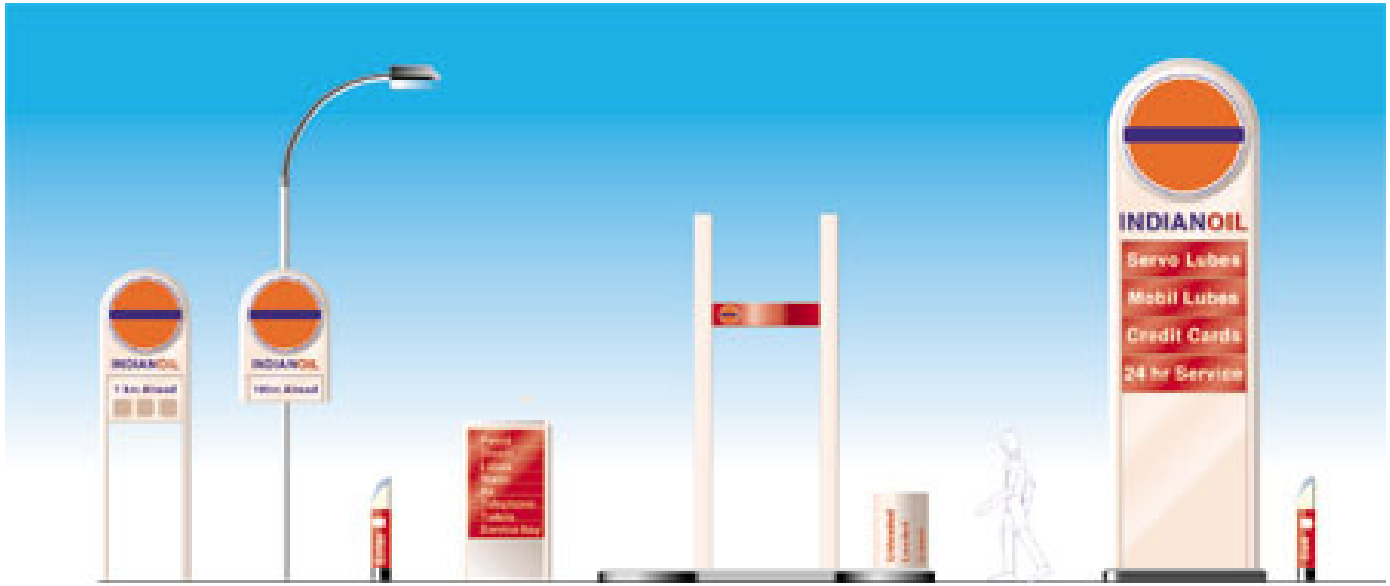
design of many cars).

• Stage Five: Application of Corporate Identity:
- Application of Identity Programme? Apply what you have conceived on all of the artifacts that are connected with the organization.



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Directional Signage

Different stages of Design:
- Understanding the organisation and the signage environment
- Identifying a facility
- Locating the place for signage
- Designing the elements of the signage system
- Design Process for developing a Directional Signage System

- What is the brief from the Client?
- Is it a new design or a redesign?

The Design Process design process for directional signage systems involves 6 stages as below:

• Stage One: Understanding the organisation and the signage environment:
 - What is the name/title of the organisation/environment?
 - What are the major activities of the organisation/environment? (useful for creating visual expressions connected with the organisation)
 - What is the unique identity specific to the organisation/environment?
  . Is there a well conceived visual identity program?
  . look at the background, history, context, etc. of the organisation
  . look at the vision, goals, future directions of the organisation
  . talk to your client and consolidate their viewpoints.
 - What is the need for the signage? How will the signage make a difference?

• Stage Two: Identifying a facility:
 - What are the facilities specific to the organisation/environment for which the directional signage is required? (including staircase, lift, toilet, help, dustbin, etc.)
 - Identify the different types of signage that you might require:
  . Informational? statuary? directional?
  . Floor mounted? grouted? free standing? hanging?
  . Indoors? outdoors?
  . Back lit? front lit? not lit?
 - Debate over these issues for imparting identity to a facility:
  . whether to use graphical pictograms/visuals only?
  . whether to use graphical pictograms in addition to text?
  . whether to use text only?

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. whether to use graphical pictograms/visuals/expressions around the facility when one reaches the facility?
. whether to use numbers/alphabets to identify a facility?
. (multilingual considerations, visibility, remembrance, etc.) . . . .

- If you have chosen pictograms/graphic symbols, whether they should reflect the function of the facility or be arbitrary (like selecting different animals/seasons/plants to depict the facility):
- Semantic factors? should the signage have an unique identity? should it express the identity of the organisation? or should it have a unique theme?
  . expressions, meaning, content, feeling, etc.
  . macro view, micro view, etc
- Functional factors? How should the signage be? Should it convey additional information?
  . educational, entertainment, emotional, promotional
  . humorous, serious, expressive, etc
  . to Identify, to differentiate, to focus, etc.
  . to inform, to direct, to warn, etc.
- Influencing factors? Can you make use of shape, form, colour, number, size, texture derived from contextual themes for this?
  . cultural factors, local idioms and conventions
  . aesthetics, trends, etc.
- Usability factors? Do you need to conduct experiments to verify these factors?
  . visibility, readability, recognisability, etc.
  . human factors, etc.
  . human product interactions
- Technology and economic factors? The cost factor can influence the selection of material and the determine the method of fabrication
  . materials and processes
  . method of manufacture - batch, mass, hand fabrication?

• Stage Three: Locating the place for signage:
- If the facility already exists, do a walk through the outlet
  . identify the location for the main signage - usually at the entrance of the lobby or visible from the main approach road
  . identify the places/corners/forks where one needs additional information to move ahead
- How would the users navigate through the different spaces in the organisation/environment?
  . Note the places where there is need for display of information, the types of information, etc.
  . If it is redesign, by observing, studying and documenting (using photography, sketches, video-taping)
  . the users navigate through different spaces
  . the different interactions the users have with the environment and how they use the facilities

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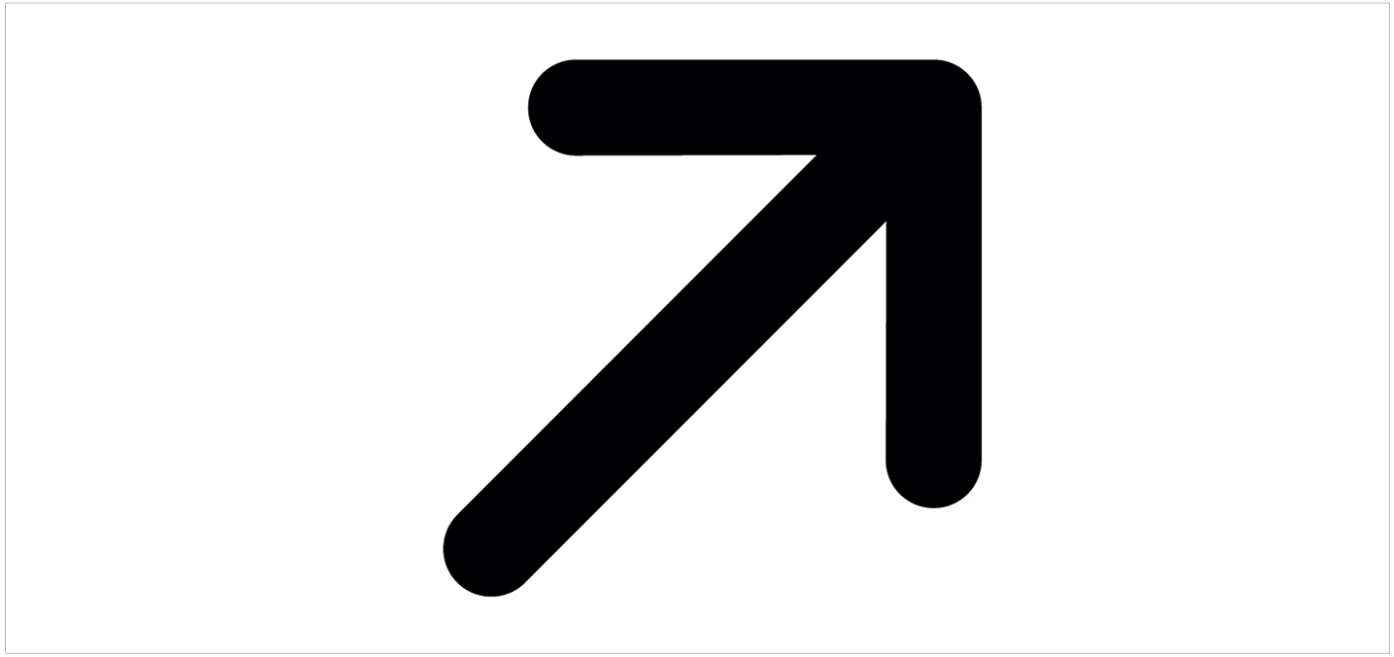
. interact with the users to talk to them, narrate their experiences and getting their feedback
- Use the map of the site or floor plans of the environment and mark the positions where different types of signage's are required.

• Stage Four: Designing the elements of the signage system:
- Classify/group these facilities into information chunks that make more sense.
  . functional? floor wise? direction-wise?
  . colour coded?
- Sequence/order them for easier information retrieval:
  . alphabetical?, numbered?
- The elements of the signage:
  . Use of expressions, colours (foreground and background), shapes, textures for designing the elements of the directional signage system
- How would you represent the 'The Directional Sign'?
  . arrow? pointing finger? layout?
- How would you represent the 'the name of the facilities' in text?
  . typeface, style, etc.
- How would you represent the 'the name of the facilities' in visuals:
  . symbols, icons, pictograms, etc.



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Case Studies

Case Studies on examples of Design of Signage Systems:

- **Hospital Symbols for Signage:**
  A case Study
  by Ravi Poovaiah

This is about the design of symbols for public hospitals in India. The design was done from the perspective of the users and they were the decision makers in all stages of the design process. The designer translated their ideas into a system of symbols.

- **Indian Oil Corporation (IOC):**
  Corporate Identity Programme for Indian Oil Corporation
  by Dr. Ajanta Sen

This is about the Vision 2000 programme under which India's largest as well as her only Fortune 500 company, the Indian Oil Corporation (IOC), had set itself on a course of revamping its corporate image three and a half years ago.

For further details check below:


Hospital Symbols


Indian Oil Corporation

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Hospital Symbols

Hospital Symbols: A case study
Communications in India is constrained by factors arising from the very diverse cultural, traditional, lingual and social backgrounds of its people - resulting in potential as well as real situations of communication impasse. A drawback of no mean proportion, it is related to the simple linguistic and cultural fact that in India, there are as many as 14 major languages and about 1,600 dialects. Secondly, many of its adults are perhaps functionally literate but are literally illiterate. Thirdly, people do not communicate easily because of boundaries determined by the cultural-traditional-social denominators of gender-divide that limits the free mixing between the sexes, or among different castes or religious communities.

Need:
At the very outset it was discovered that there was no existent data pertaining to the problem of message communications in the domain of health-care services. One reason for this being that at the time of our study, Indian hospitals by and large did not employ any system of symbols. Five major hospitals run either by the government or the municipality within the city limits of Bombay was therefore chosen for a study of the potentials of symbol development. The results of the study revealed that there were several problems deriving from the absence of a sign system: There was a great degree of confusion that resulted from using a number/numerical system for identifying the departments, counters, etc. It was found for instance, that 35-40% of the first -time users coming to a hospital to utilize health services, invariably ended up standing in the wrong queues. This not only caused loss of time for the user but also undetermined efficiency as a consequence of the considerable confusion and delay caused on both sides- on the part of the patient, as well as on that of the hospital staff. Since the queues were lengthy on account of high patient turnouts, the patient often wasted over half an hour to simply realize this error. It was felt that visual symbols, appropriately used could go a long way in ameliorating these avoidable conditions.

Methodology:
Broadly, the approach was the creation/generation of a large set of possible solutions, which were to be narrowed down, and graphically refined until the final set emerged. The design solution also involved a dialectical movement between the user and the designer, and each stage of the process was modulated by responses from the users.

Message Areas:
As a first step, all the major facilities where a symbol was necessary, were identified and classified according to their potential for representing in the iconic, indexical and the arbitrary categories.

This involved visits to various hospitals, photographic documentation of all the facilities along with the users, ob-

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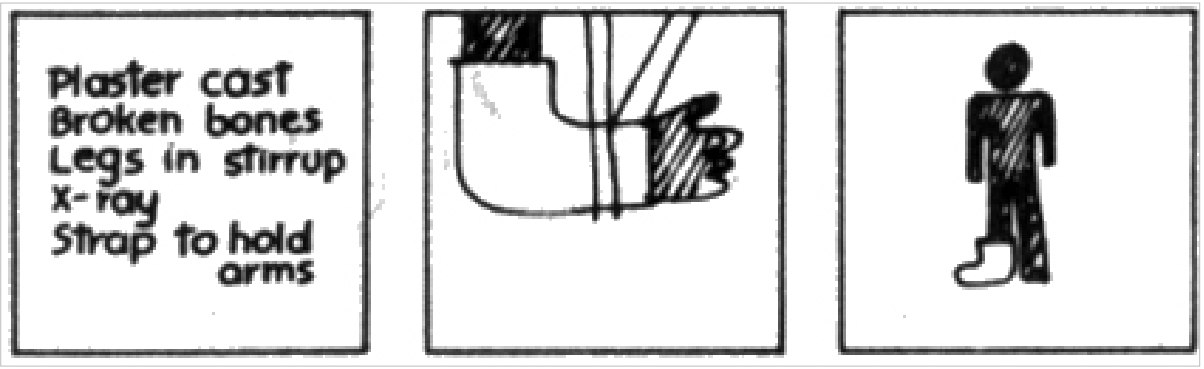
serving and following the users navigating through the hospital spaces, taking down notes and making sketches, keeping track of the different interactions the users have with the hospital environment and talking to the users about their difficulties and asking them to narrate their experiences.

Variations:
In order to generate possible solutions pertaining to each message area, three methods were employed.

From users:
First, the users (patients, visitors and hospital staff) themselves were requested to propose solutions. Their perceptions were quite helpful in conceptualizing especially the indexical category of representations. They were interviewed and asked to narrate their experiences with the aim of finding out what association they had regarding a particular message area. Key words associated to the message areas described by the users were documented. These were then visualized into possible visual representations by the designer.

From Designers:
Secondly, brainstorming creativity sessions were held involving designers and visual artists in order to generate solutions mainly for the iconic and arbitrary category of representation.



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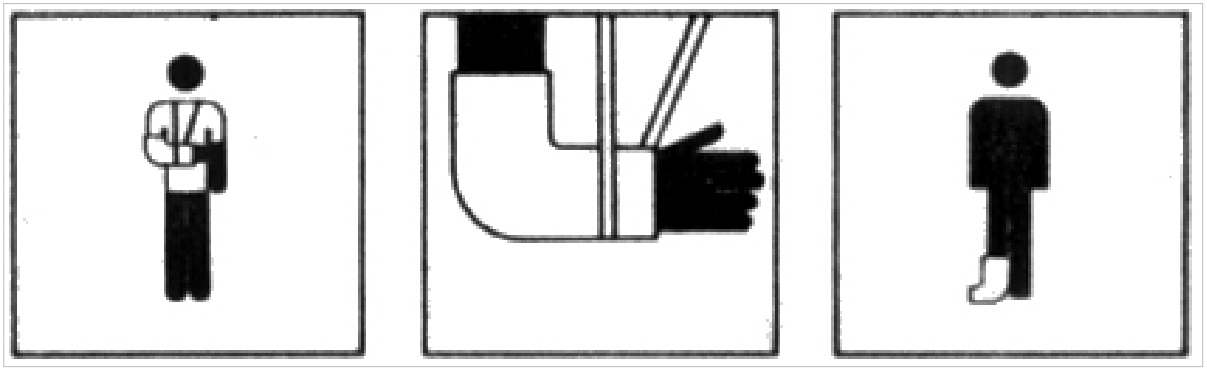
From Existing Solutions:
Thirdly, existing international solutions were documented. This procedure resulted in the accumulation of a large number of alternatives for each message area.

Evaluation by the people:
The next stage consisted in going back to the users for an evaluation. Without volunteering any information, the users were shown the complete set of possible solutions for each message area and asked to mention what these represented and to identify the ones which gave them sufficient clues towards identification. When the results were tabulated, it was discovered that out of the whole set of possible solutions a few were semantically considered more appropriate than the rest. These few were then passed on to the next phase of the process.



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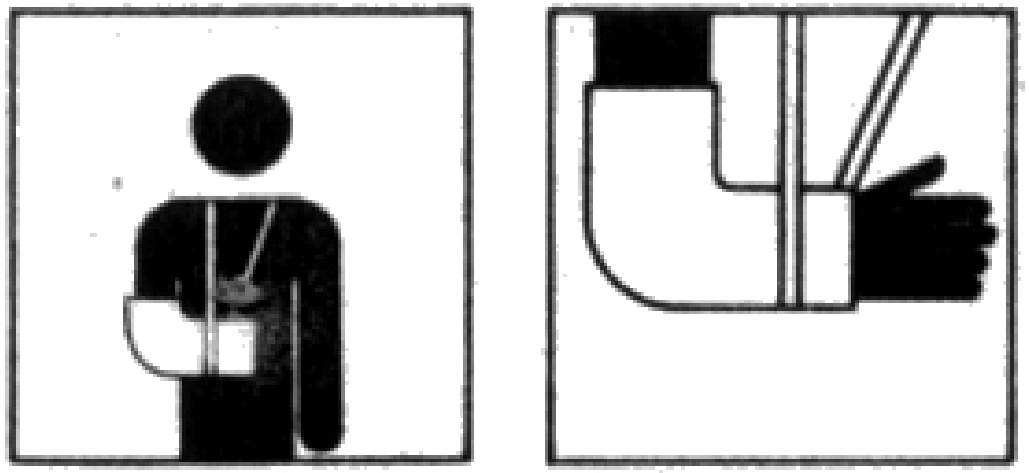
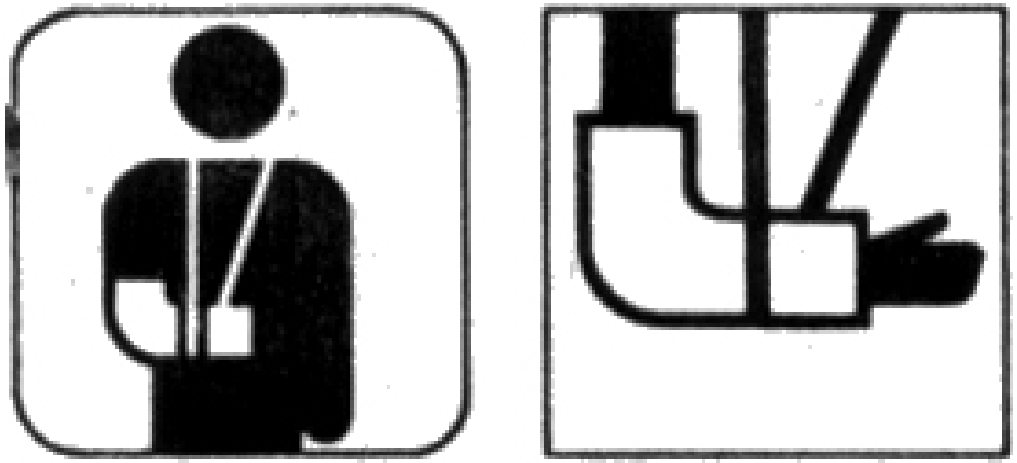
Ergonomic and System Attributes:
Following this was the pragmatic phase where ergonomic studies were done on aspects like visual distances, amount of relative blackness perceived, minimum thickness of lines, and the required enlargements. Decisions at a macro level in the semantic and syntactic domain were formulated across message areas so that it became a convention to be used in all symbols for a given environment (e.g.; the patient in black and the hospital staff in white, the roundness of form, the character of border, etc.)



Redrawing of Symbols:
In the light of all these studies and evaluations, the symbols were redrawn incorporating ergonomic features and established standards, and then made to syntactically match with each other. The designer's task was to work them over and refine them so that they were graphically more compatible with each other.



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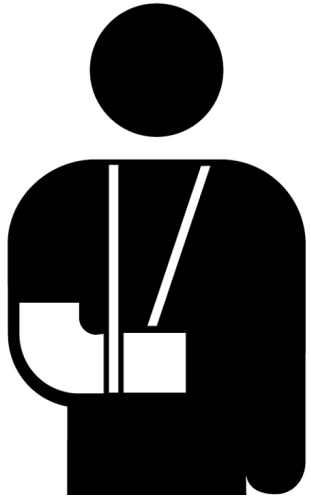
Re-evaluation by Designer:
Next the designer evaluated the symbols for ease of recognition and for syntactic compatibility.



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Operation Test on Site:
The final stage involved operational tests on site for checking out the effectiveness of the designed symbols.

Example of Signage Application:

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Indian Oil Corporation

Introduction:
Corporate Identity Systems work on the premise that there is the need for a corporation to be perceived as being different from the ordinary, especially in a business climate that is increasingly being besieged by pressures of several kinds - political, social, economic. What does the corporation then do to fight its way out of an impending or an anticipated situation of facelessness?

We will exemplify this process with a recent hands-on experience that is known to have set a few precedents in India through its design initiatives. This is the Vision 2000 programme under which India's largest as well as her only Fortune 500 company, the Indian Oil Corporation (IOC), had set itself on a course of revamping its corporate image three and a half years ago. Part of the outcome is now available in the form of a recently inaugurated retail petroleum outlet near the international airport of Sahara in Mumbai. The outlet bears testimony to an arduous, and needless to say, comprehensive designing programme backed up by an equally stringent implementation process. Also arguably the first of its kind in India, the programme was systematically initiated in the fall of 1994.

- The objectives for IOC
- The design idioms for Vision 2000
- The Design Solutions
- The Key Design Features
- Conclusion
- The Designers

The objectives for IOC:
Any design solution as part of a corporate image-building exercise needs to be a construction of the statement of the company's attitudes and goals. Followed by the backing of a clear-cut design idiom. The imperatives for a change in IOC's corporate image were rooted in several factors. In a survey undertaken by the designer commis-

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sioned by IOC to undertake its image-building programme, it would appear that on an everyday basis, neither the company's image nor its performance left any indelible imprint in the minds of its consumers. A finding that applied equally well to all the other oil companies in India as well. In the event, the only way to distinguish one oil company from the other seemed to be the colour-bands running across their pump station facias - red in the case of IOC, yellow for BPCL, blue for HP and orange for IBP. And even there, the customers found it difficult to remember which colour represented which company. It was this 'impersonality' which had lent to the company's image an utterly unexciting impression, and one that now required immediate addressing.

The design idioms for Vision 2000:
As mentioned already, one of the first steps towards any image-building exercise is also usually marked by the adoption of a clearly defined set of design idioms. Which is why a similar course of action was expected to set the way for IOC to accomplish a clearer identity aimed at transforming the corporation's impersonal image. In the designer's opinion, this could only happen by evolving a 'design style' that was "manifoldly distinct from the prevalent ones," apart from projecting IOC as a 'consumer- friendly' company. This image-building exercise was now going to be undertaken systematically through a design programme designated by the designer as 'Vision 2000'. Under this, projects would either be an outcome of a redesigned effort, as in the case of all existing retail IOC outlets across the country. Or designed from scratch in the case of a few select retail outlets yet to be constructed. And which would sport an entirely new look. As in the case of the project under discussion here.

One of the two design idioms considered appropriate for this programme was 'comprehensive designing' that would consist of designing an entire range of artifacts right from buildings to products to packaging to publicity material, rather than just a few items here and there chosen in a piecemeal manner for designing. All this, of course, with a view to creating a composite mental picture of the company in the minds of its consumers. Included under comprehensive designing process would be an entire gamut of artifacts, such as the architecture of the sales building of the retail outlets, the canopy to cover the oil-pumps, signage poles to guide the traffic around, the uniform to be worn by attendants at the pump station, the size and positioning of the billboards, and such.

The other major design idiom adopted under IOC's Vision 2000, and which is seldom undertaken by India's industry, was the concept of 'proprietariness'. It is an undertaking through which materials and processes are developed exclusively for the company's use. In the event, it would give IOC a major competitive edge to its revamped corporate identity by pre-empting the company's design initiatives from getting undercut through cheap imitations.were tabulated, it was discovered that out of the whole set of possible solutions a few were semantically considered more appropriate than the rest. These few were then passed on to the next phase of the process.

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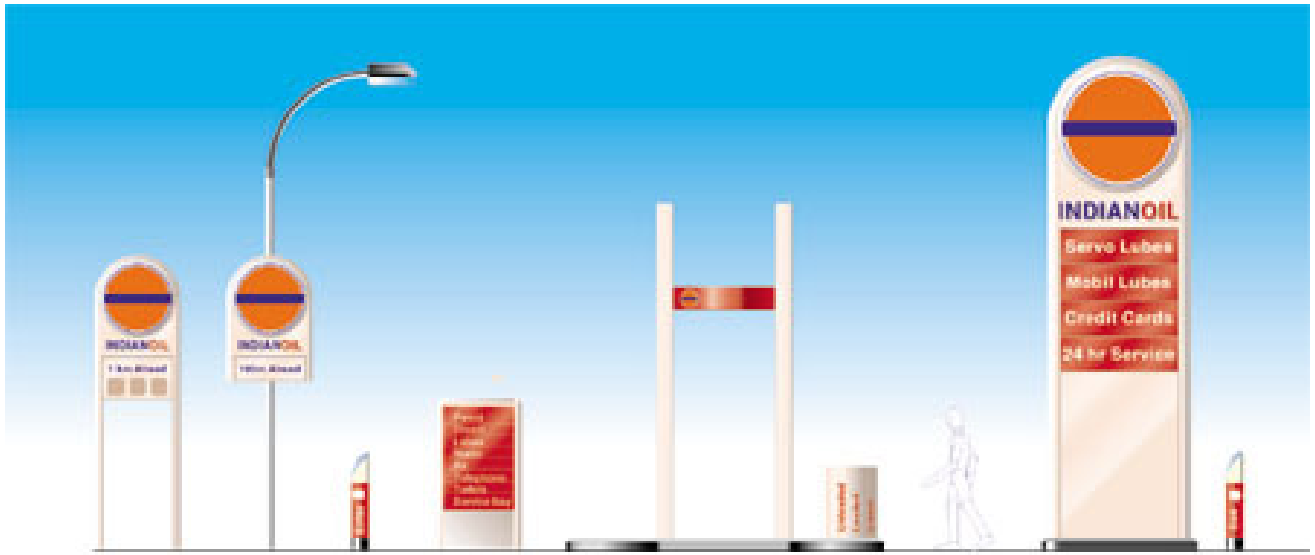

The Design Solutions:
There were three design solutions offered as alternatives to IOC. Each one reflecting a certain style of designing, and each style in turn, representing a certain sense of purpose distinctly associated with that particular style. Of these three solutions - traditional, modern and post-Modern - presented in the form of models to the company for them to be able to visualize the projected outcomes, the one selected by IOC for implementation was the post-Modern one. In the words of the designer, the post-Modern design was based on "an open, dynamic form in order to go along with the futuristic aspirations of the company."

It is widely known that post-Modern design represents an attitude towards precision and purpose, but not in a driven industrial sort of way. Instead, it is an idiom of design that admits outside sensibilities with less reservations, this by itself connoting an attitude towards change. With its roots in the post-seventies' movement called Memphis, post-Modern design had sign posted, through its protagonists such as Ettore Sottsass, Peter Shire, Natalie Pasquire and others, a note of protest against the orthodoxy of the prevailing design culture of the rectilinear that had swept the Western world since the twenties. Which is why some of the key design features of Vision 2000 display a move towards the curvilinear.

Adopting a post-Modern style for IOC's revamped corporate image was going to send out a signal of unorthodoxy in an otherwise undifferentiated environment of staticness that had come to mark the corporate-industrial scene in India. IOC now desired itself to be projected as a 'futuristic' corporation "poised at the cutting edge of technology, and up-to-date in appearance" apart from being a 'friendly' corporation.

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by
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IDC, IIT Bombay

Source:
http://www.dsource.in/course/design-signage/case-studies/indian-oil-corporation

The Key Design Features:
Decidedly, one of the elements in the overall design scheme that was going to impart IOC's future retail outlets with a sense of distinctiveness, was going to be its colour identity. In its completed form at the new retail outlet near Mumbai's international airport at Sahara, it appears quite strikingly as a rainbow-coloured band that runs visibly along the entire length of the retail outlet's facia. Needless to say, the rainbow band is of a proprietary nature, made in PVC and reproduced either through digital printing or through screen printing. Then, there is the house colour chosen by the designer especially for Vision 2000. It is a proprietary 'IOC Beige.' Further, the colour combination of white letters on a red background developed specifically for IOC, has been set aside for use on its signage's.

Some of the other features that are the result of a dedicated proprietary development for the corporate identity exercise are:
• the concept of a convenience store on the premise of a retail outlet and which combines the conveniences of emergency shopping and snacking with the act of filling up gas;

• a range of signage's which are of a distinct shape and colour-combination and which include the main sign poles indicating all facilities available at the outlet, as well as directional sign - poles and signage's for the pump island and the convenience shop;

• the curvilinear dumbbell-shaped pump islands to help the vehicles maneuver themselves with ease, as well as to create space for the pump attendants to stand and attend to the vehicles;
  the facia band in steps, as a feature along the top of the canopy as well as on the sales and service building; and

• the positioning of the oil-pumps in two separate spaces of the retail outlet - one of them to provide easy access to two and three wheelers, the other to four wheelers.

This segregation is expected to promote better space and functional management of the arriving vehicles in terms of the customized attention that can now be accorded to the varying needs of two and three wheelers vs. those of four wheelers.

Conclusion:
It is just as well that a Fortune 500 company should have taken the plunge towards such a potentially massive exercise in comprehensive and proprietary designing and set the pace for the others to follow. What holds a measure of promise through this particular design endeavor, are the clues that are embedded in the corporation's initiative towards indigenous designing. Compared to the usual tendency in the industrial design history of the Indian industry to plump in for already available designs, even if such designs have been worked out to suit the needs of companies located elsewhere, and quite usually of those located abroad.

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It has to be said in a measure of fairness to IOC, that it was the top echelon of its management that had opened up the doors for indigenous designing. The strategic positioning that it had created for the designer right from the point in time at which he was commissioned into the launch of the Vision 2000 programme, could have a strong message for other corporations in India especially the ones that could be in an urgent need for a corporate image-building exercise. The fact that such strategic positioning had enabled the designer access to the topmost levels of the management compares well with the way companies like IBM or Mobil had gone about their own such exercise in the sixties. The relative face of coherence displayed amongst IOC's top management, especially with respect to the critical matter of freezing their design concept in order to move on with its implementation, had all the hallmarks of a company getting ready for marketisation.

If IOC were to conform to a strict implementation-regime of its Vision 2000 programme, in accordance with the guidelines laid out in its manual by the designer for its pan-India application (across an estimated 7000 retail outlets to be redesigned by the year 2000). And, if there were to be strict adherence to material and process control, then IOC's post-Modernist 'rainbow band' could yet turn out to be her lucky mascot.

The Designers:
The principal designer for Vision 2000 has been Professor Ravi Poovaiah, a mechanical engineer from IIT, Madras and trained in Industrial Design from the Industrial Design Centre (IDC), IIT, Bombay, and Communications Design from the Rhode Island School of Design (RISD), USA respectively.

What is interesting here is the involvement of other industrial designers in informing the production aspects of the design features for the retail outlet. For one, there was Professor Sudhakar Nadkarni, Poovaiah's teacher and ex-colleague at the Industrial Design Centre (IDC), IIT, Bombay where Poovaiah functions as a senior member of faculty. Professor Nadkarni remained an essential part of the core design team through the entire course of the outlet's implementation.

But more interestingly has been the involvement of Kishore Babu from Bangalore, and Satish Raut from Bombay and both industrial designers, who were instrumental in the productionising of the canopy and the sign-poles respectively. There were yet others. For example, industrial designers such as Sanjay Jain and Kasturi Rangan of Wipro, whose lighting design developed for Vision 2000, although not adopted on this occasion, has become a classic design study for Wipro itself.

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Symbol

Graphic Symbols for Public Signage Systems:
The symbols are available free for use.


Hospital Symbols


Railway/Bus Stations


Symbols for Buildings


Symbols for Airports


Symbols using Hands

Signage Design for Children:
These are the Graphic Symbols designed for use in the Children's environment. A set of bright, warm and colorful signage designed especially for children and their environments. Simple line drawings are used for representation and quick identification by children. The forms are soft and illustrate the sense of playfulness.


Generic Signage


School Signage

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Source:
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Hospital Symbols

Graphic Symbols for Hospital Environment:
_by Ravi Poovaiah

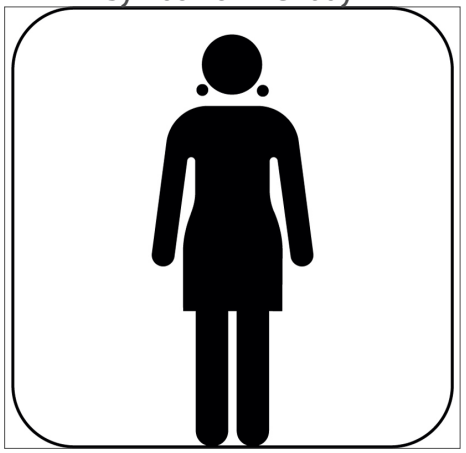
The final Graphic Symbols that were designed for use in the hospital environment. The designing was done from the perspective of the users. These symbols are available free for use.

Note: The graphic symbols were developed as part of a signage system for the various facilities in a public hospital environment.

Symbol for the Man

Man in traditional dress

Symbol for the Lady



Symbol for the WoMan

Symbol for the Man

Symbol for the Lady

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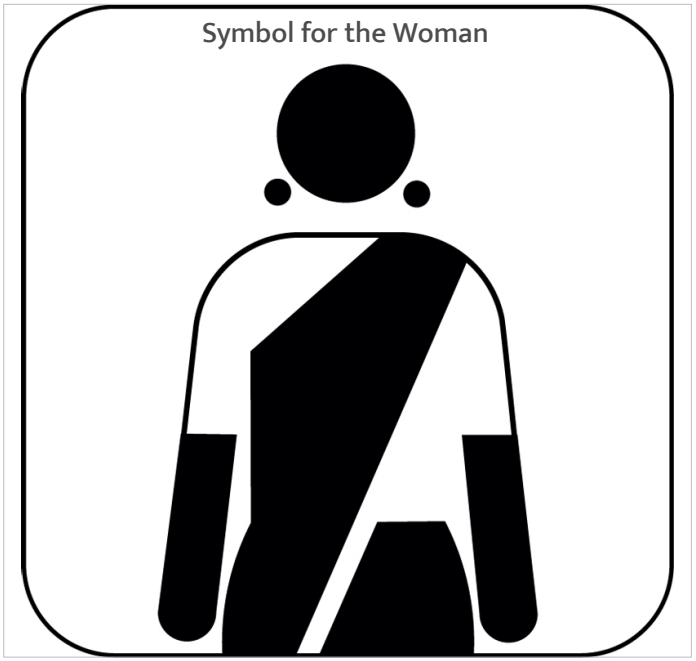

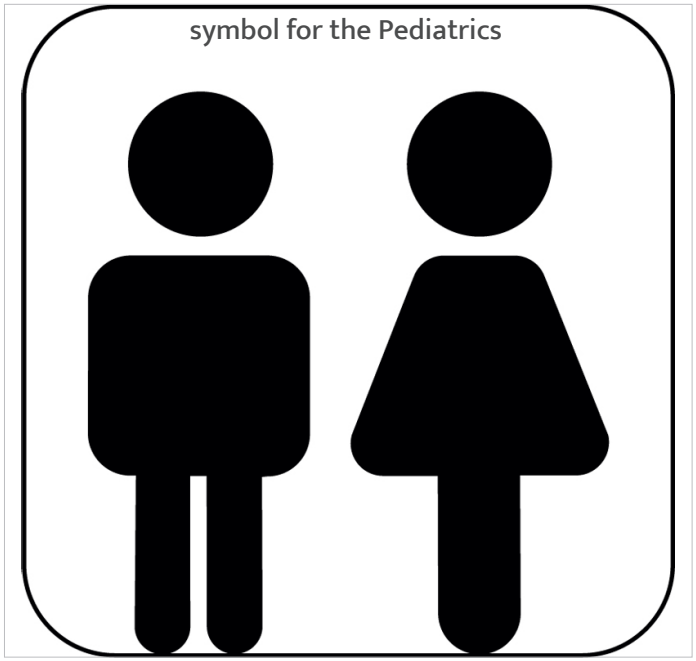

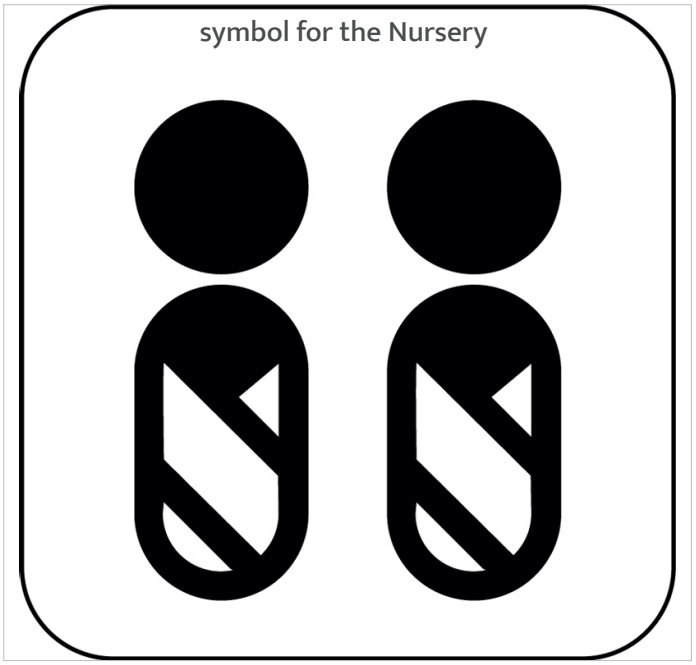

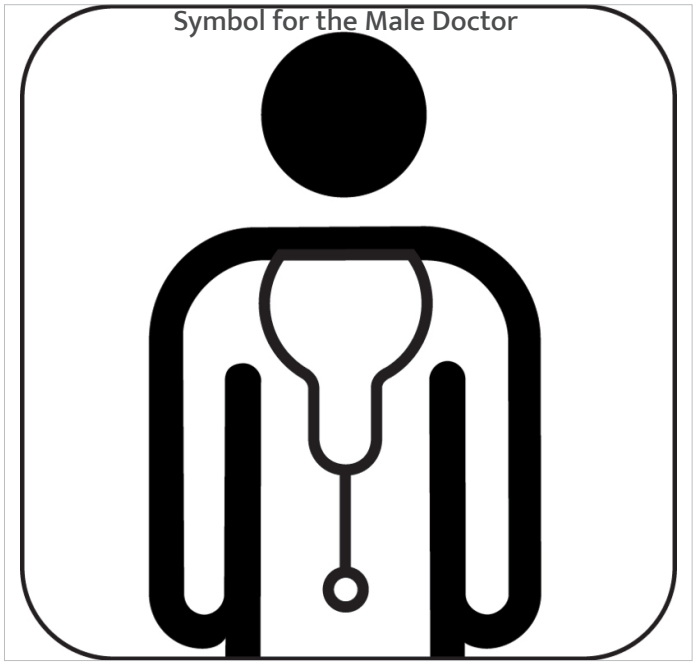

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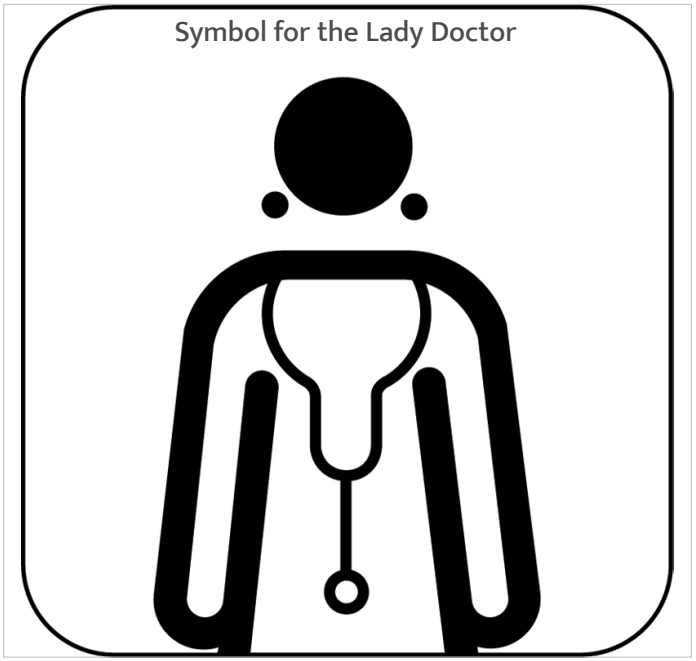

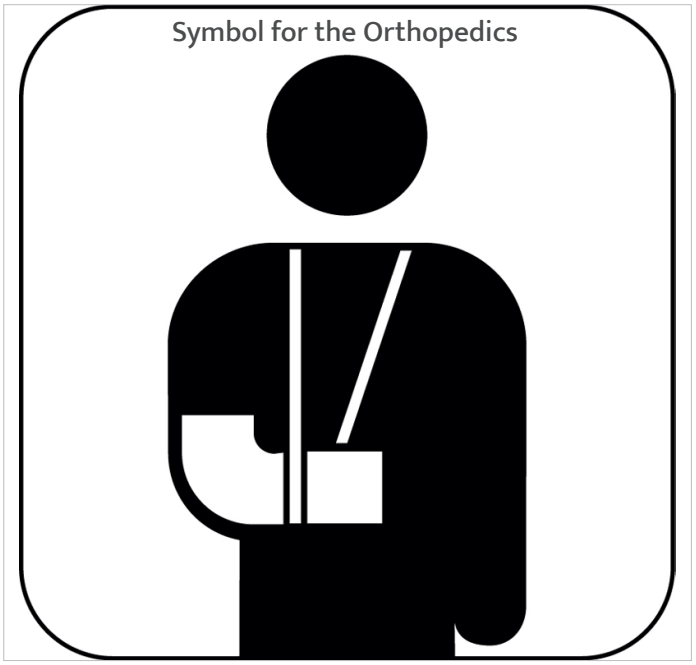

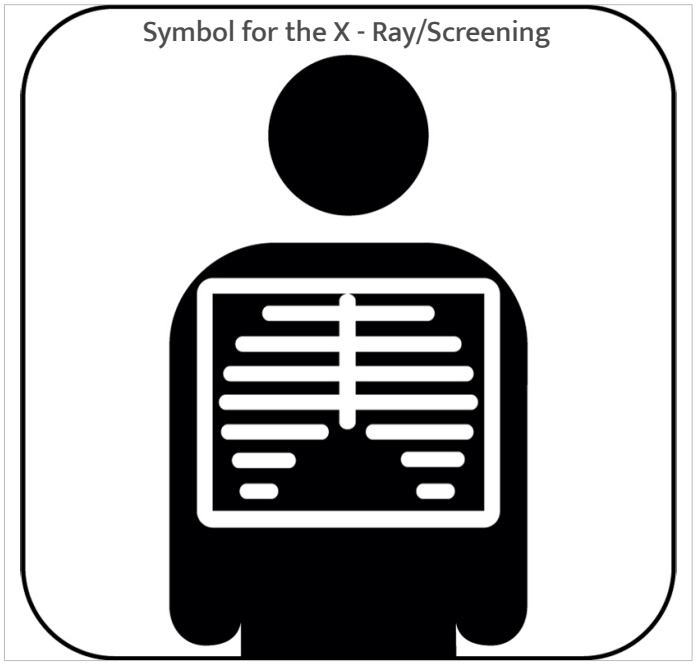

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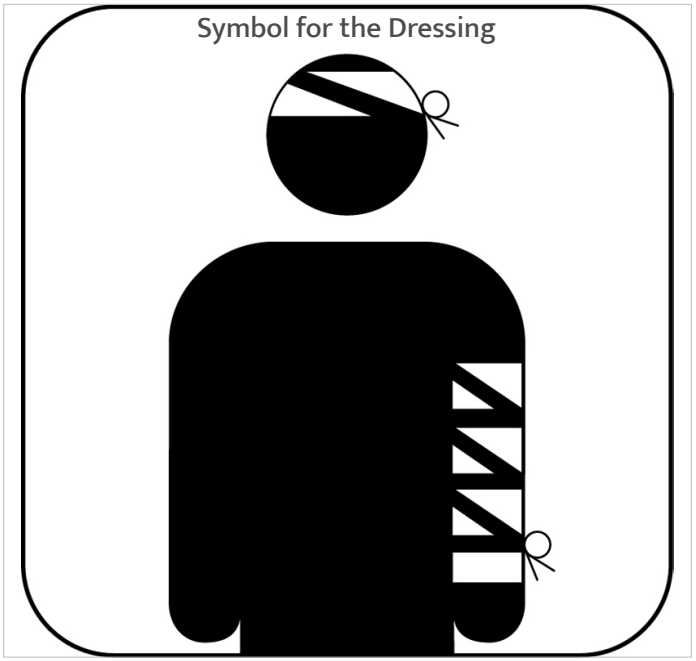

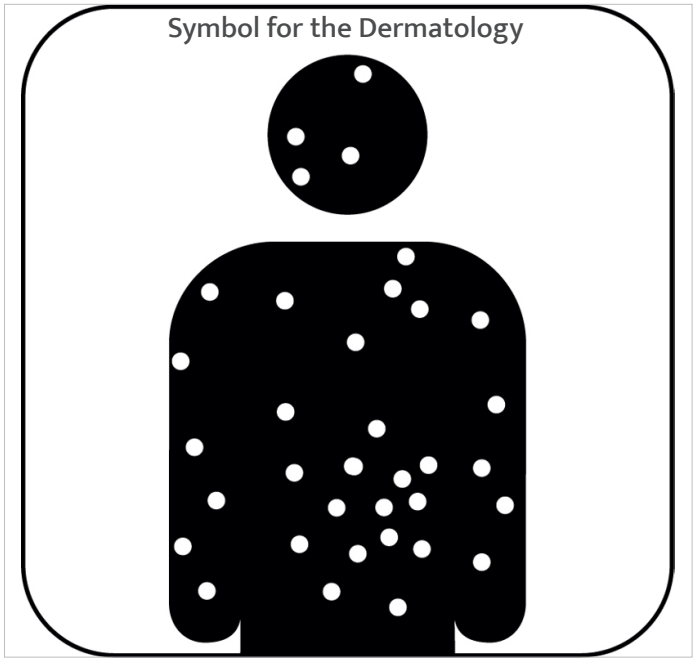

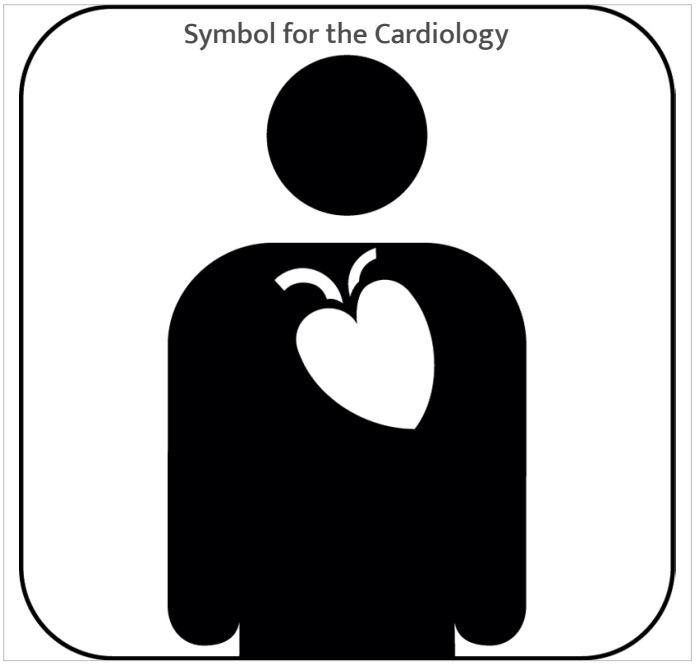

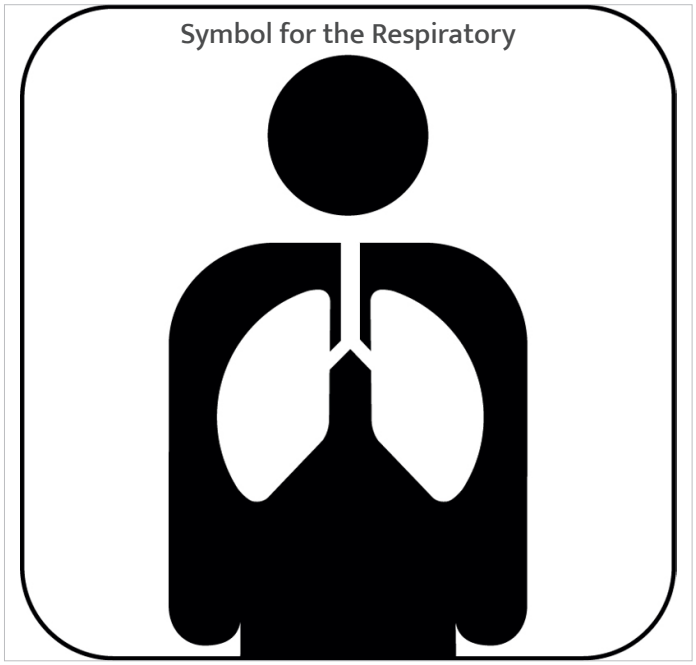

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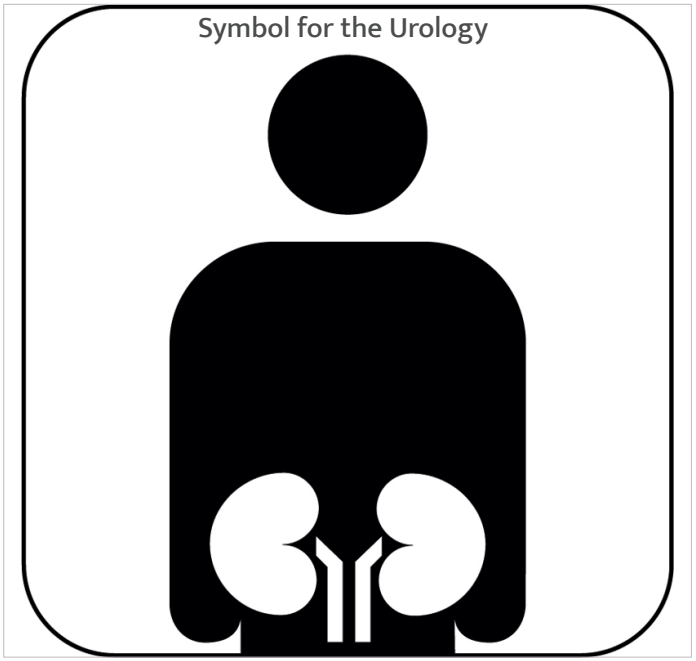

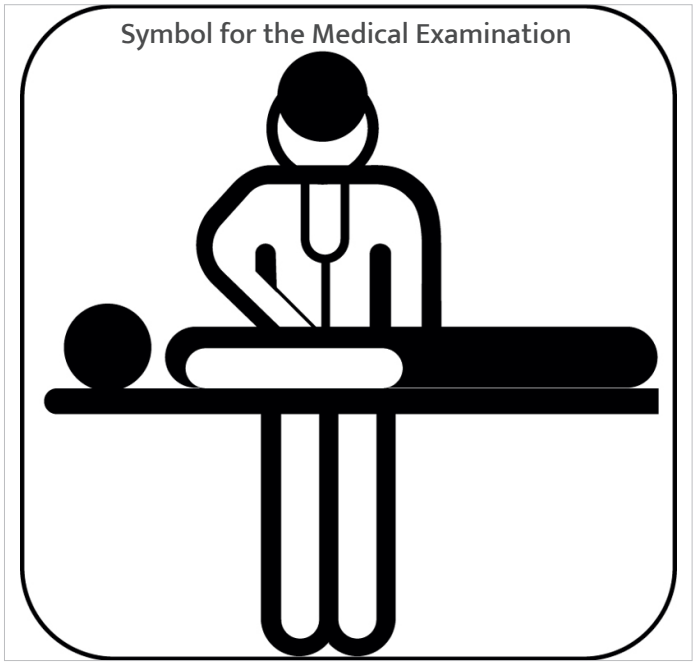

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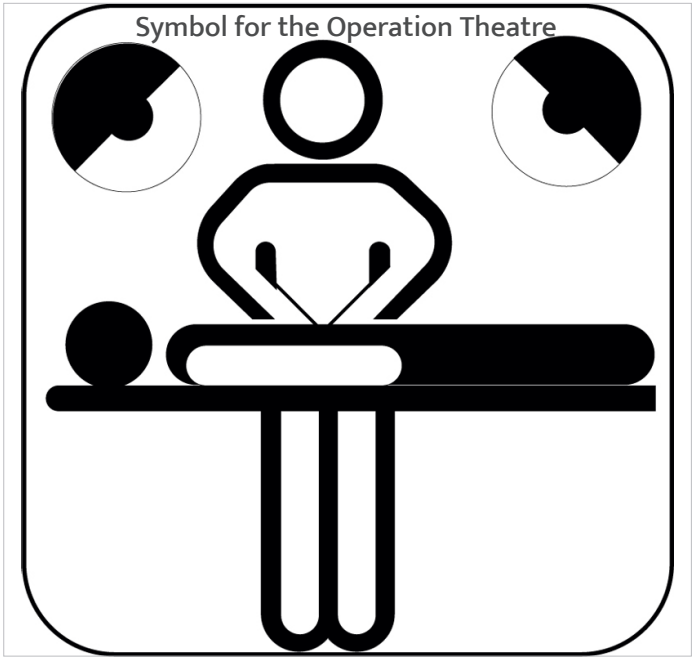

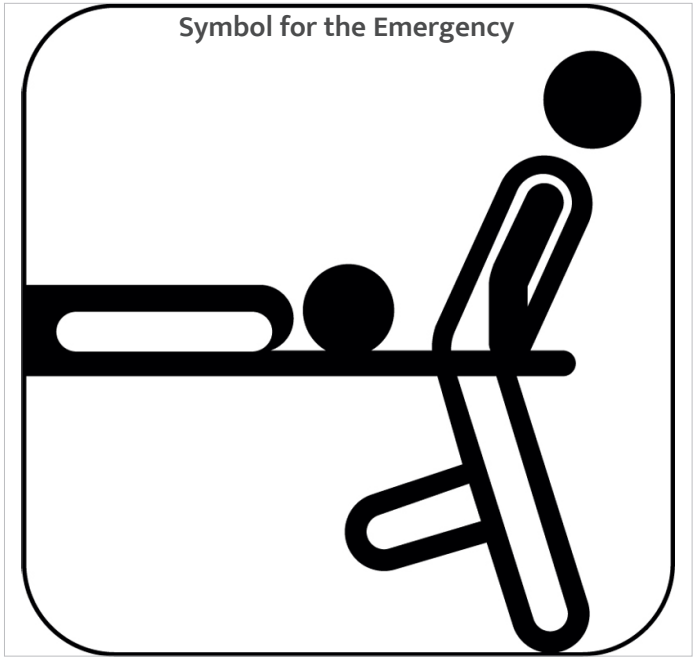

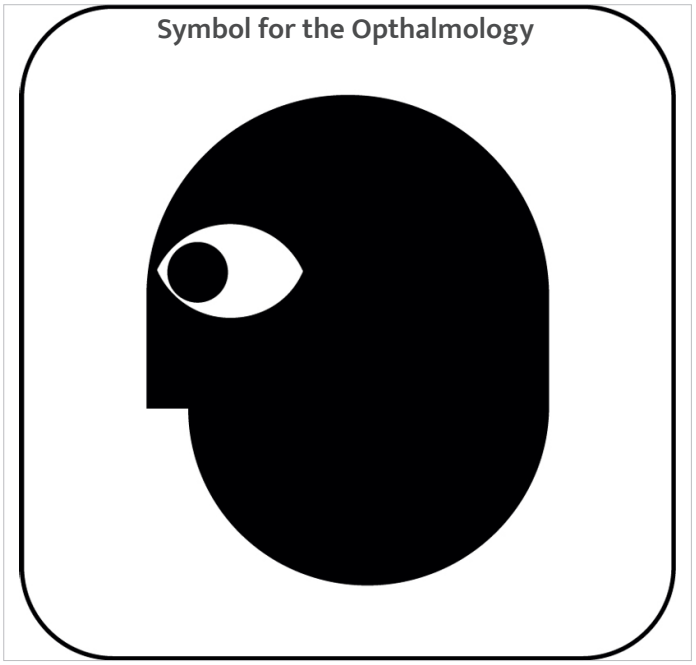

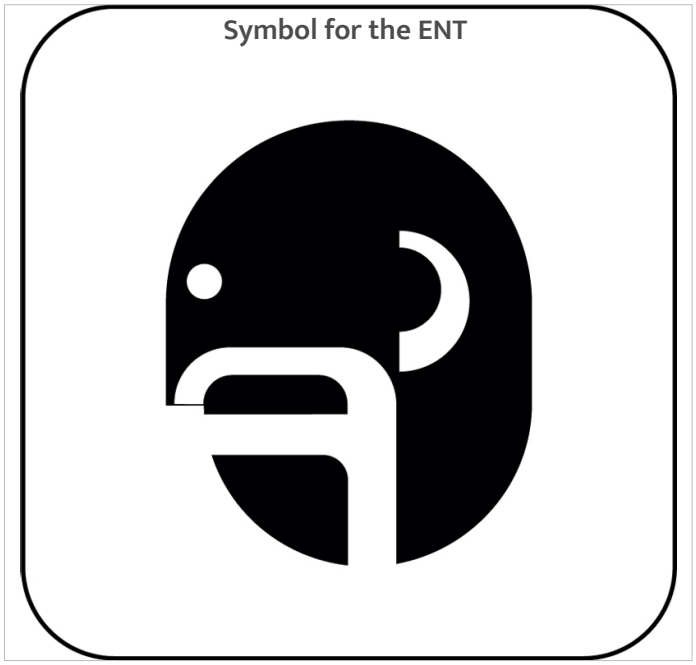

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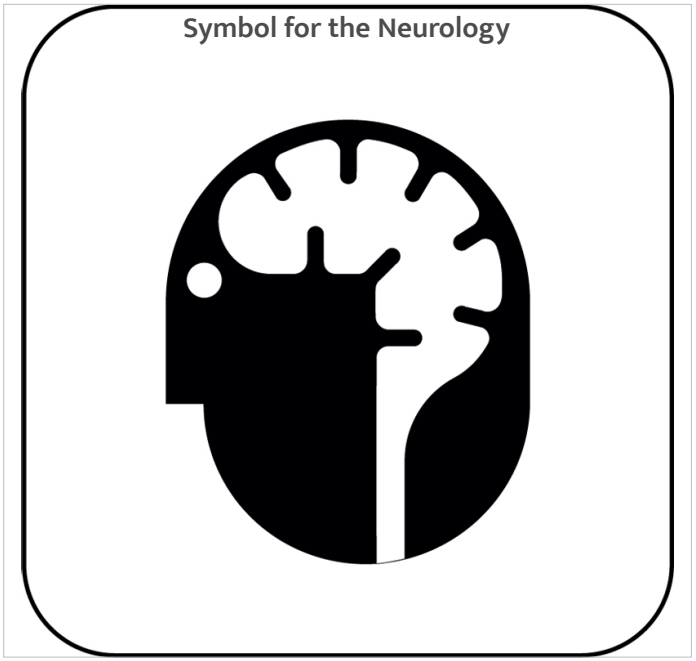

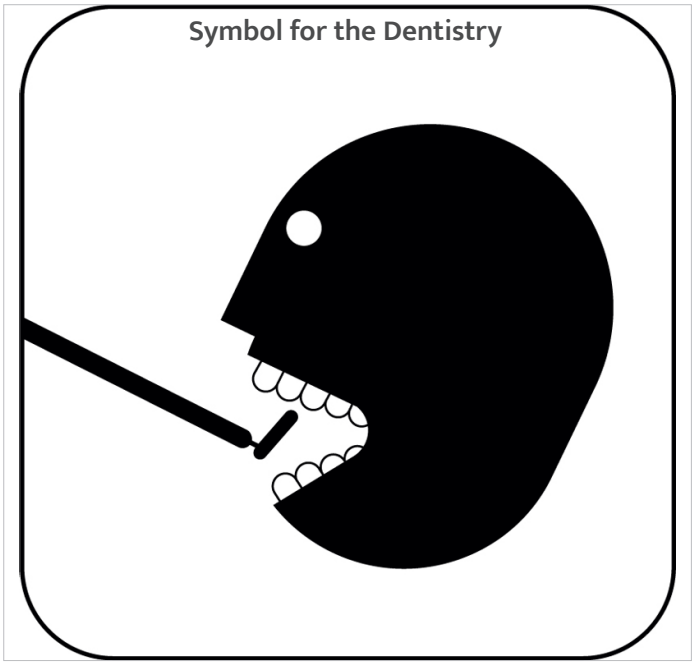

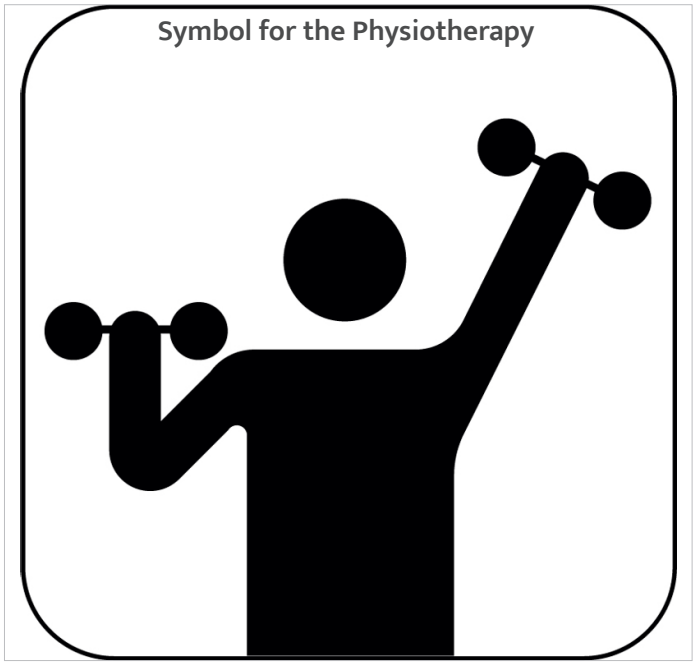

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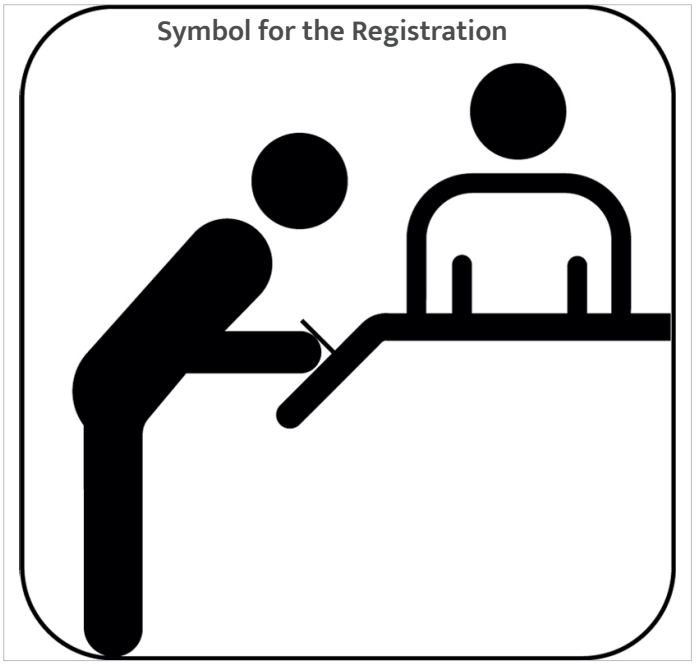

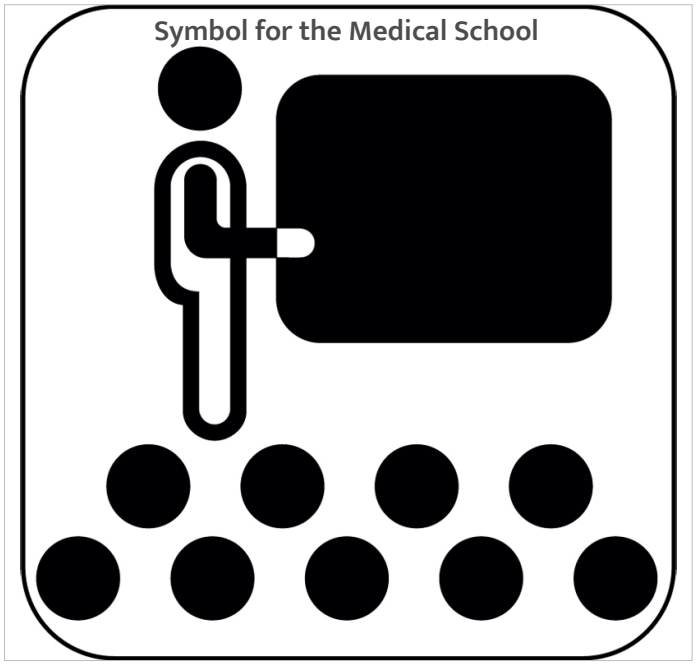

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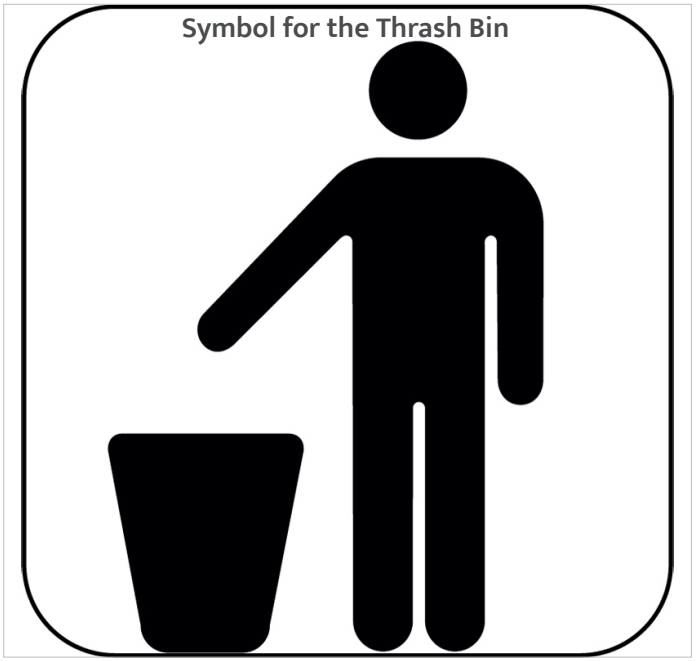

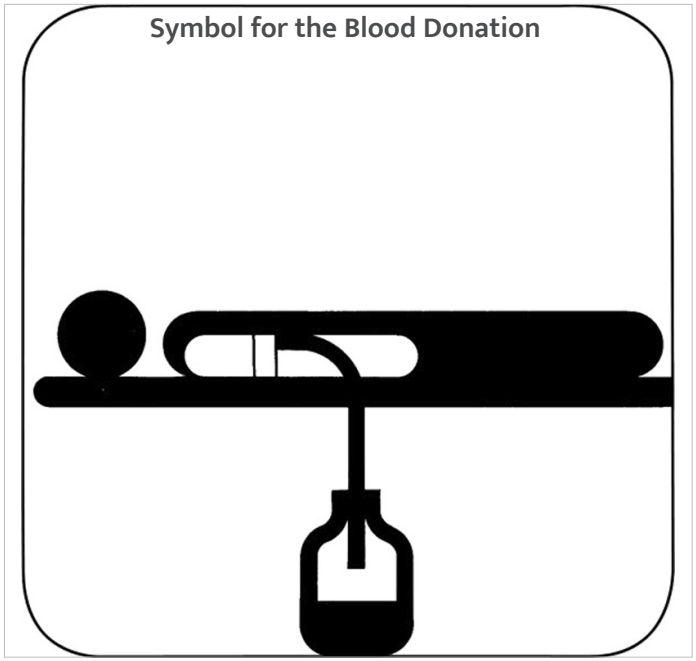

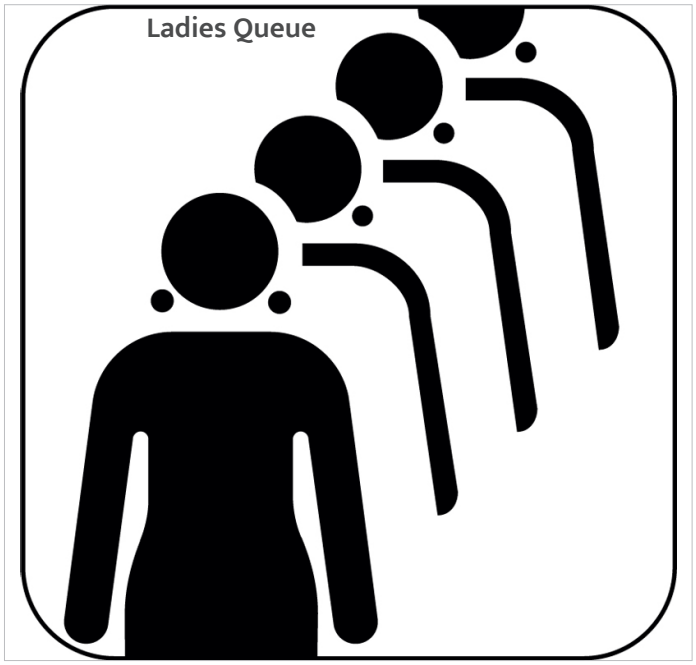

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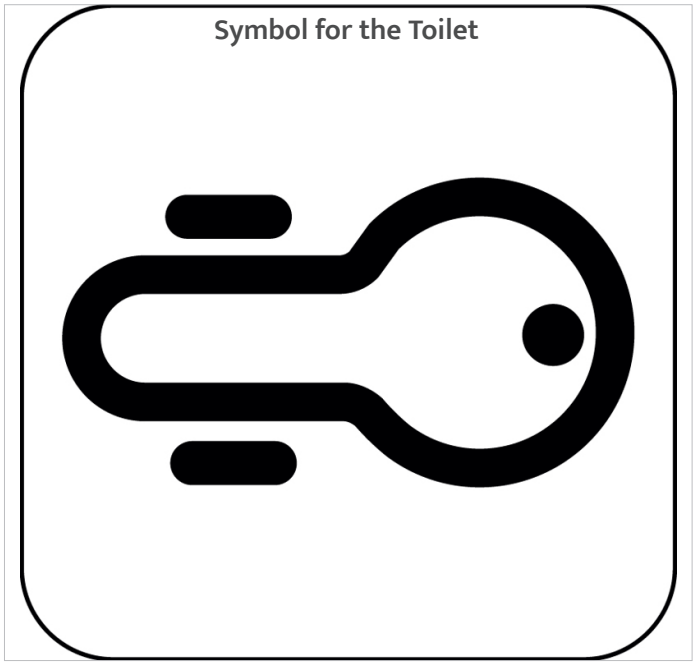

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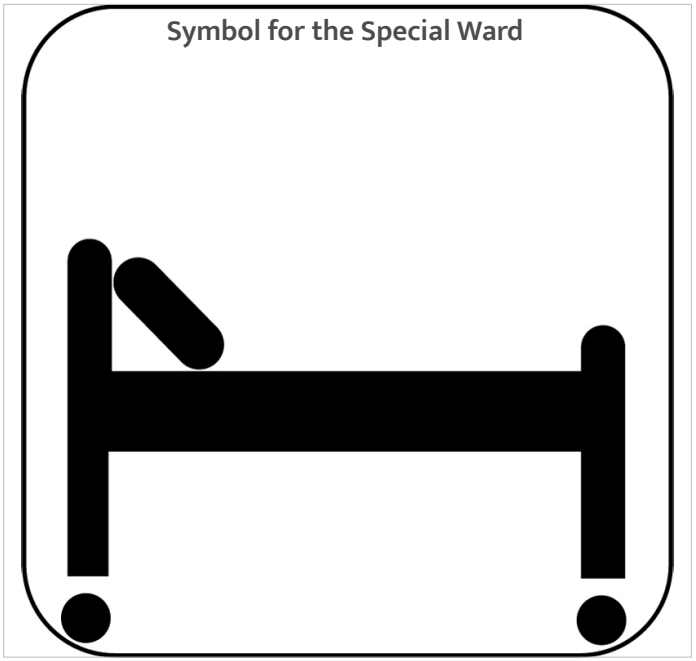

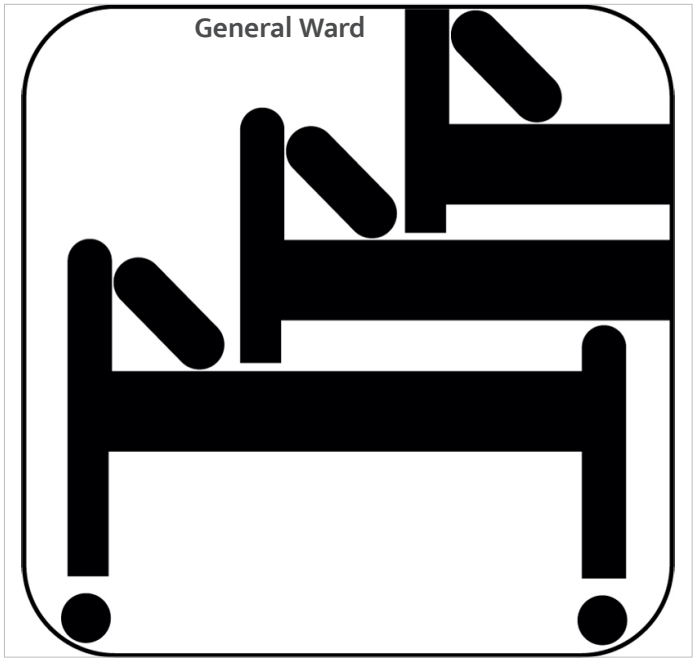

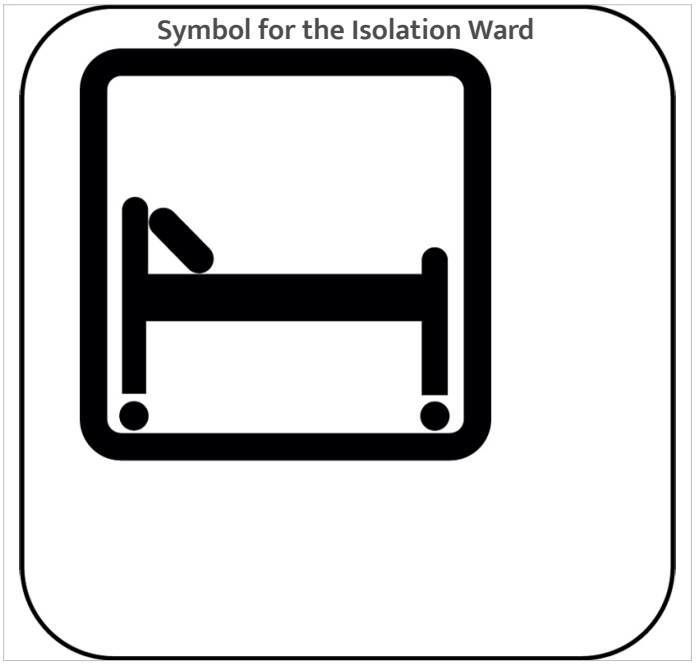

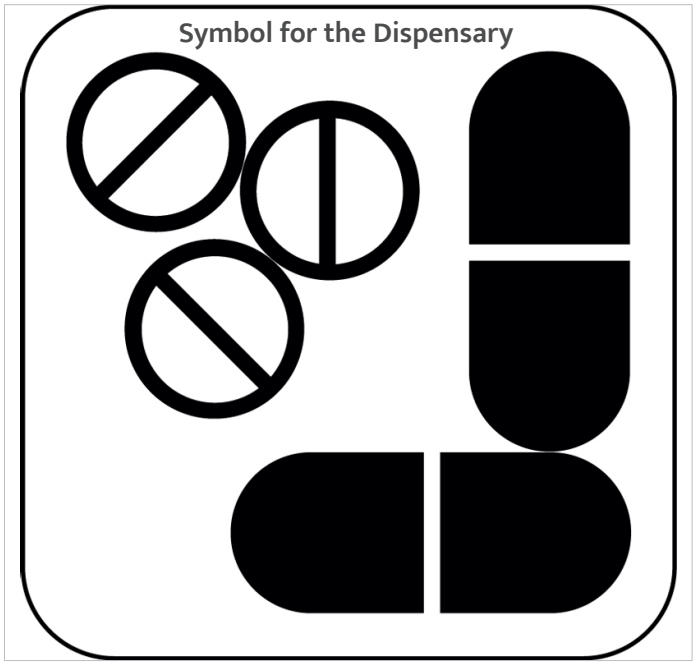

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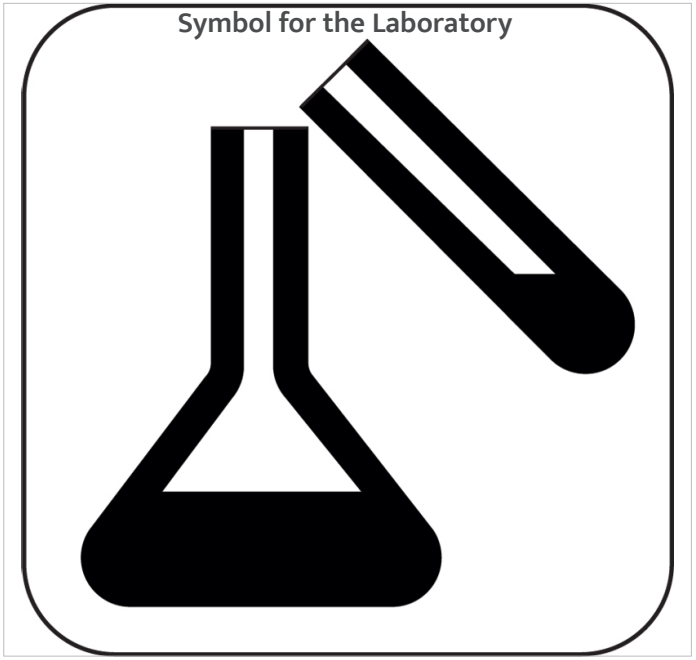

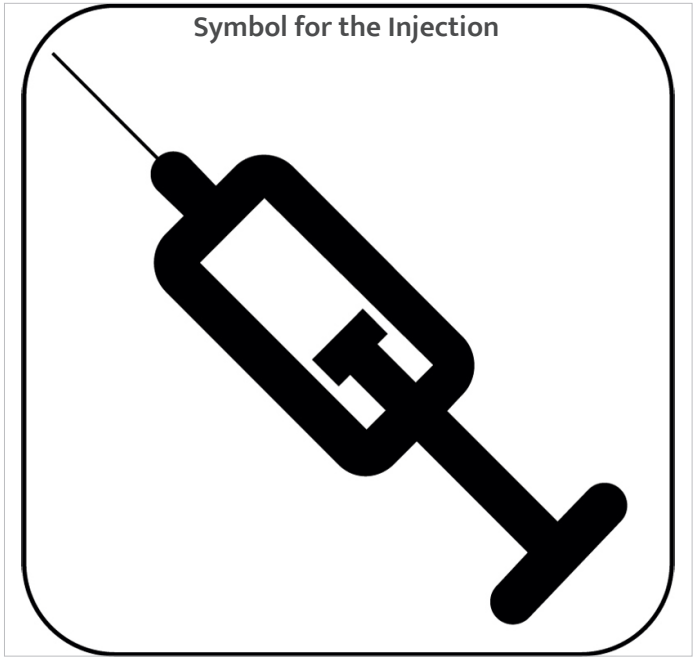

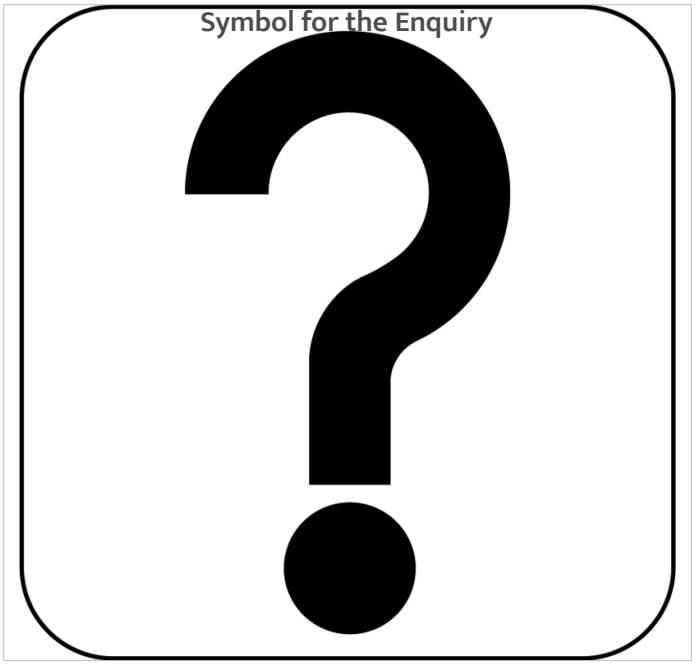

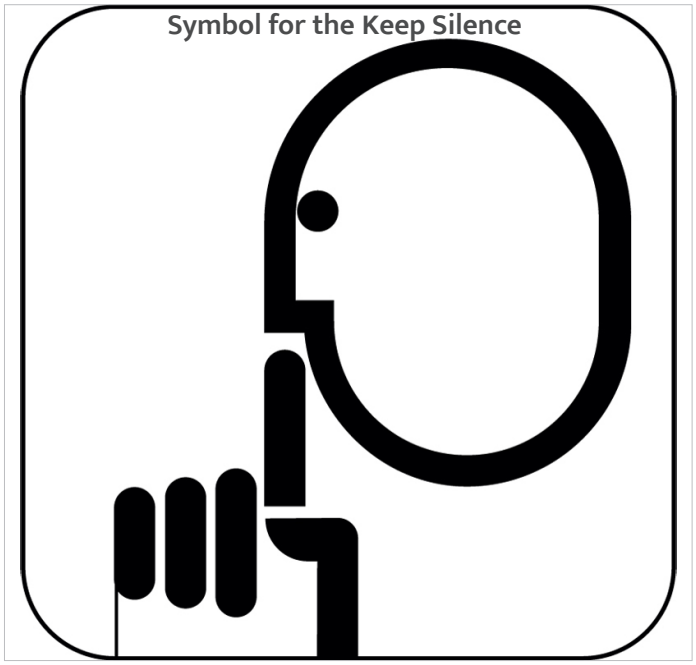

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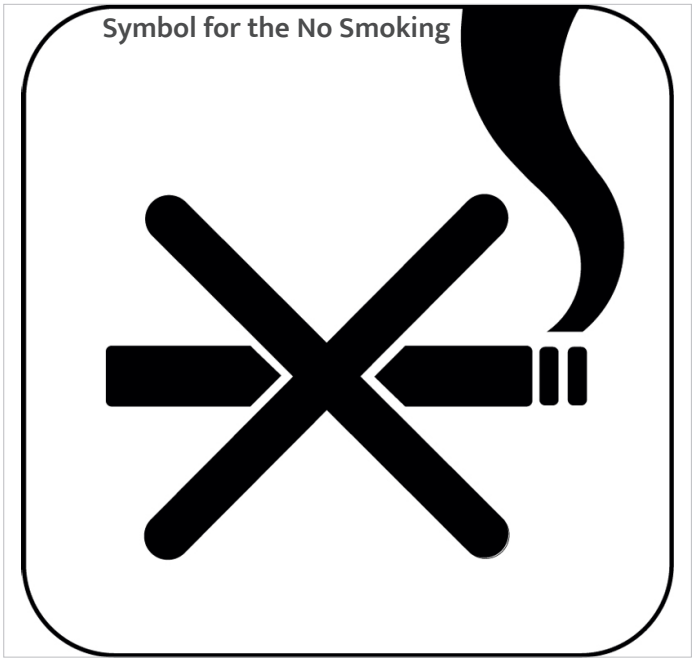

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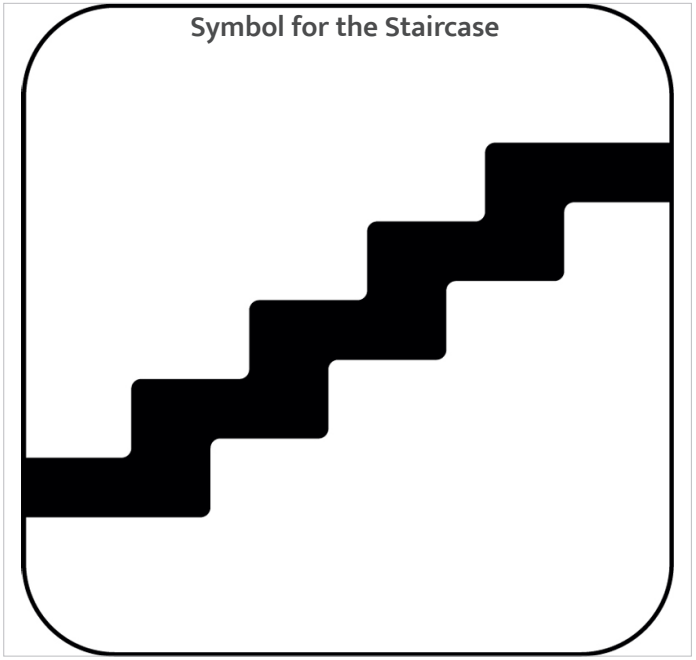

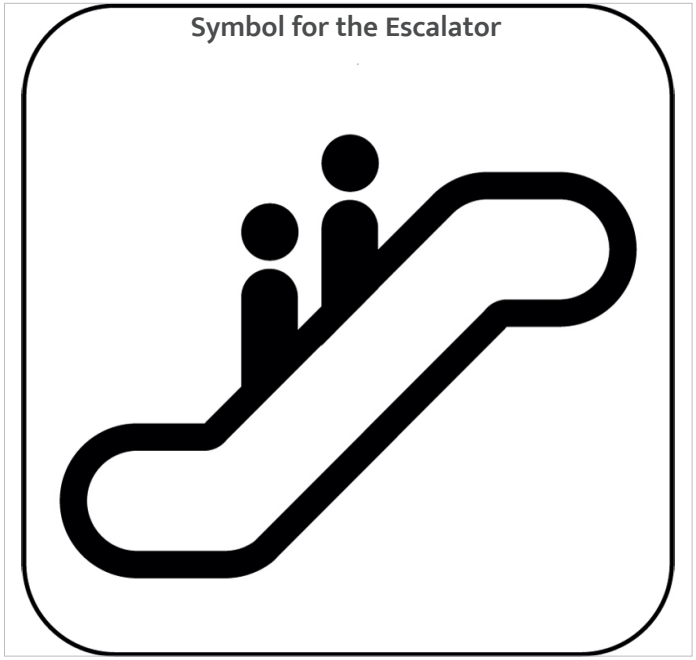

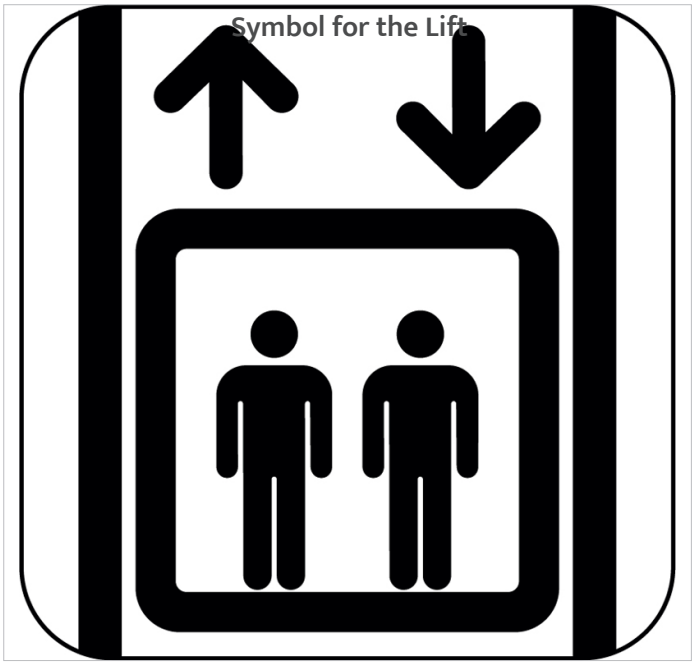

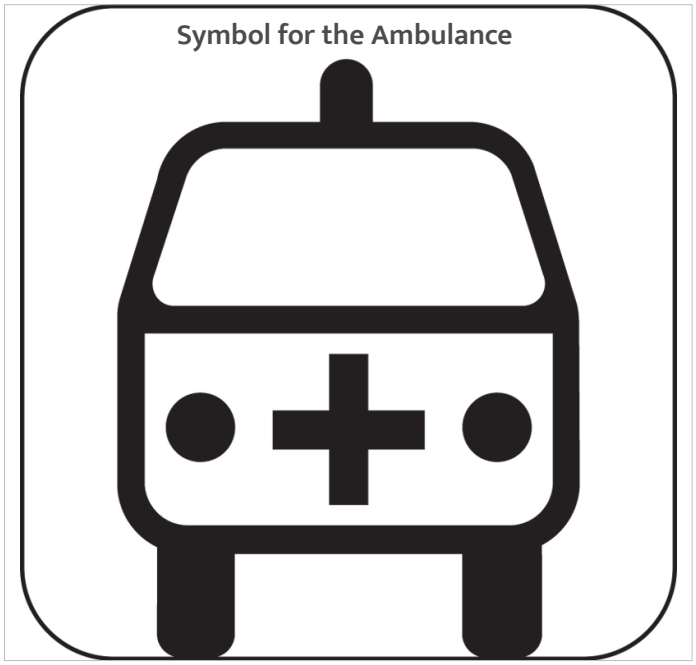

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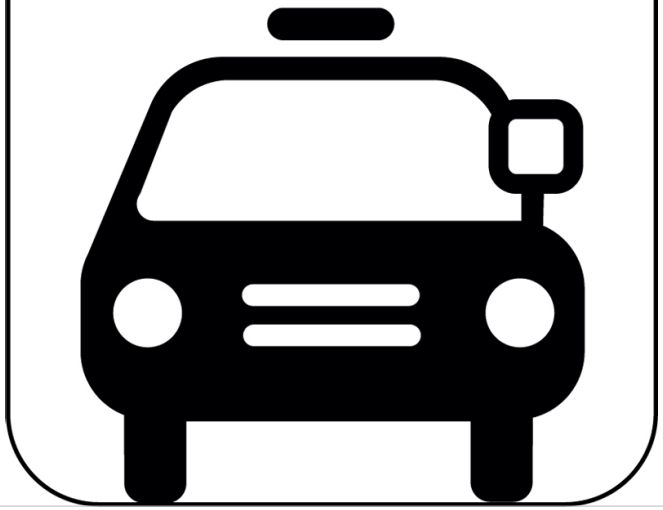
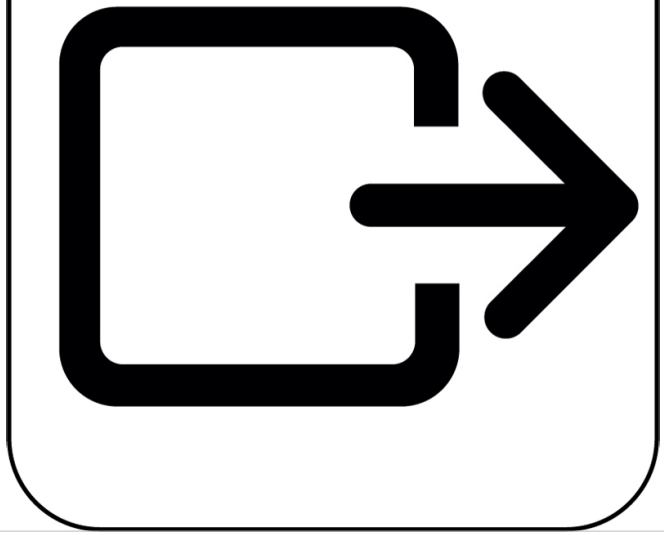
IDC, IIT Bombay

Source:
http://www.dsource.in/course/design-signage/symbol/hospital-symbols

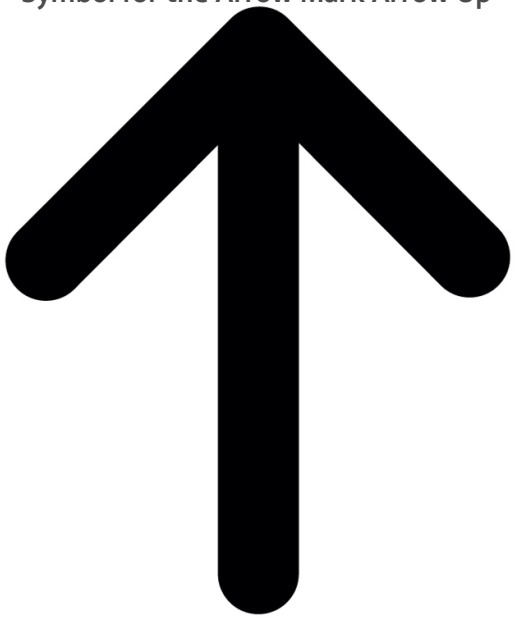
Symbol for the Taxi



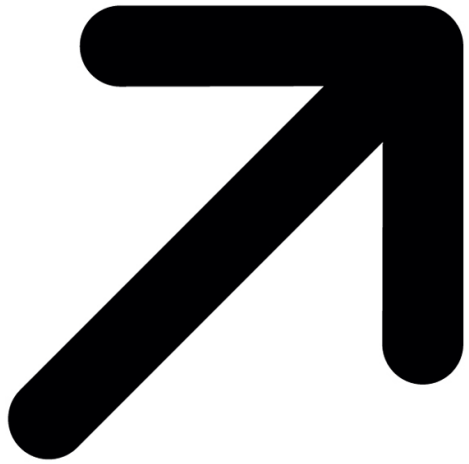
Symbol for the Exit



Symbol for the Arrow Mark Arrow Up



Symbol for the Arrow Mark Right Up



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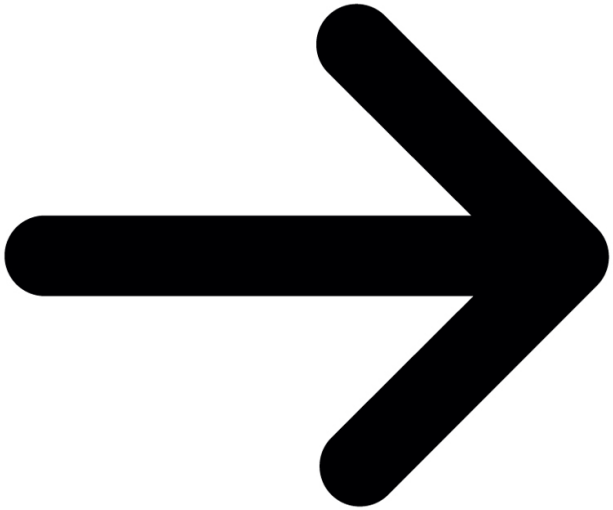
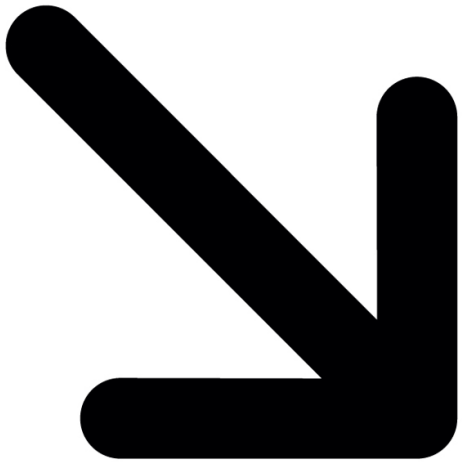
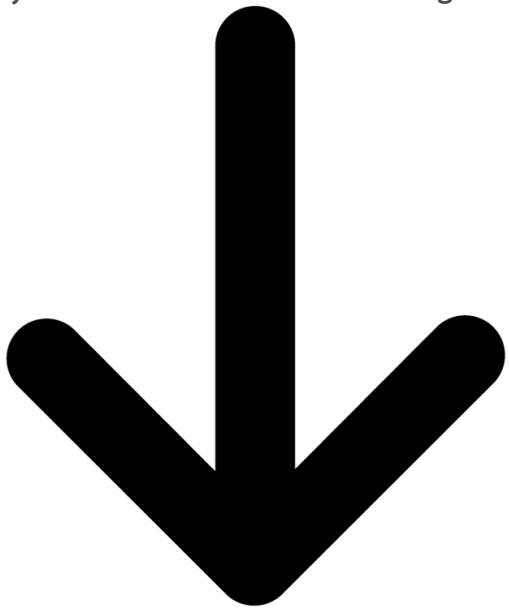
Symbol for the Arrow Mark Pointing Right



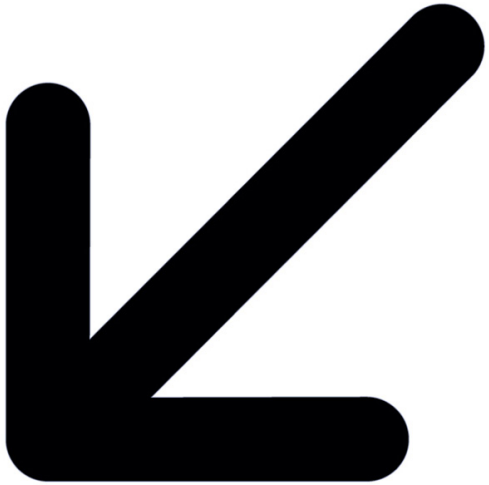
Symbol for the Arrow Mark Right Down



Symbol for the Arrow Mark Pointing Down



Symbol for the Arrow Mark Pointing Left



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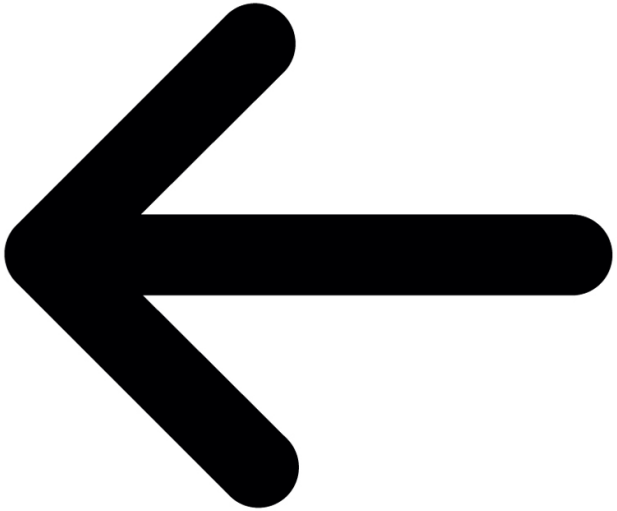
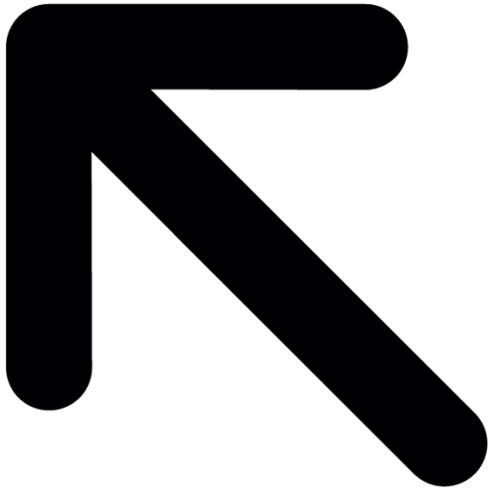
Symbol for the Arrow Mark Pointing Left



Symbol for the Arrow Mark Pointing Left Up



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Railway/Bus Stations

Graphic Symbols for Railway/Bus Stations:
_by Ravi Poovaiah

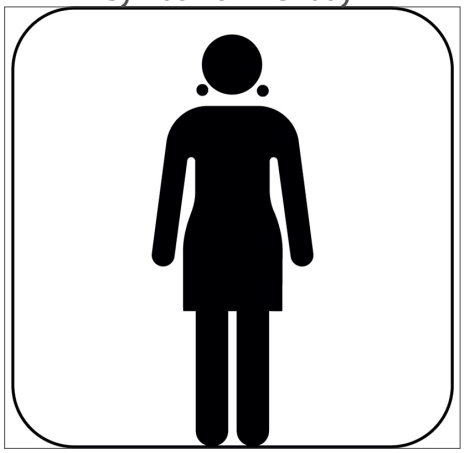
The Graphic Symbols designed for use in the Railways/ Bus Station Environment. These symbols are available free for use.

Note: The graphic symbols were developed as part of a signage system for the various facilities in a public railway/bus station environment.

Symbol for the Man

Man in traditional dress

Symbol for the Lady



Symbol for the WoMan

Symbol for the Man

Symbol for the Lady

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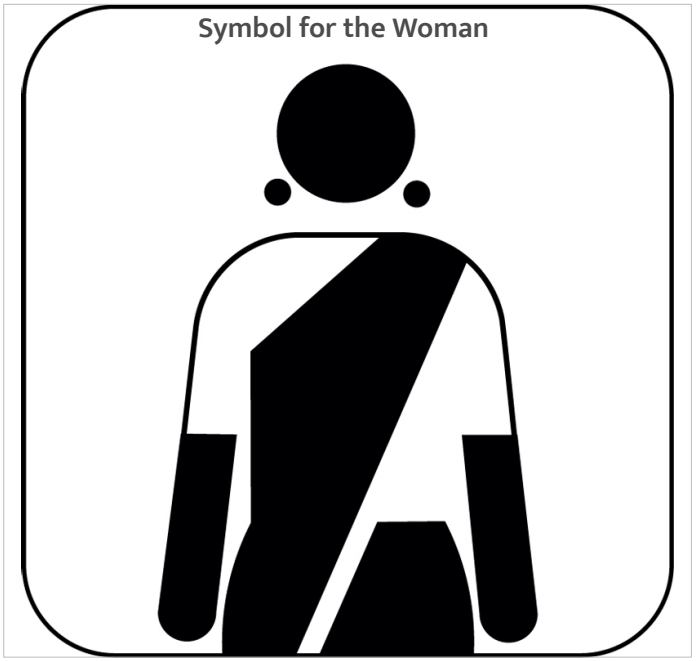

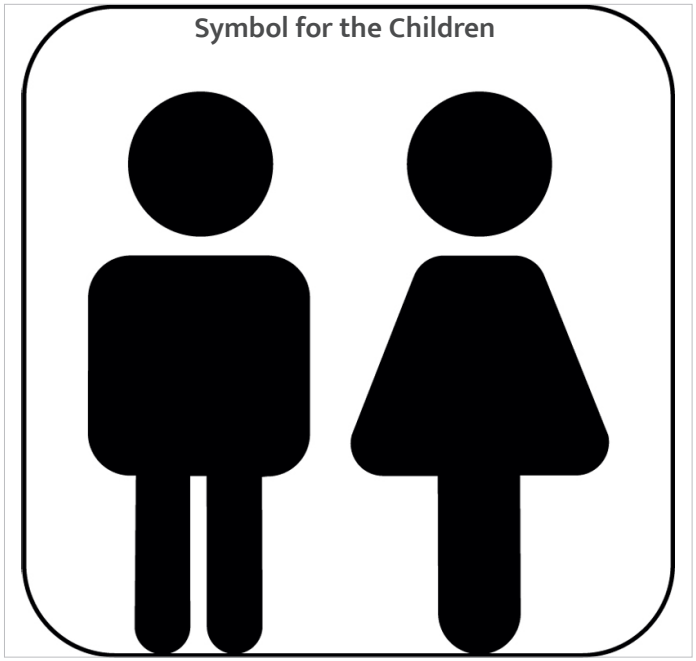

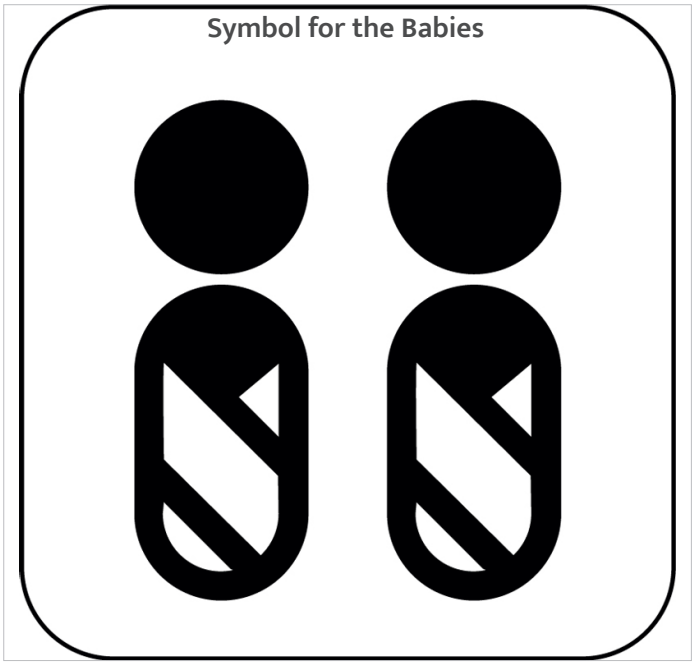

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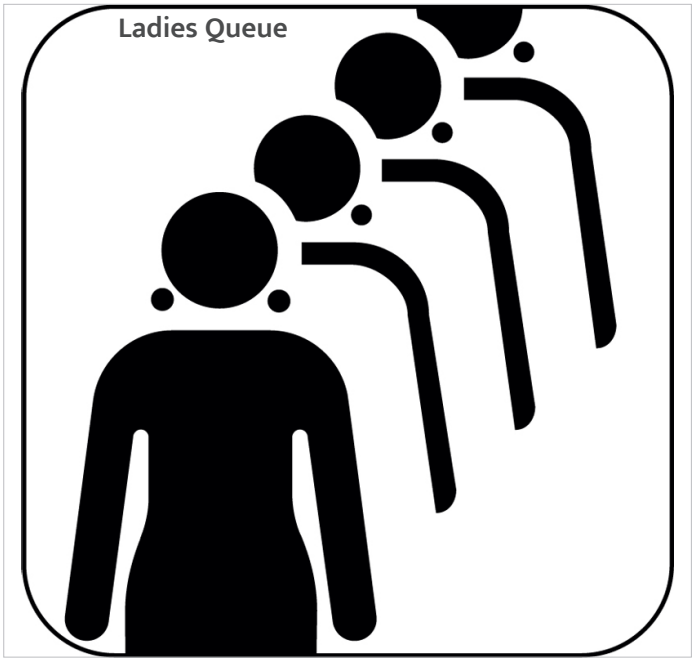

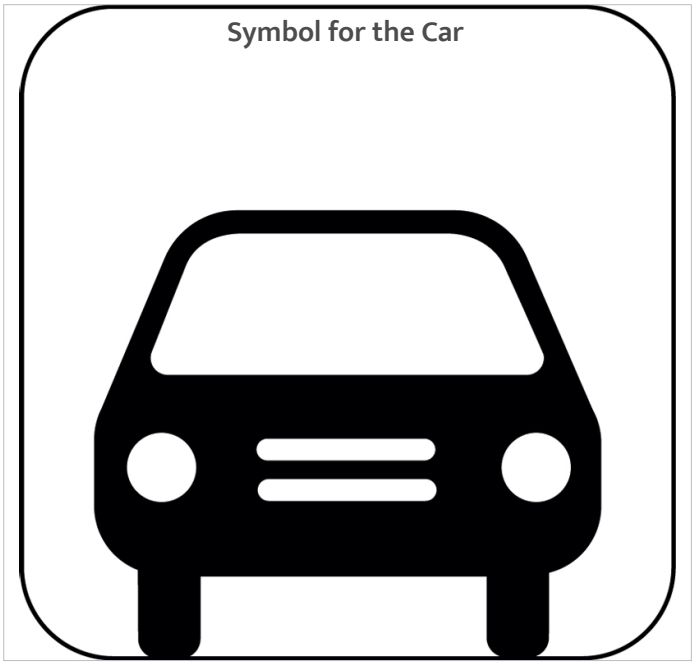

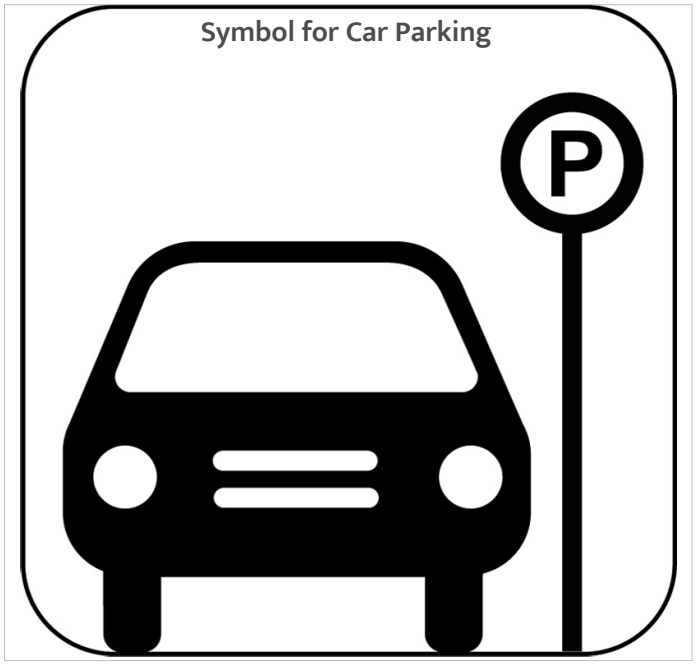

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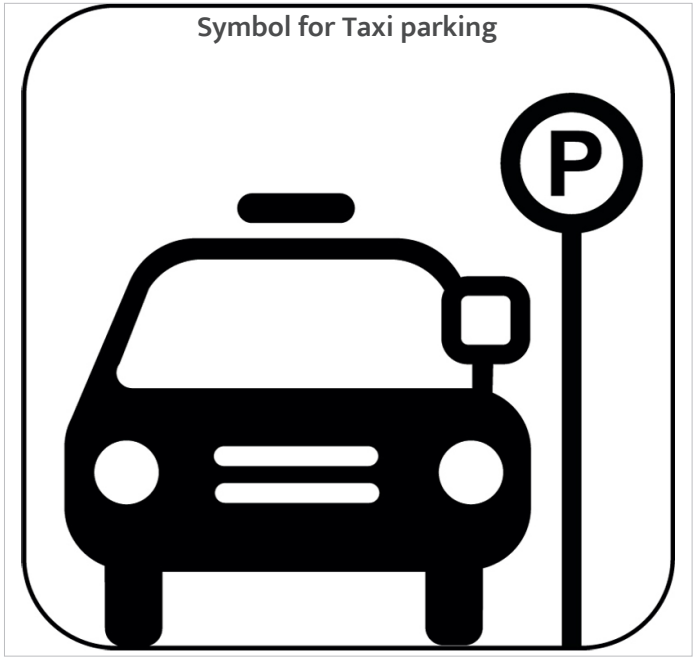

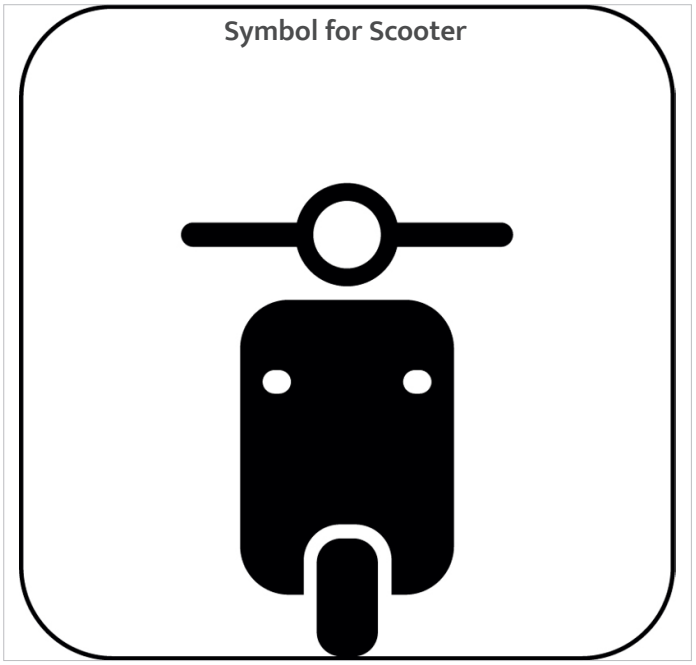

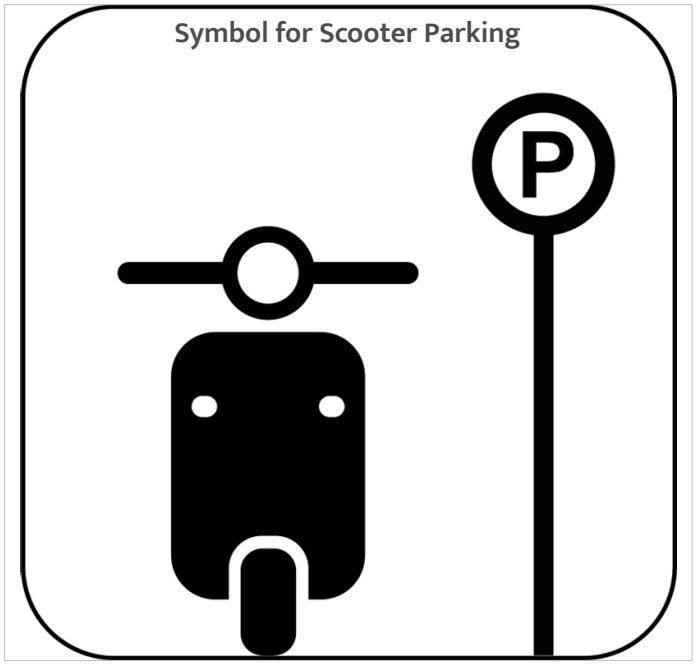

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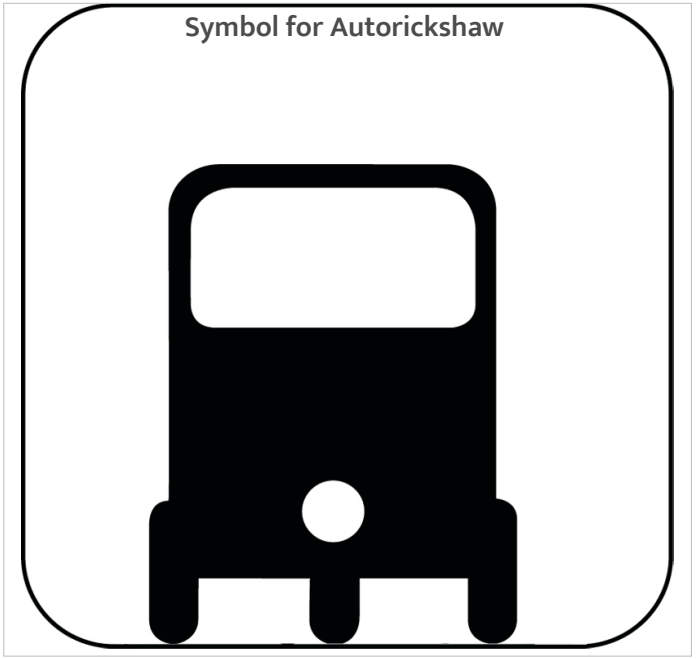

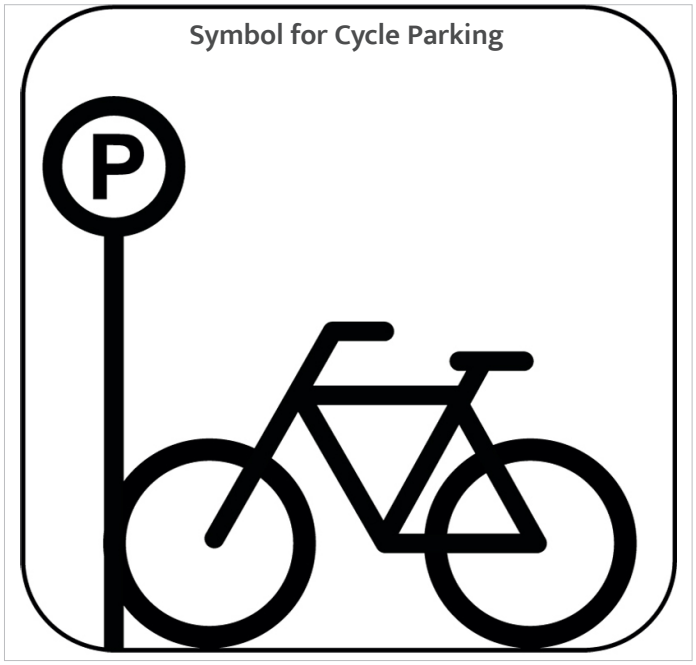

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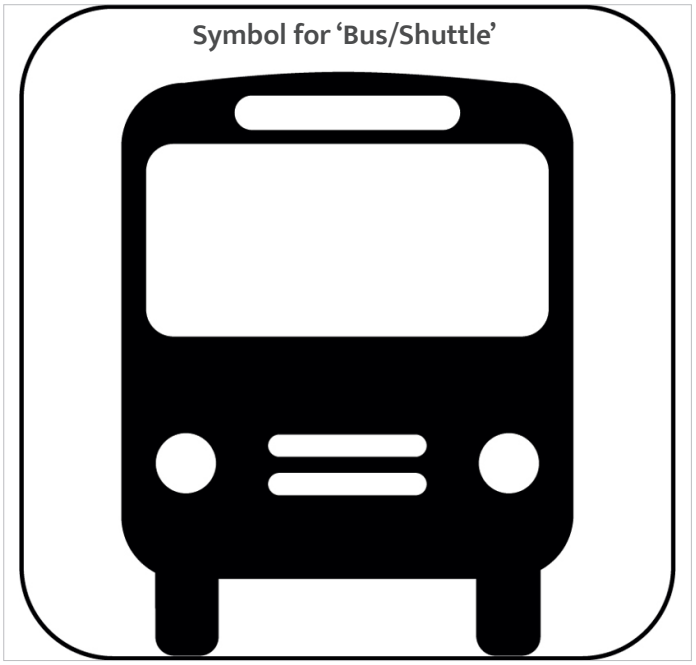

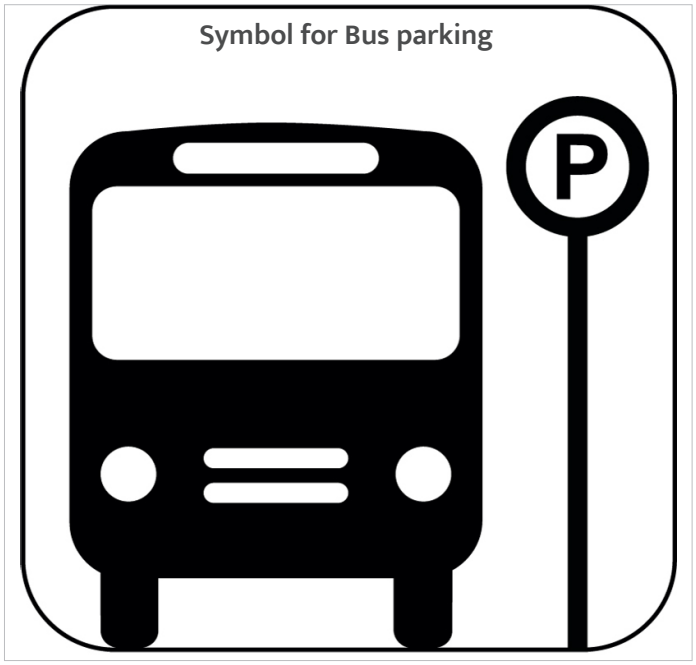

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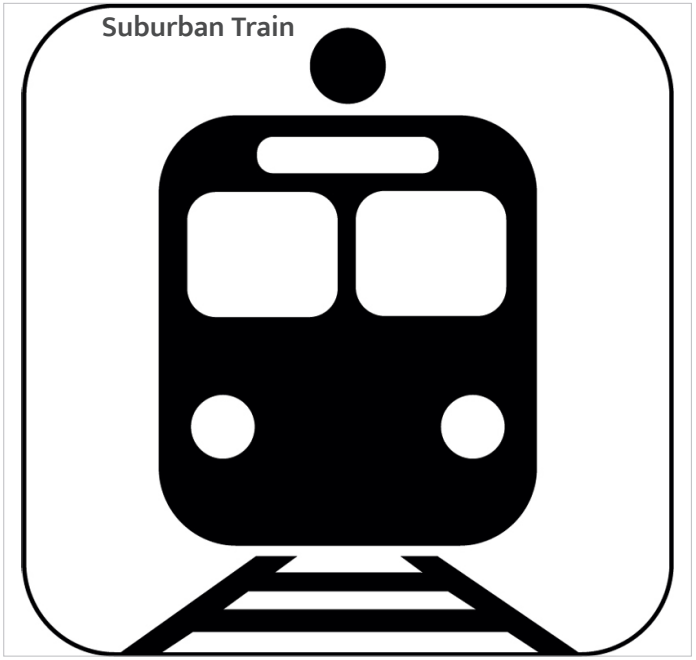

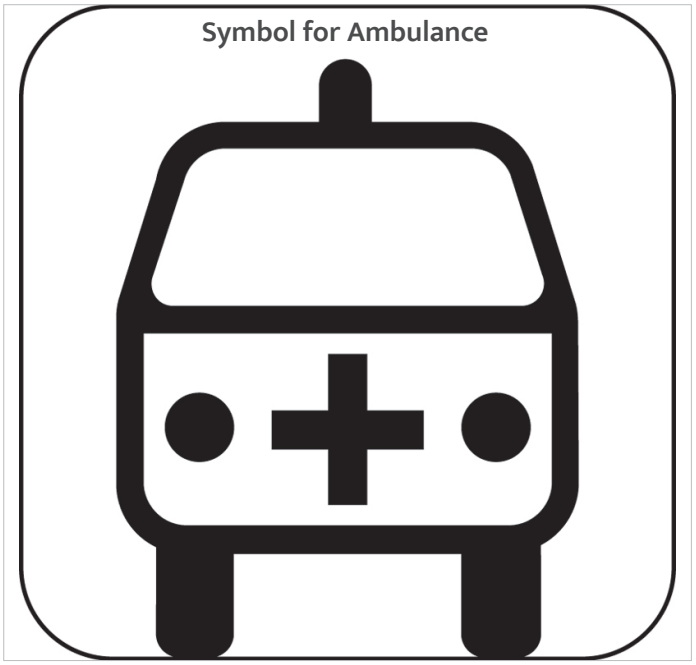

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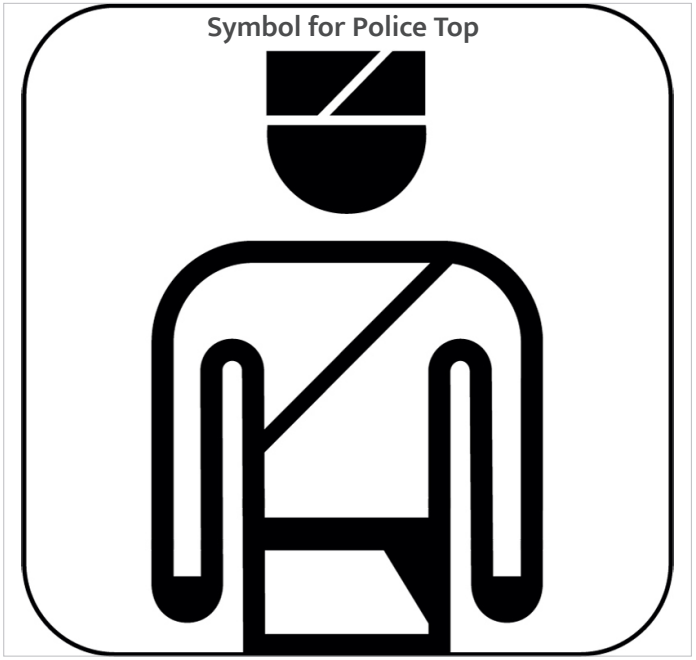

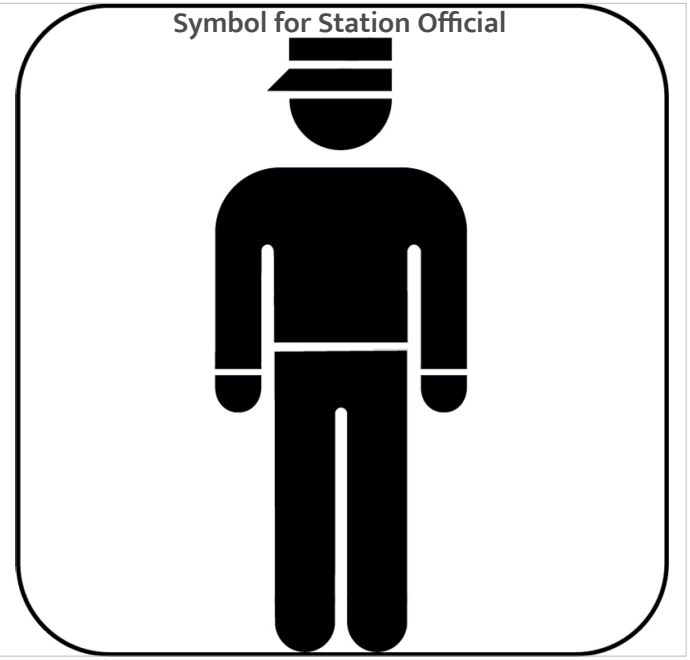

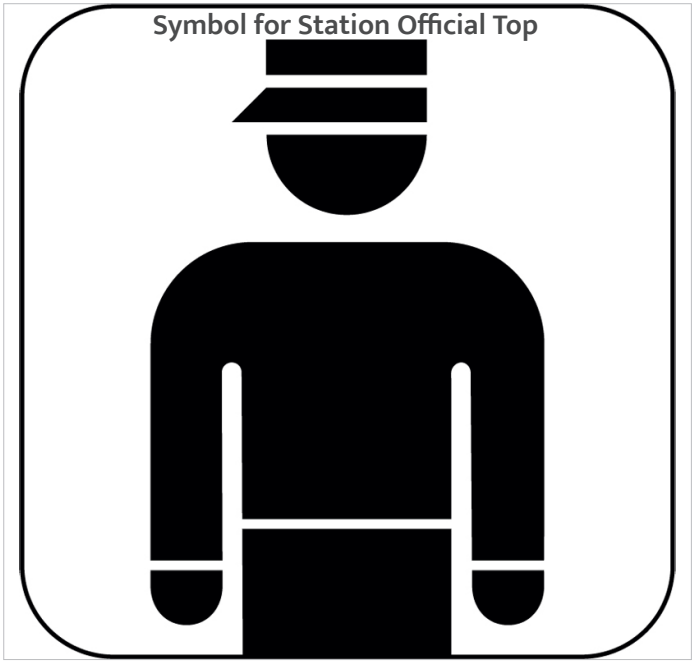

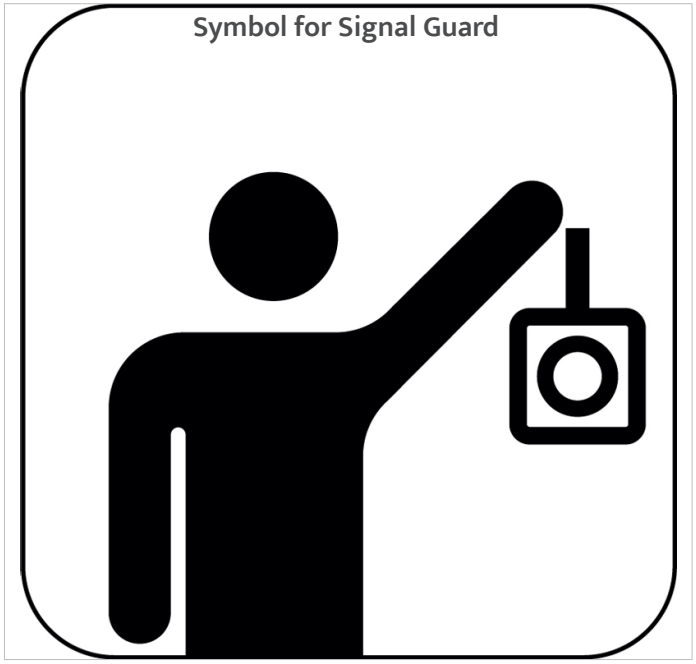

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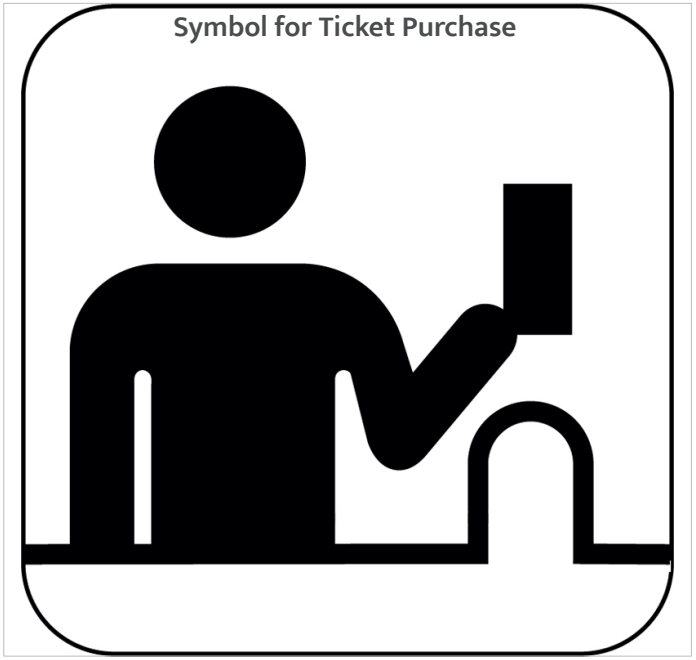

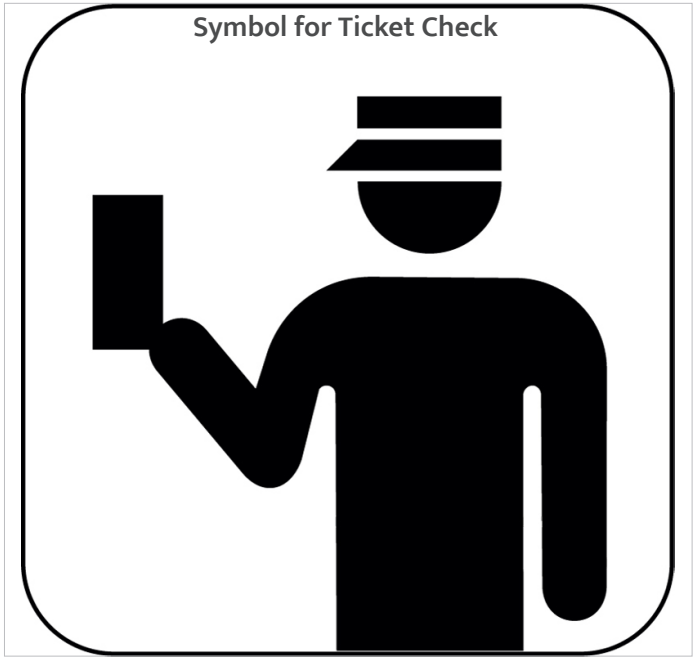

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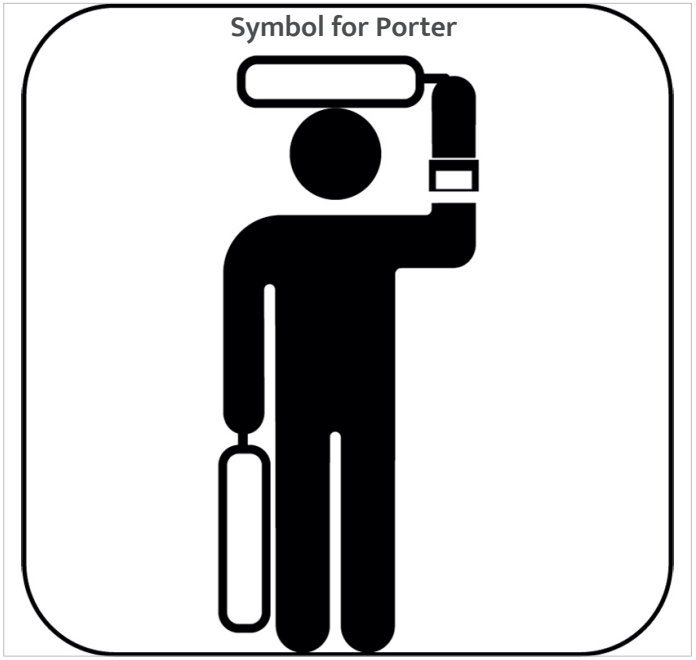

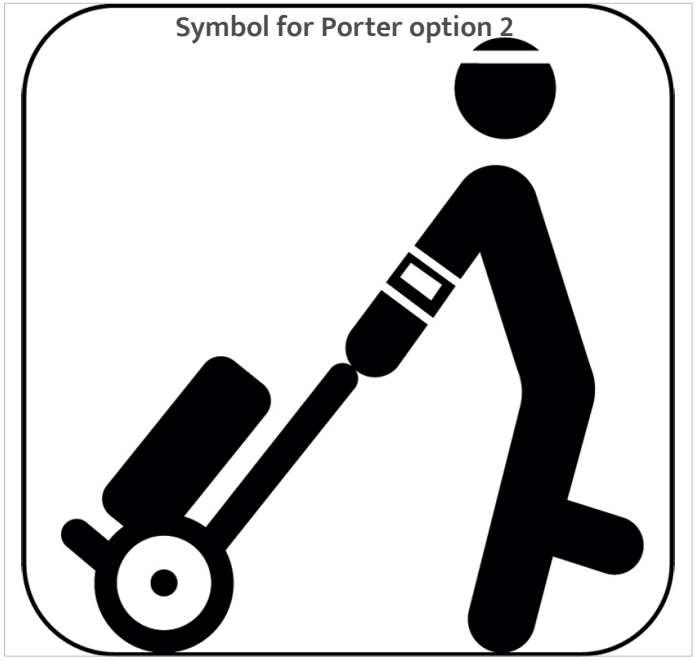

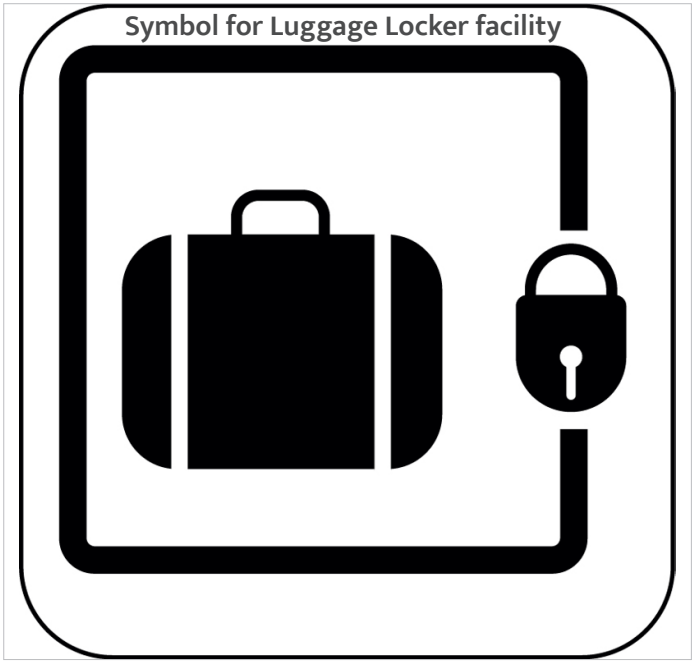

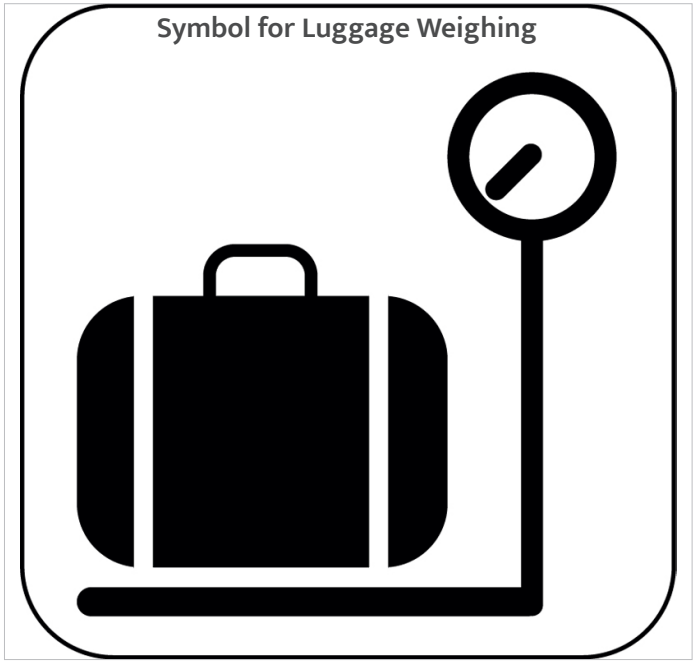

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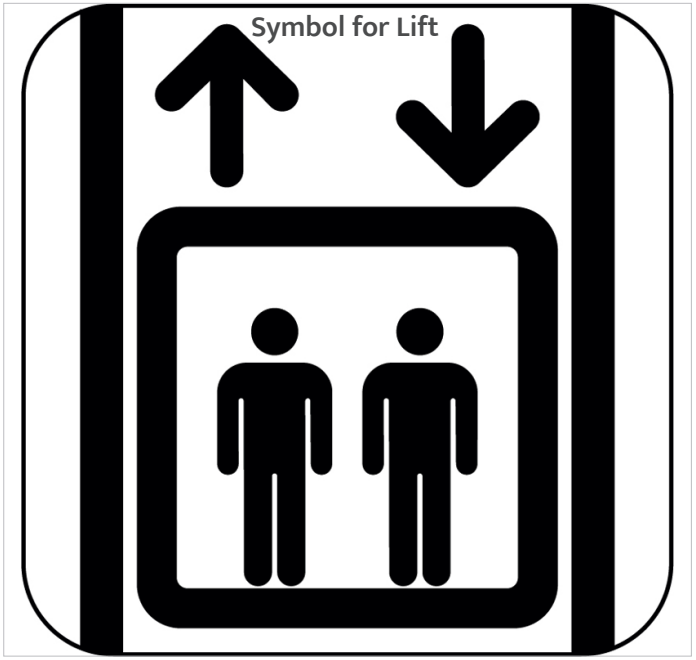

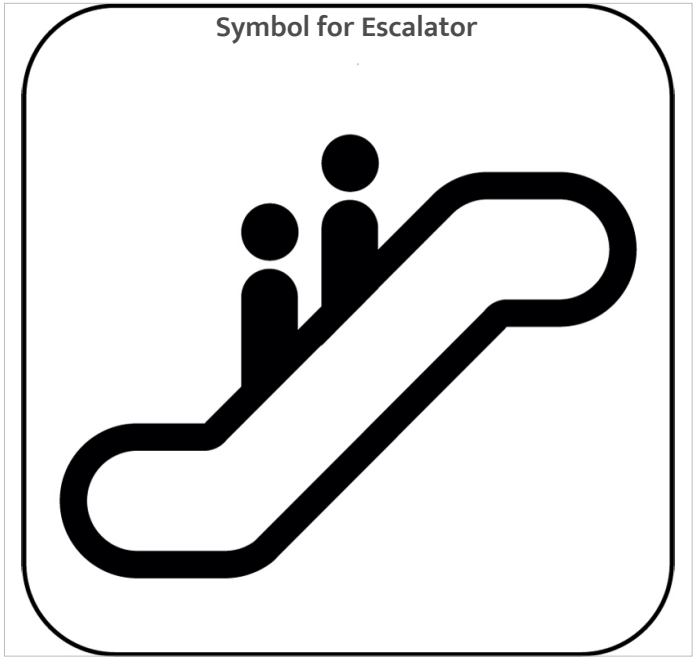

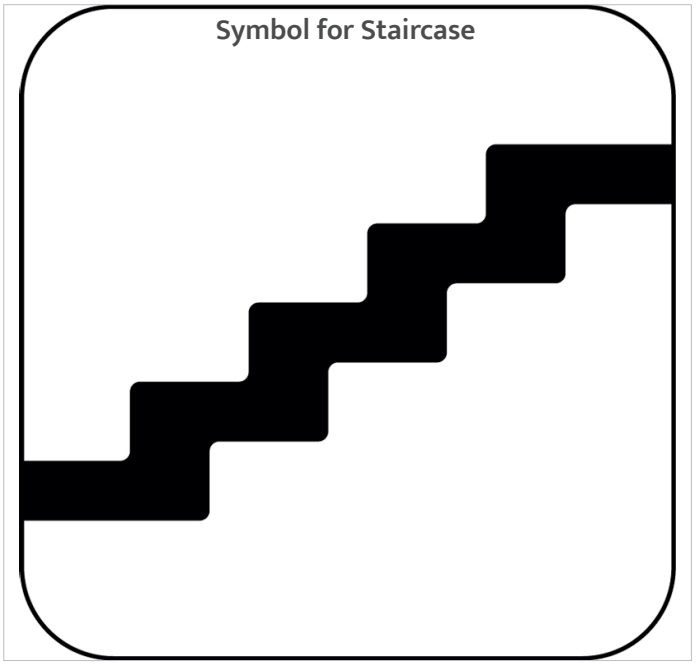

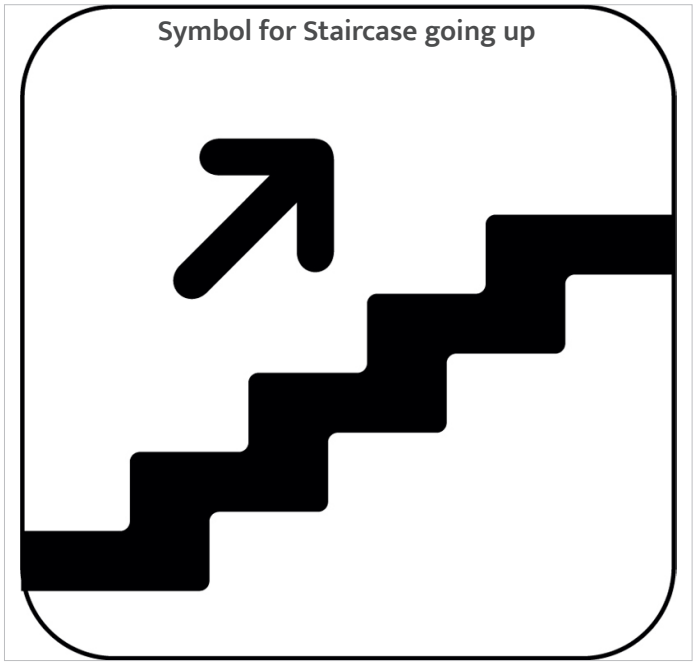

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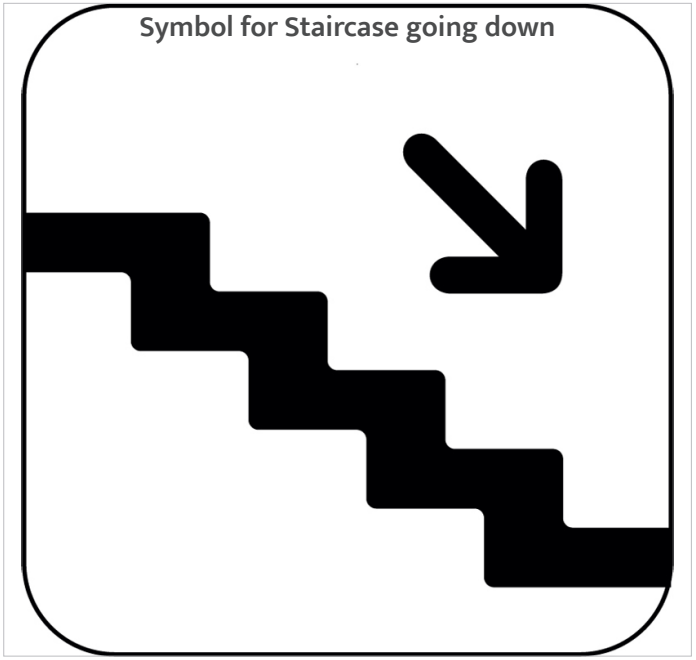

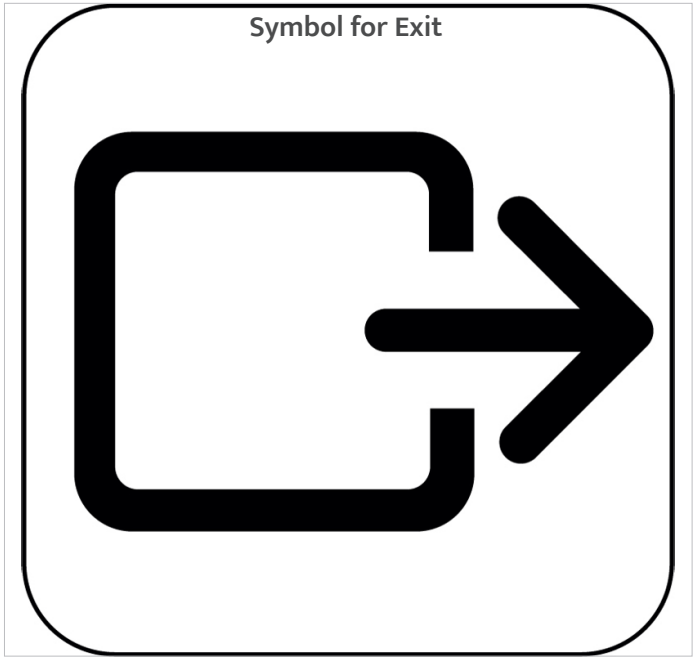

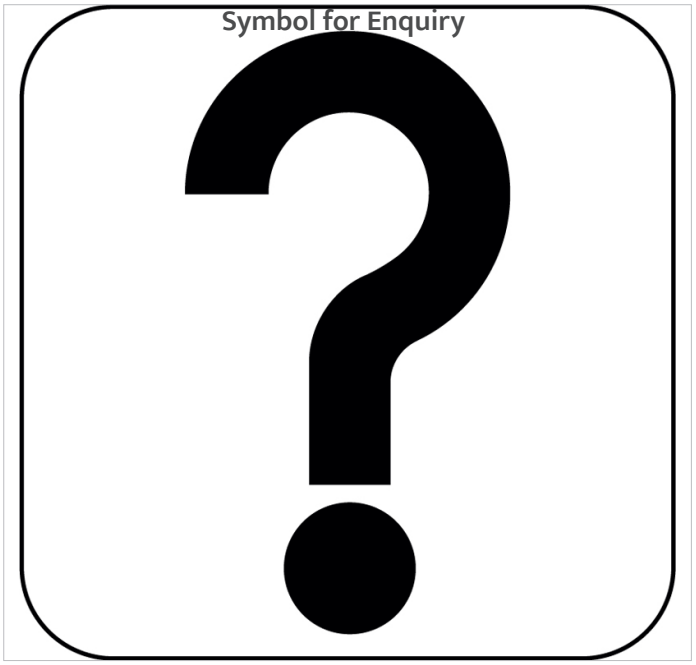

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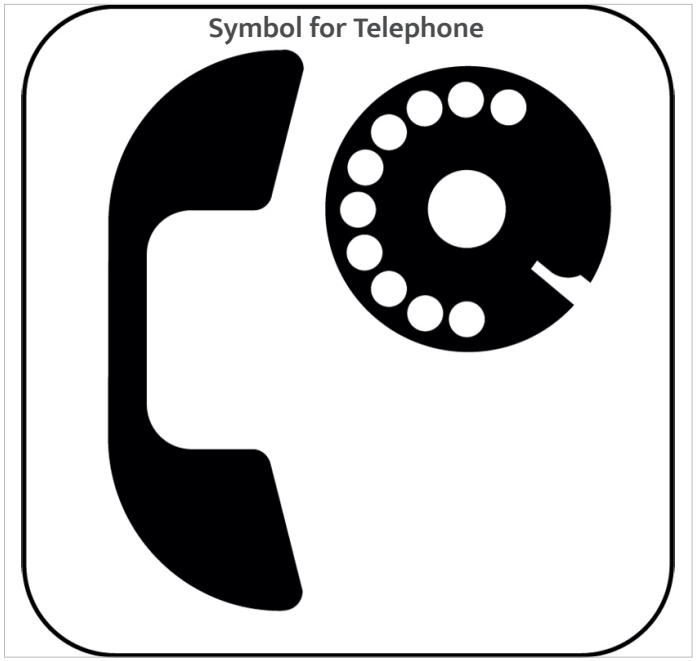

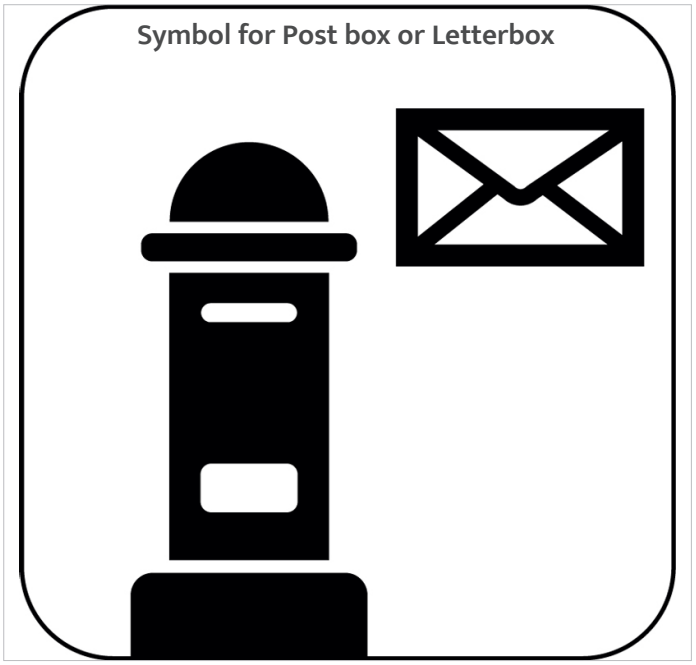

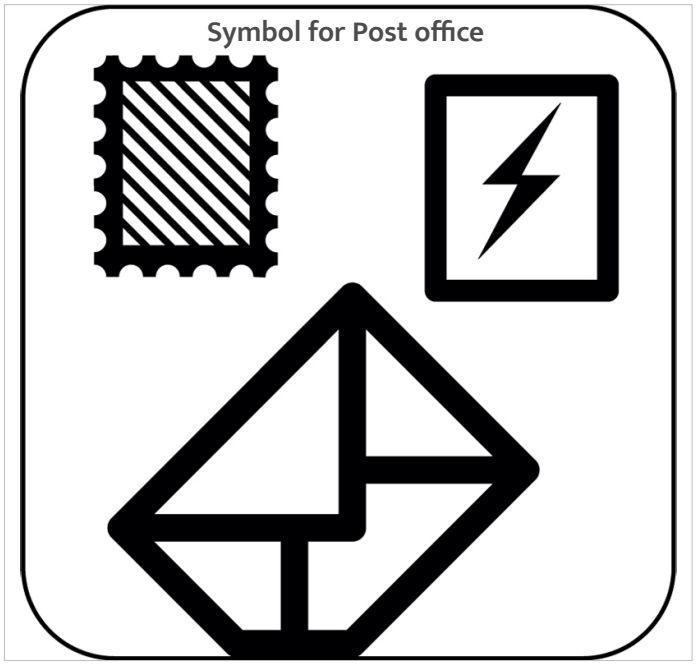

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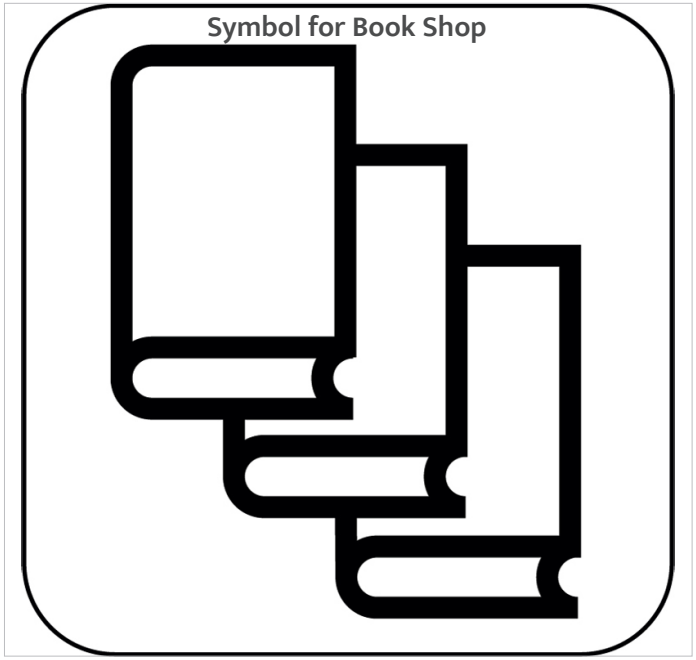

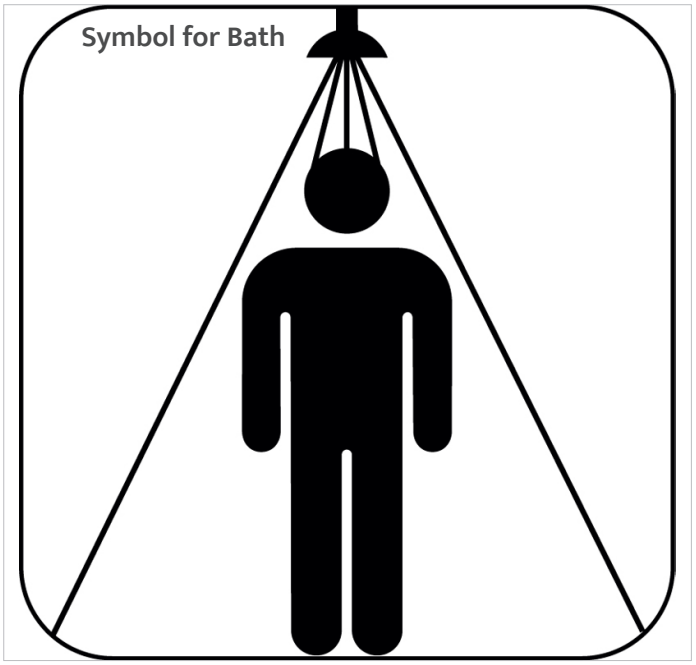

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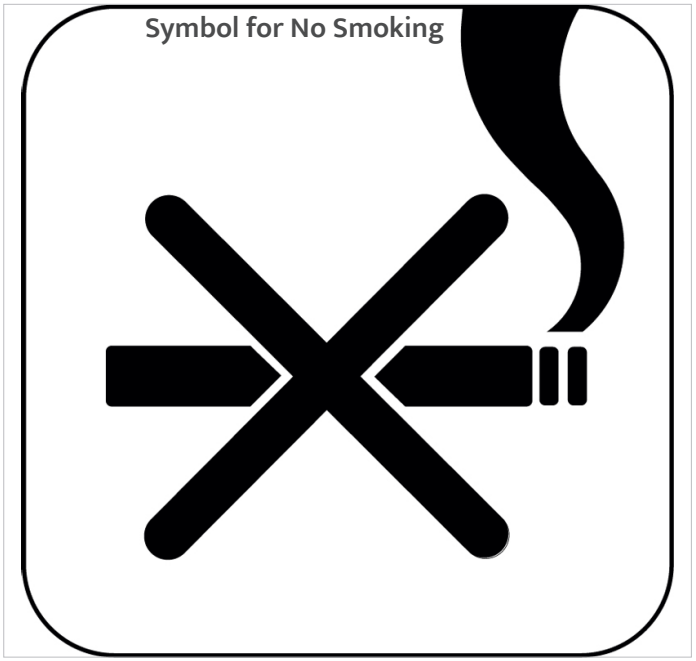

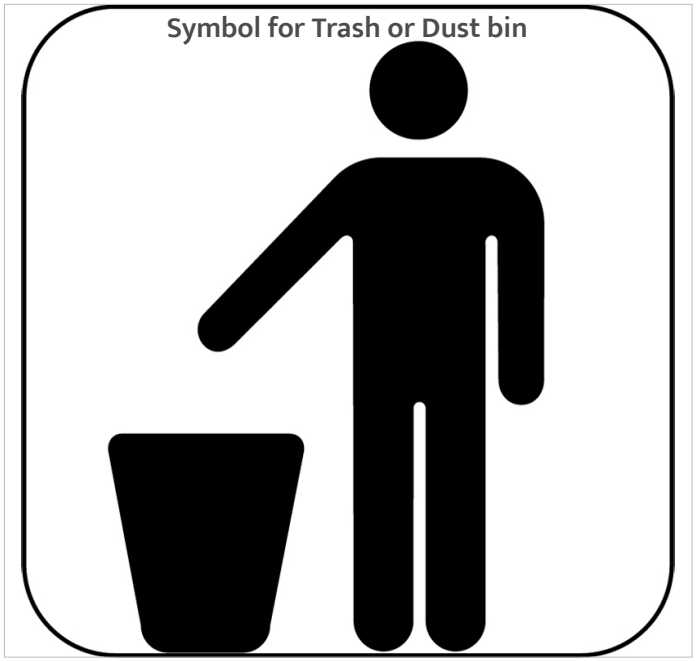

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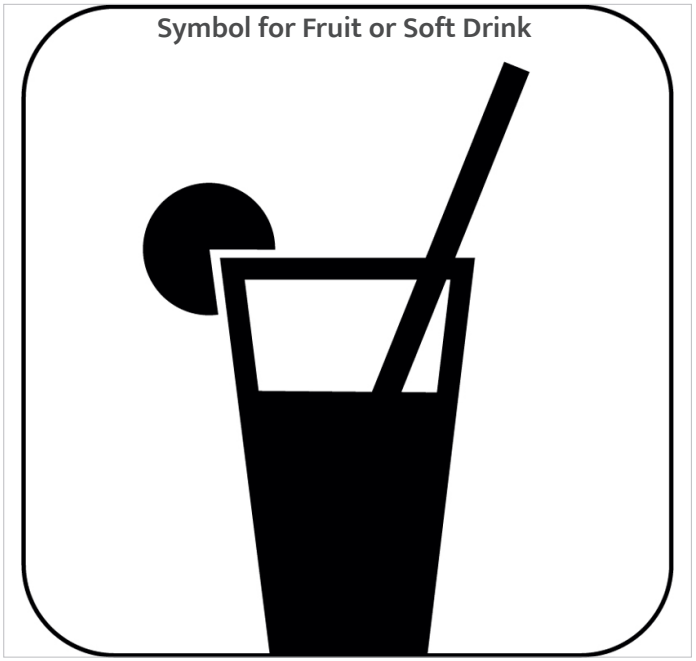
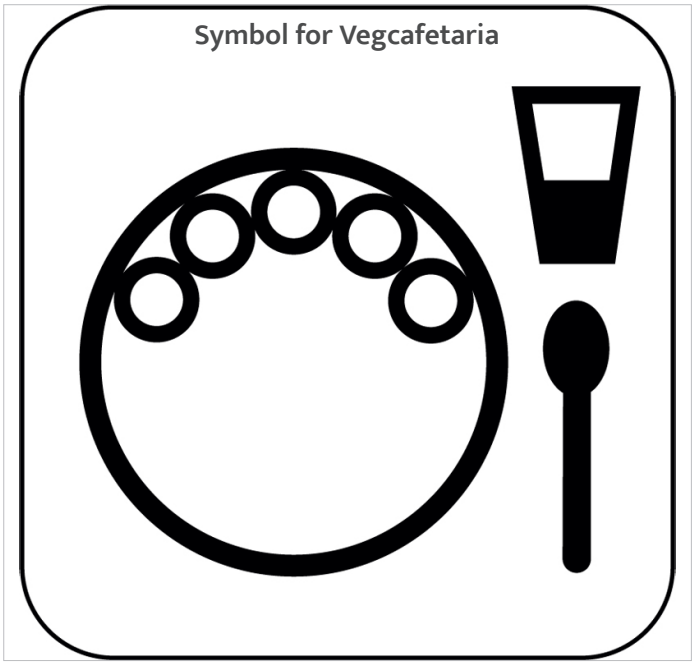
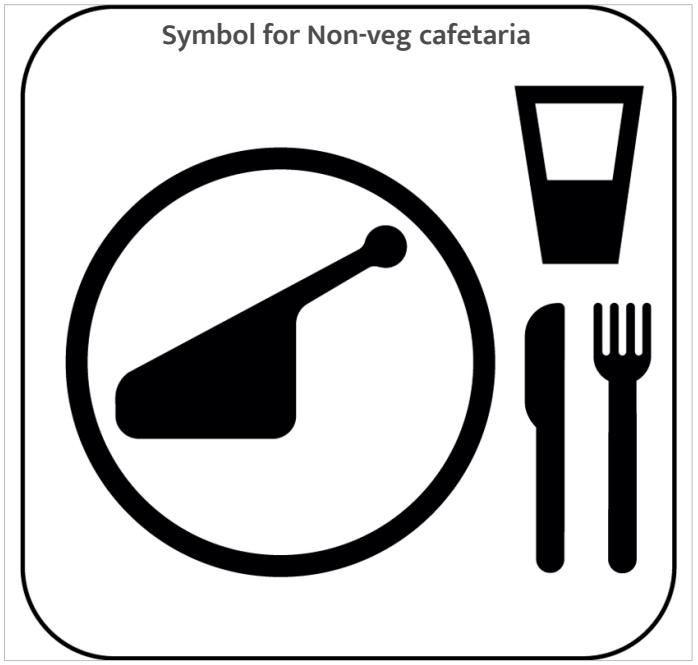
IDC, IIT Bombay

Source:
http://www.dsource.in/course/design-signage/symbol/railwaybus-stations







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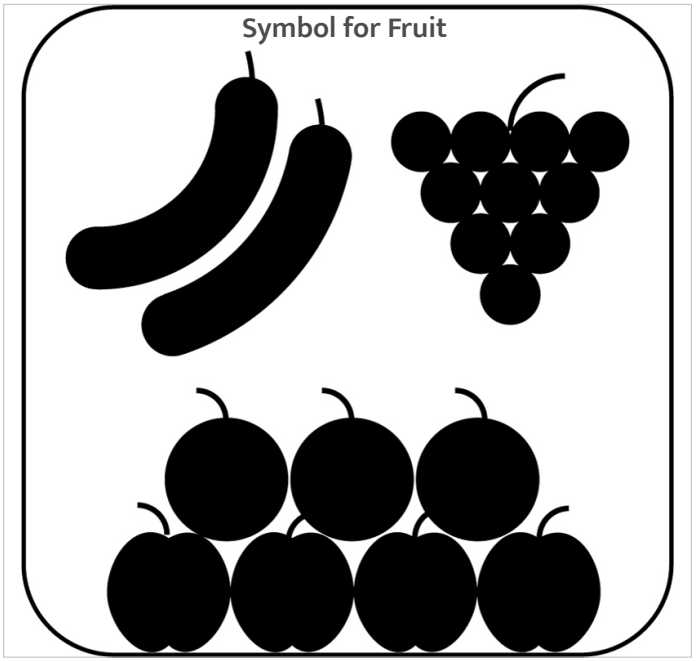

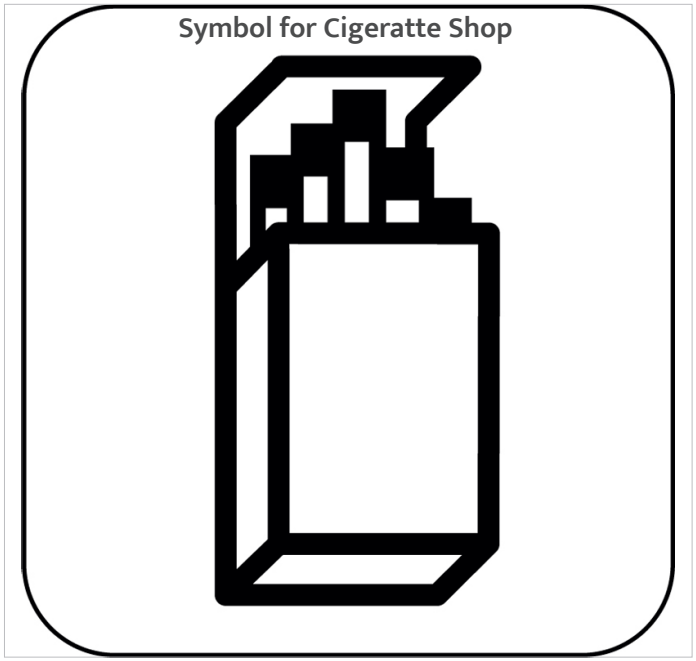

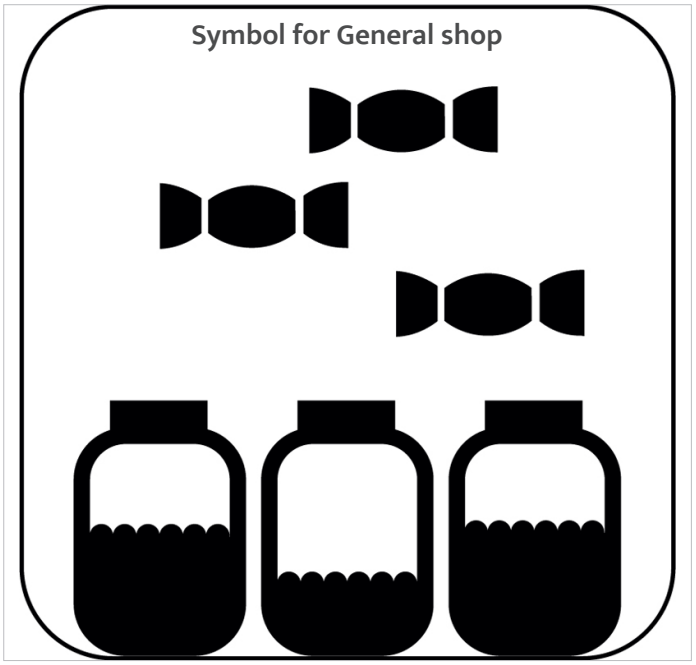

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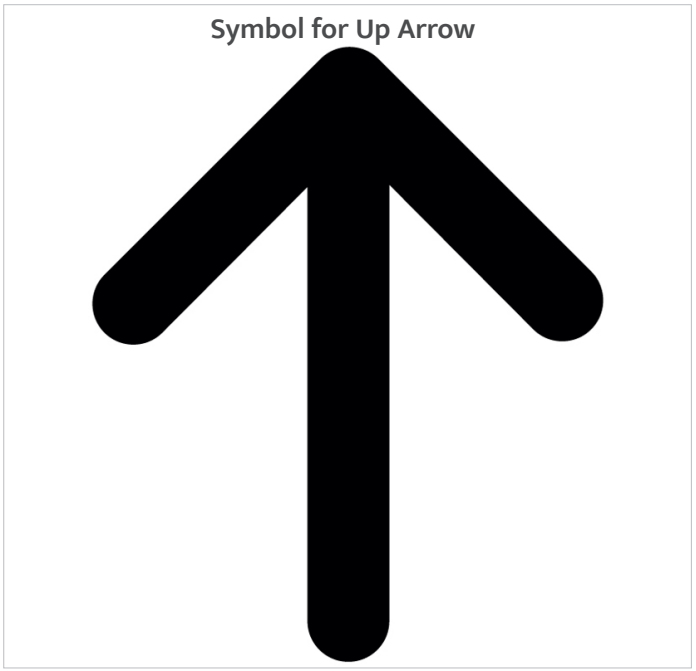

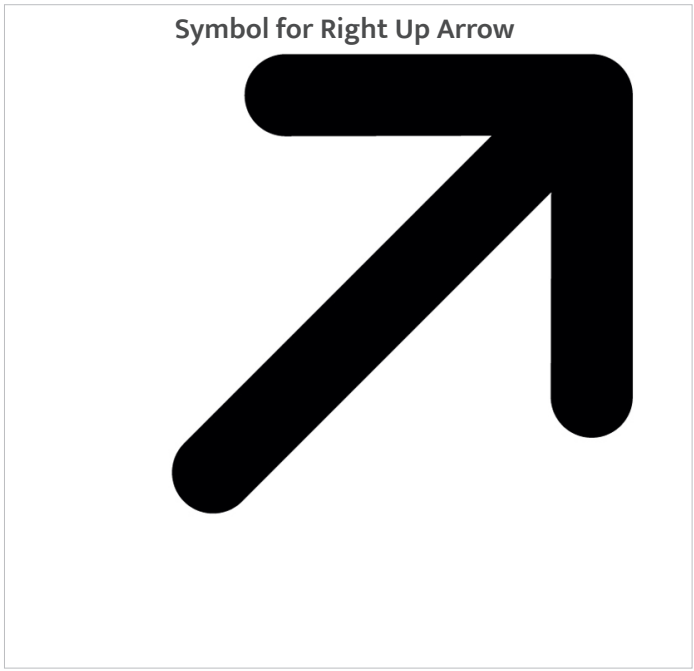

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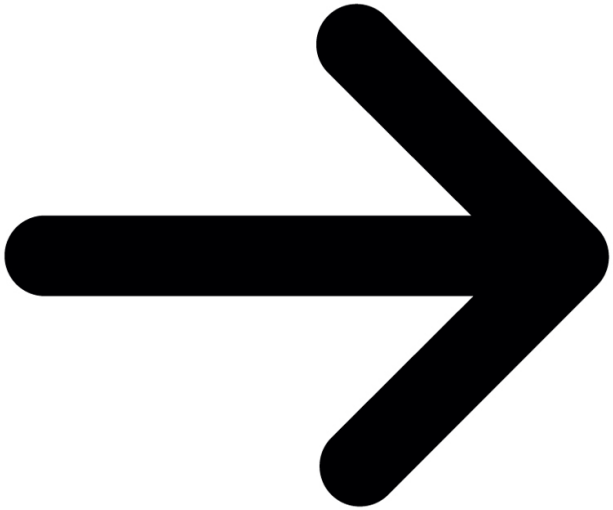
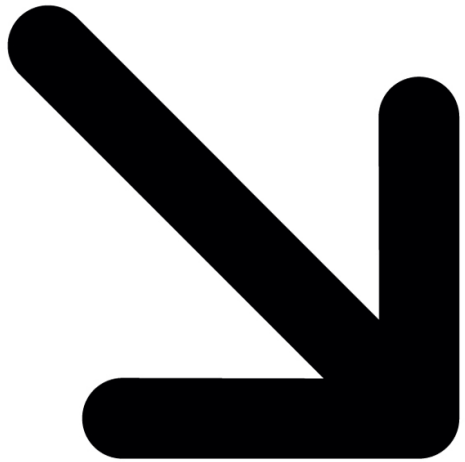
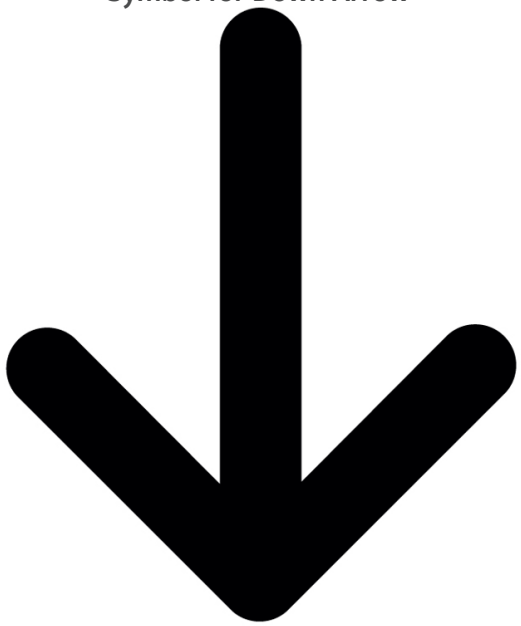
Symbol for Right Arrow



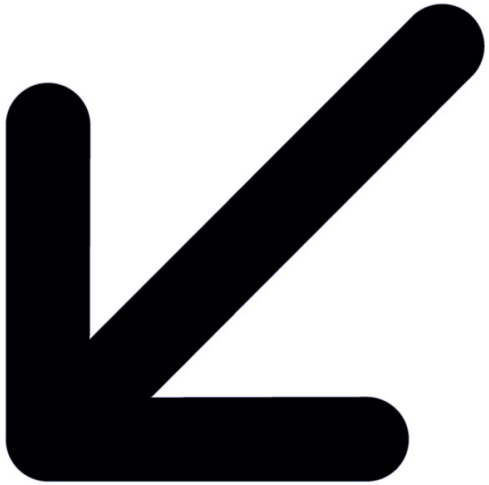
Symbol for Right Down Arrow



Symbol for Down Arrow



Symbol for Left Down Arrow



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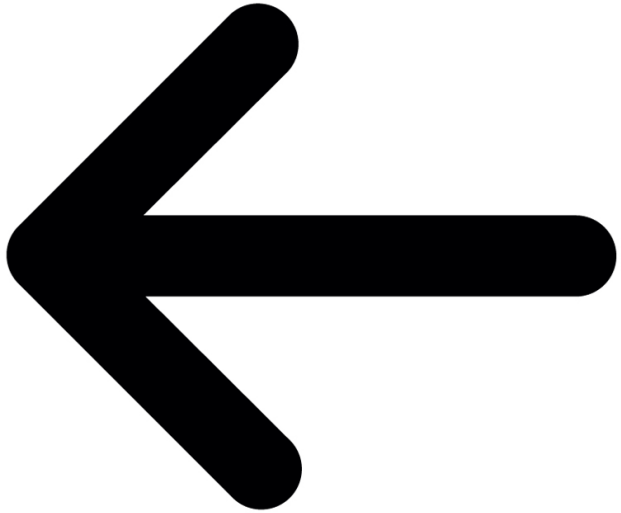
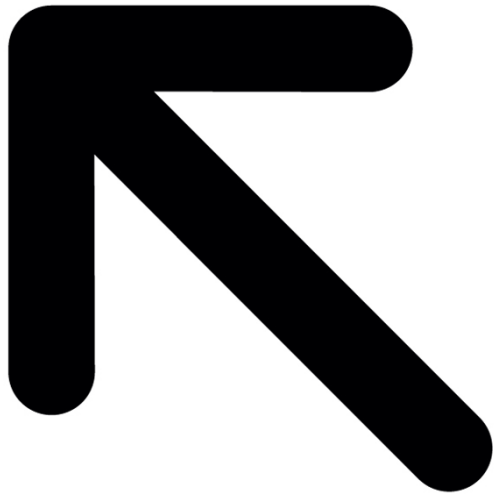
Symbol for Left Arrow



Symbol for Left Up Arrow



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Symbols for Buildings

Graphic Symbols for Buildings:
_by Ravi Poovaiah

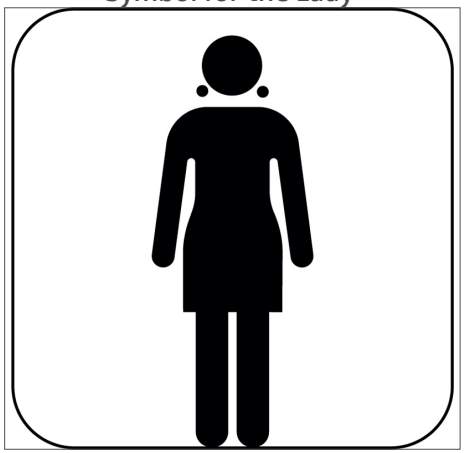
The Graphic Symbols designed for use in the Architectural building environment. These symbols are available free for use

Note: The graphic symbols are developed as part of a signage system for the various facilities in a public building environment.

Symbol for the Man

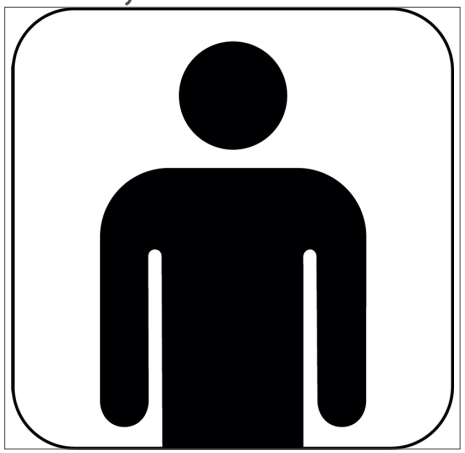
Man in traditional dress

Symbol for the Lady



Symbol for the WoMan

Symbol for the Man



Symbol for the Lady

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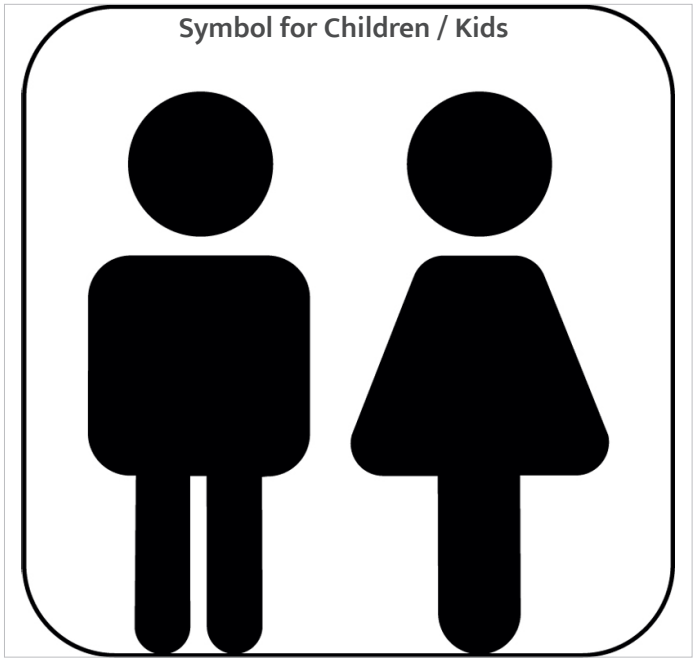

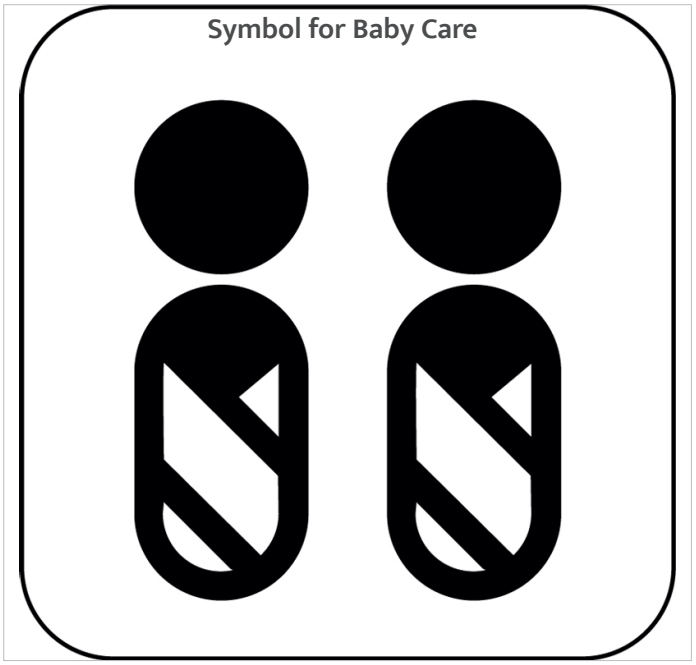

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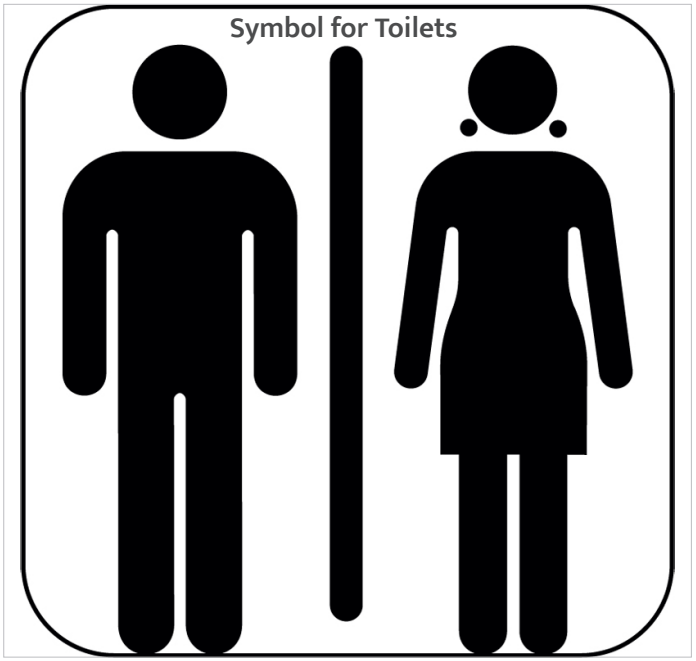

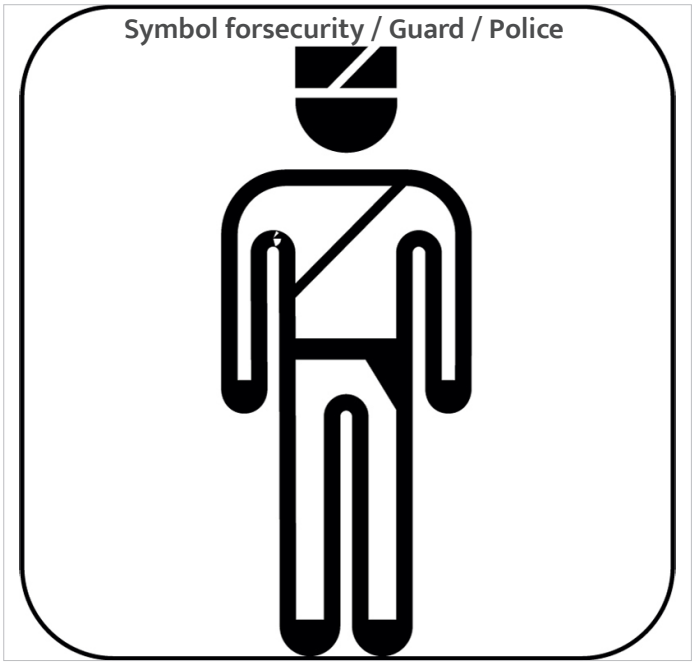

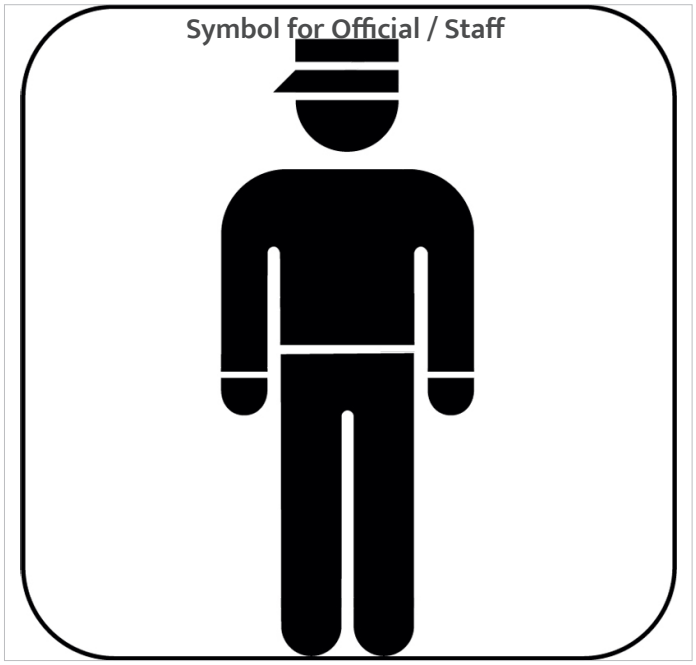

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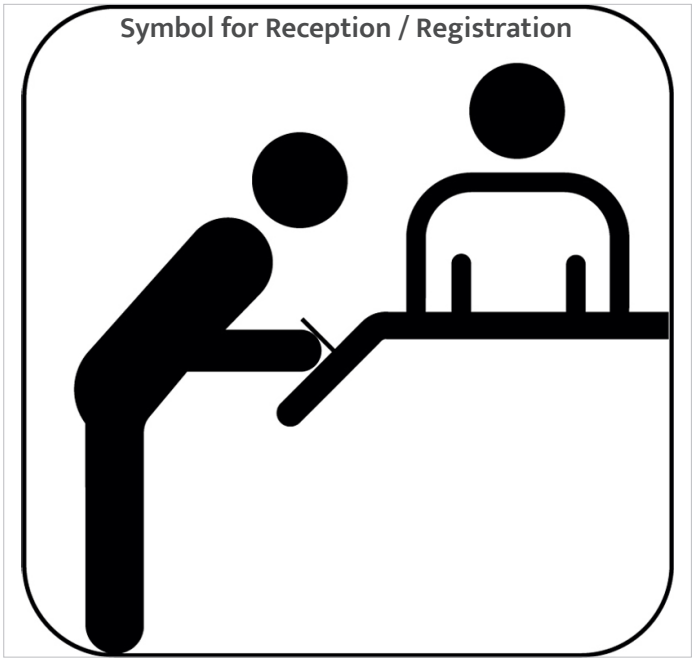

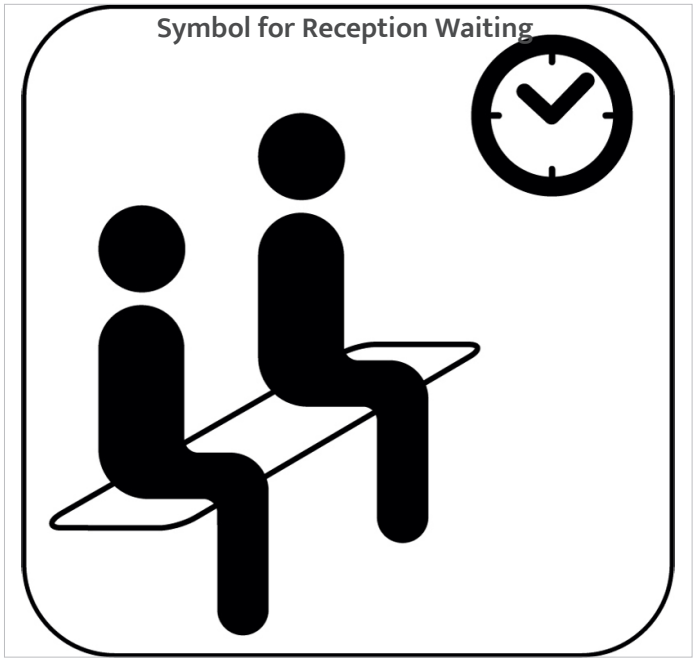

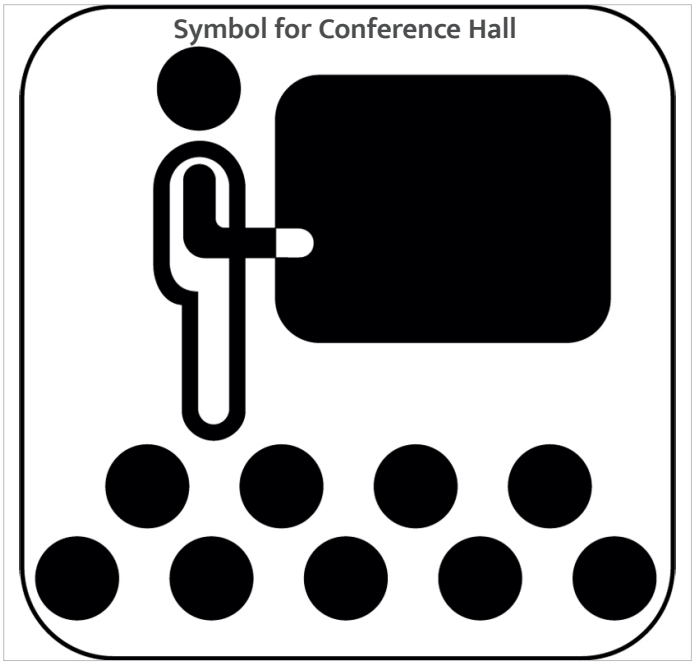

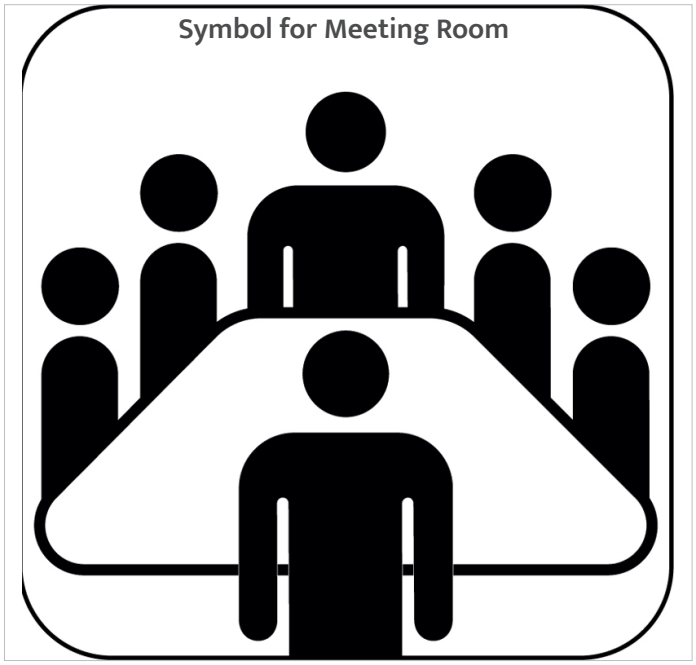

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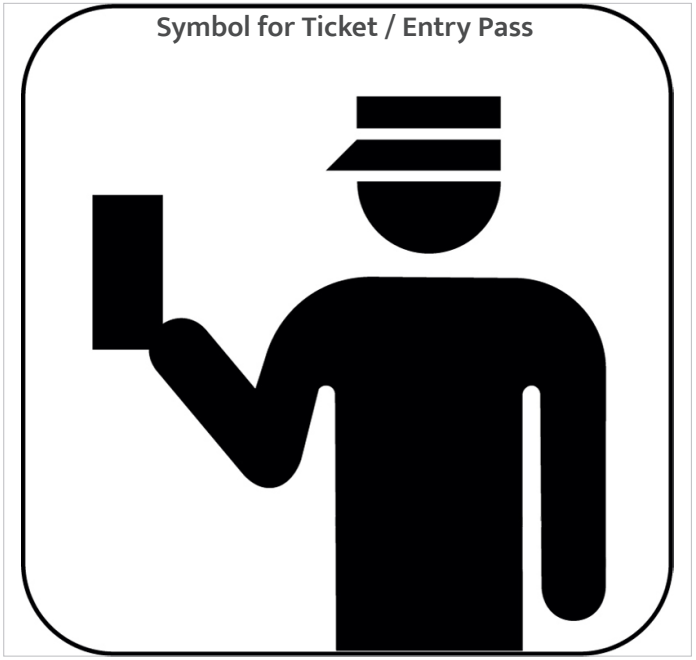

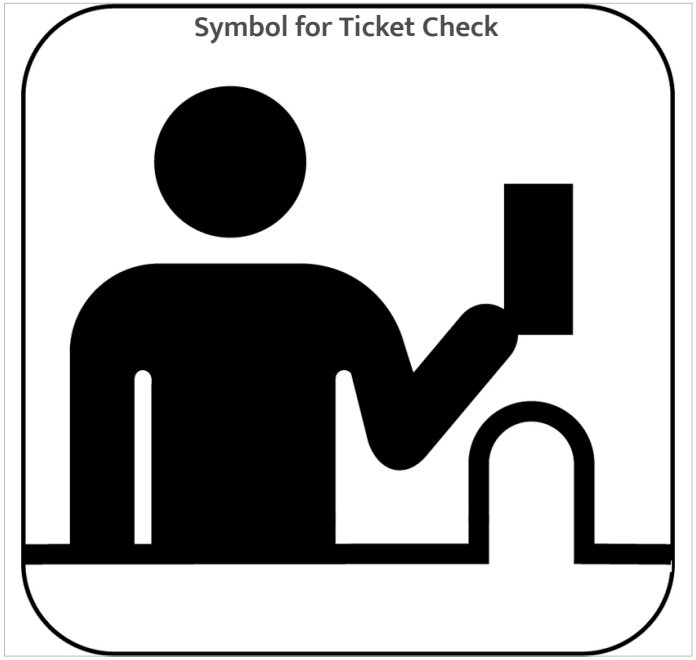

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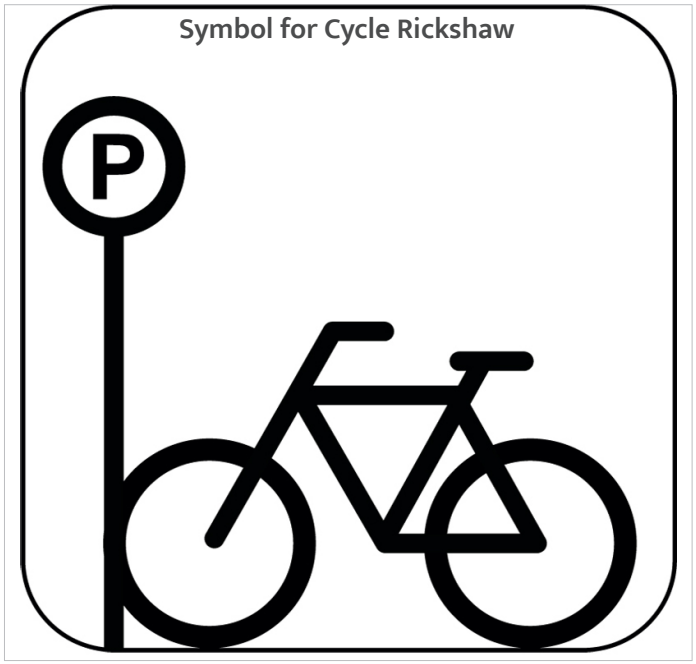

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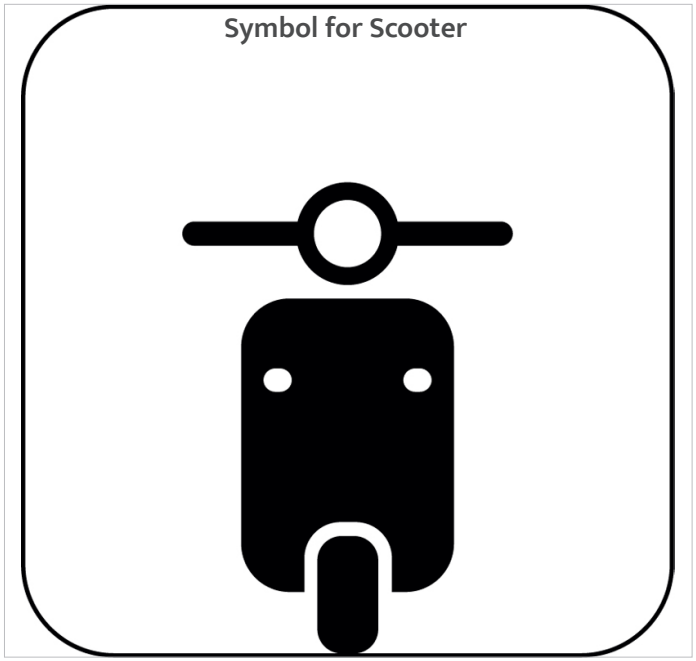

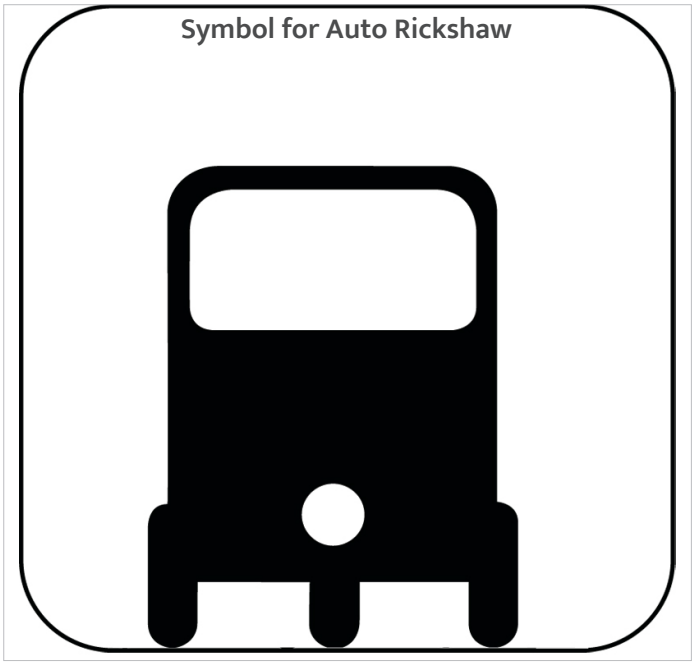

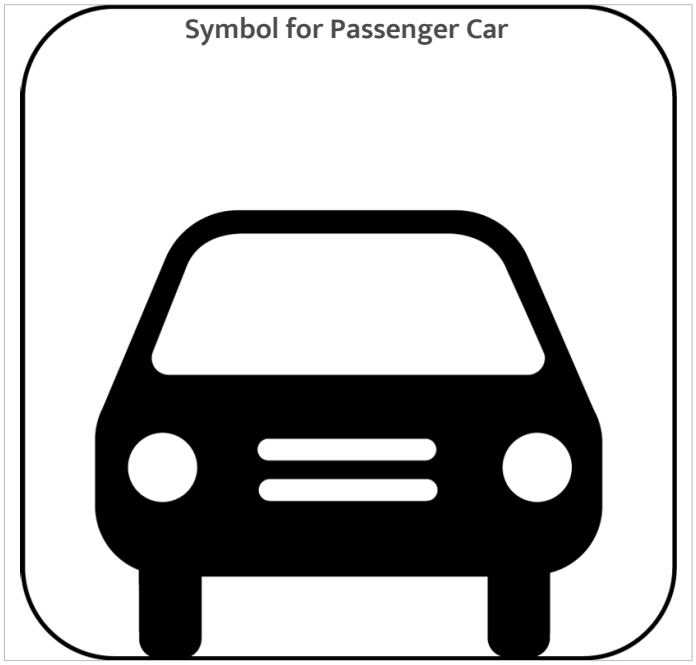

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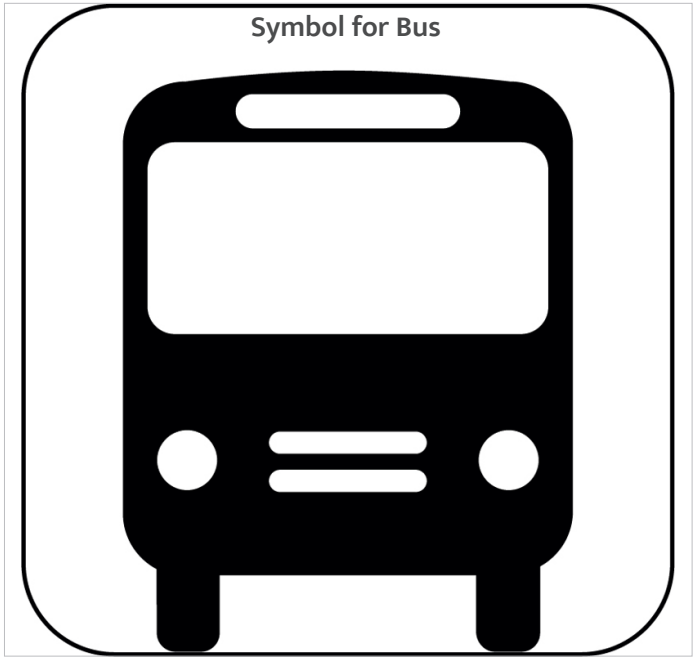

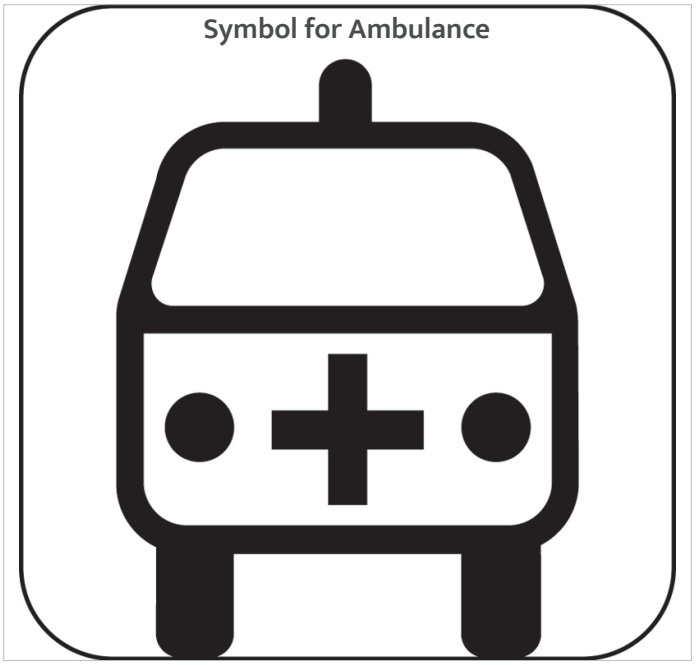

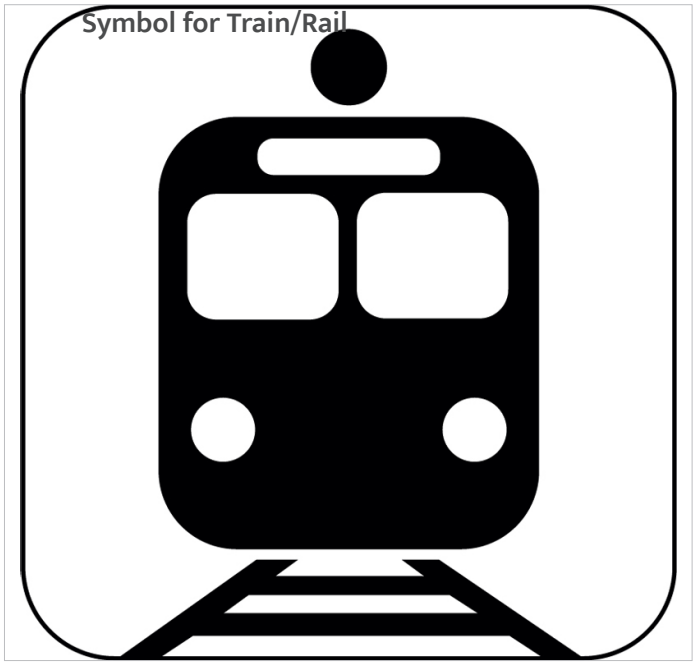

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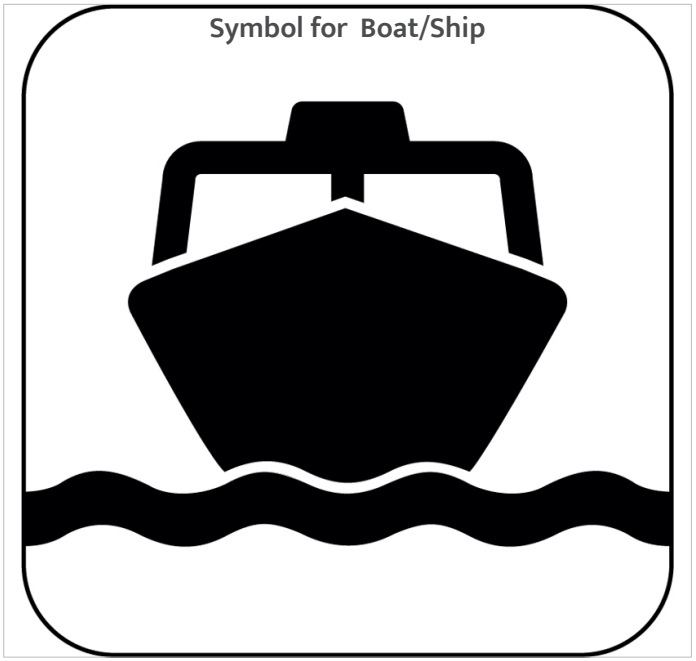

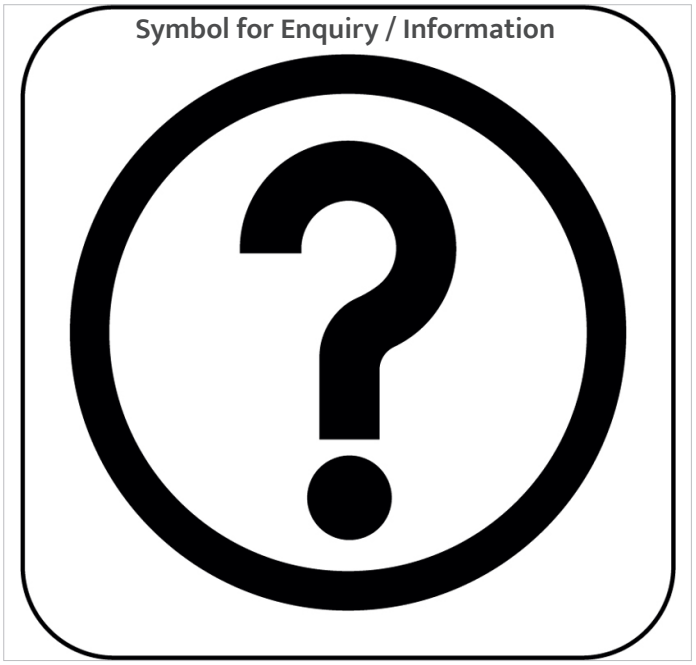

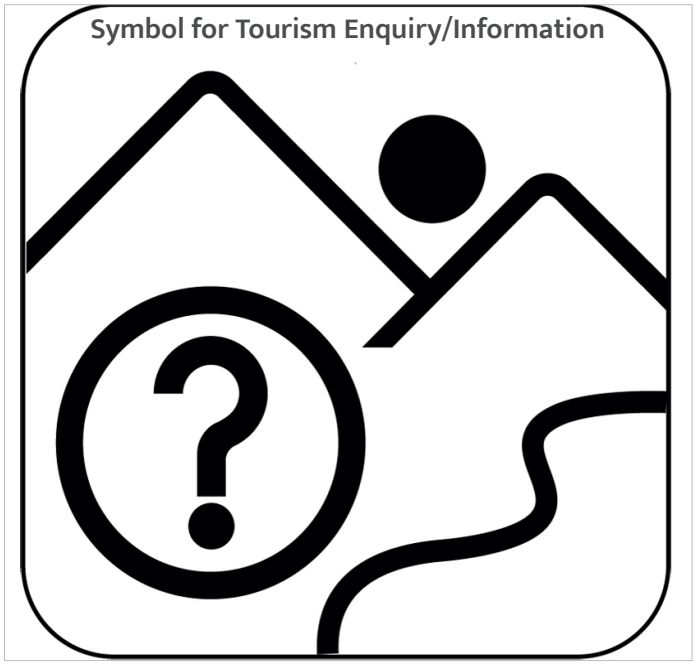

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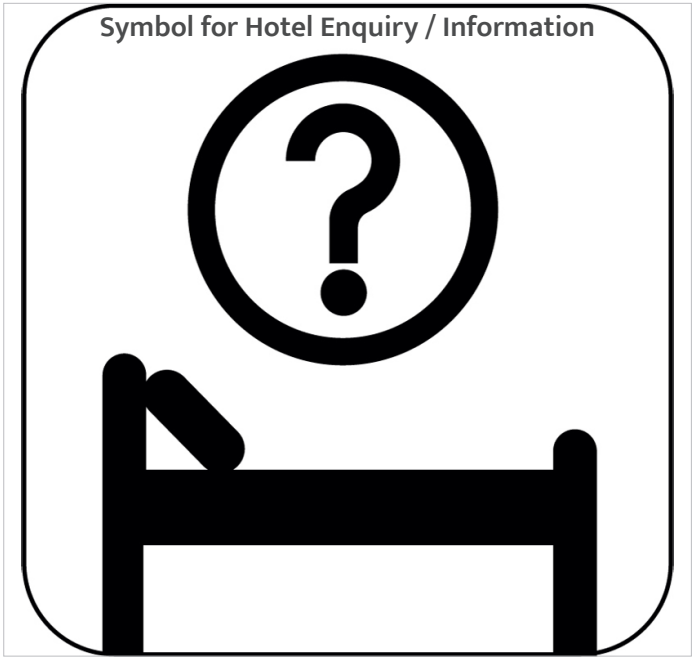

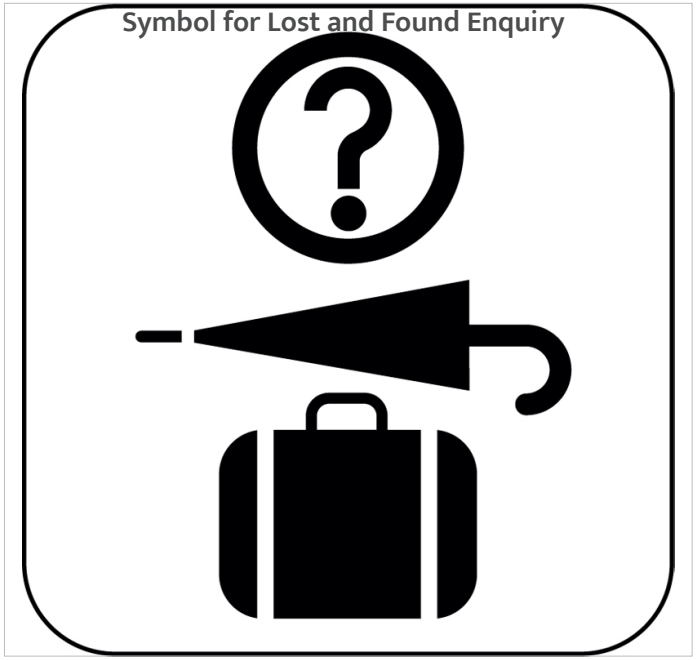

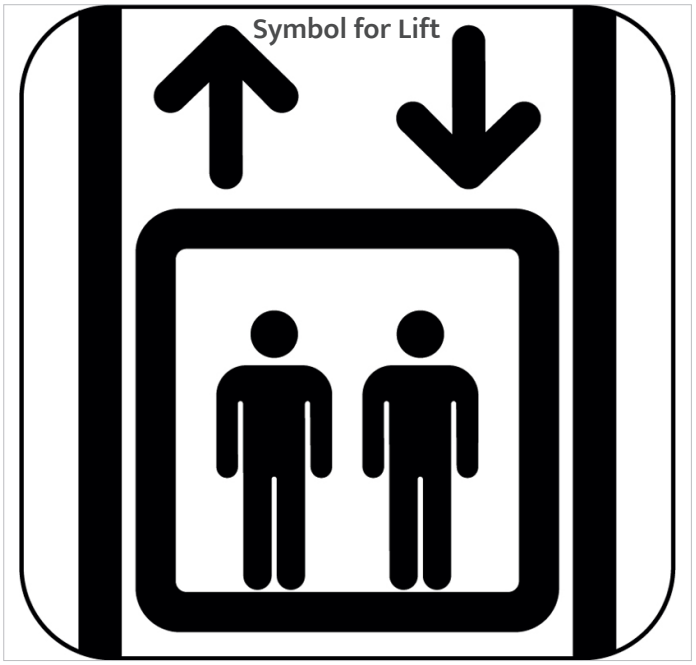

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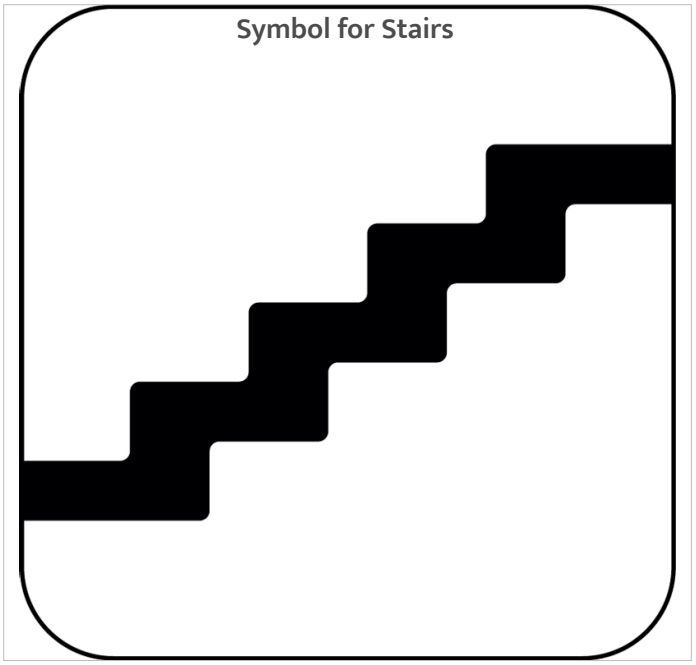

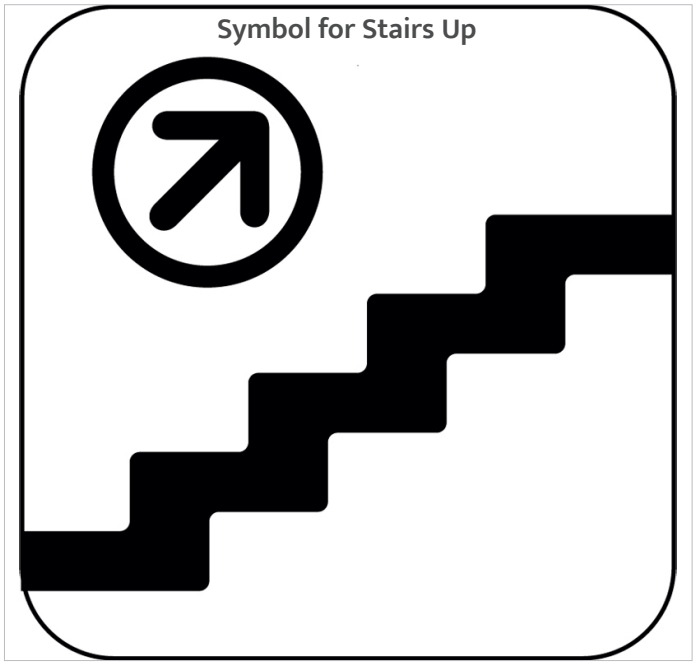

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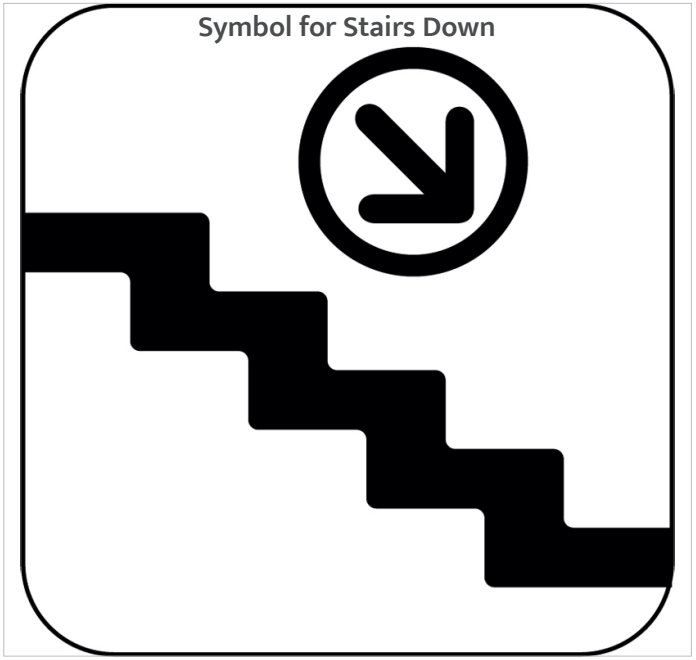

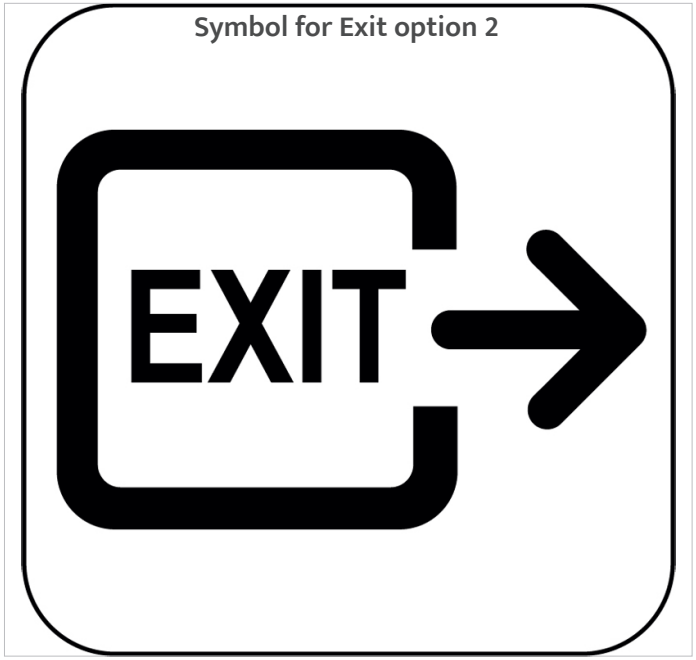

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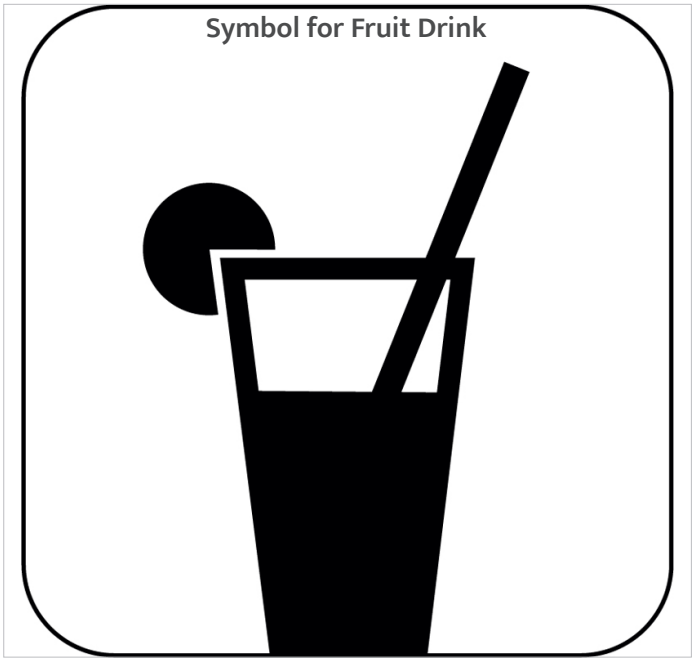

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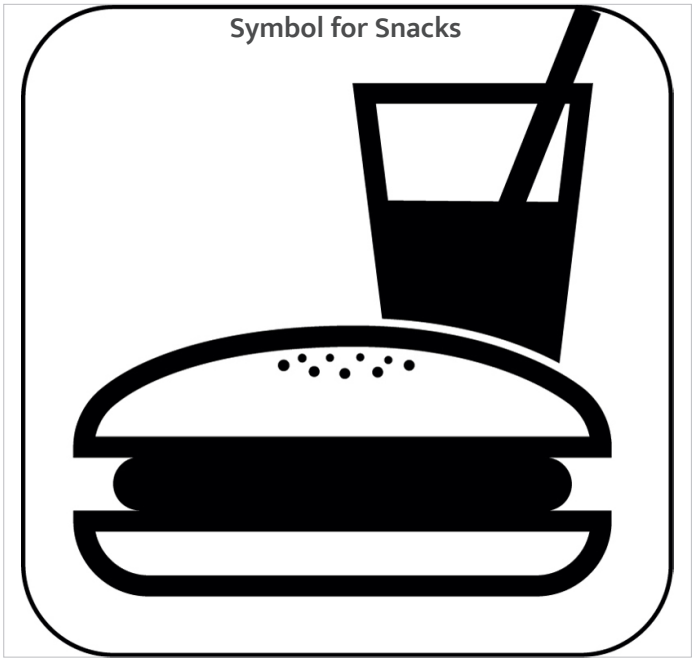

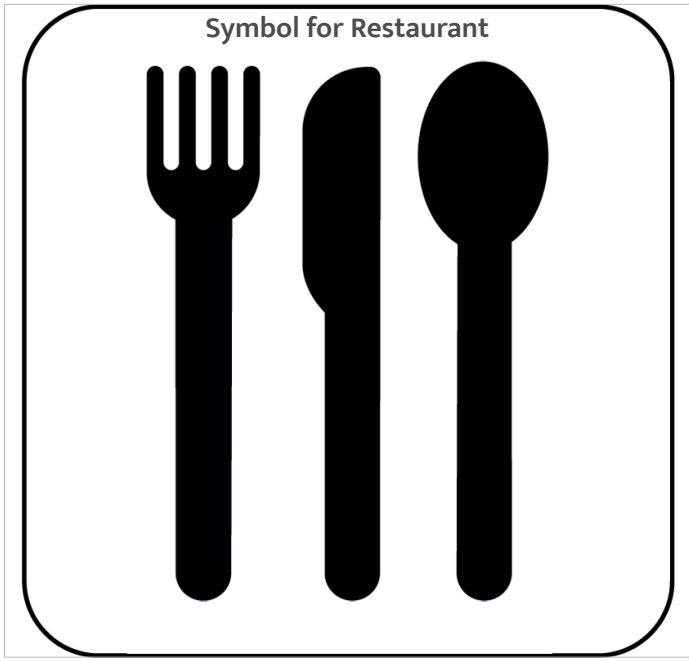

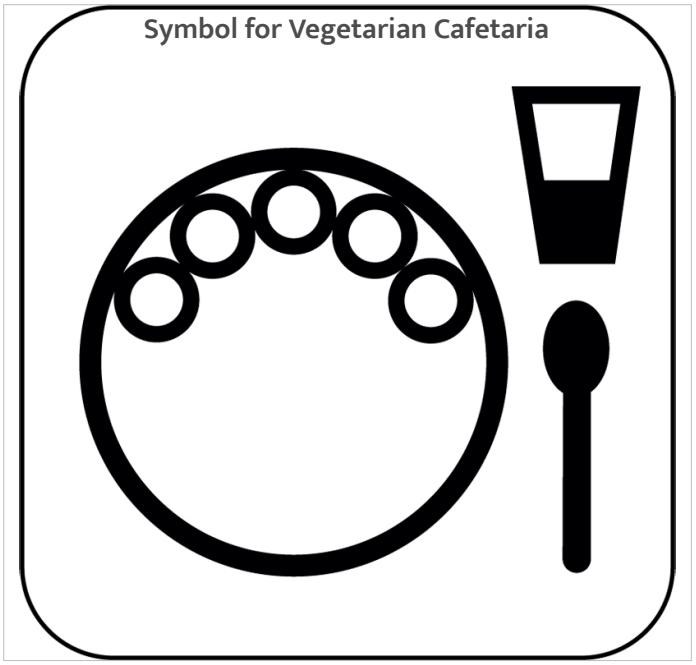

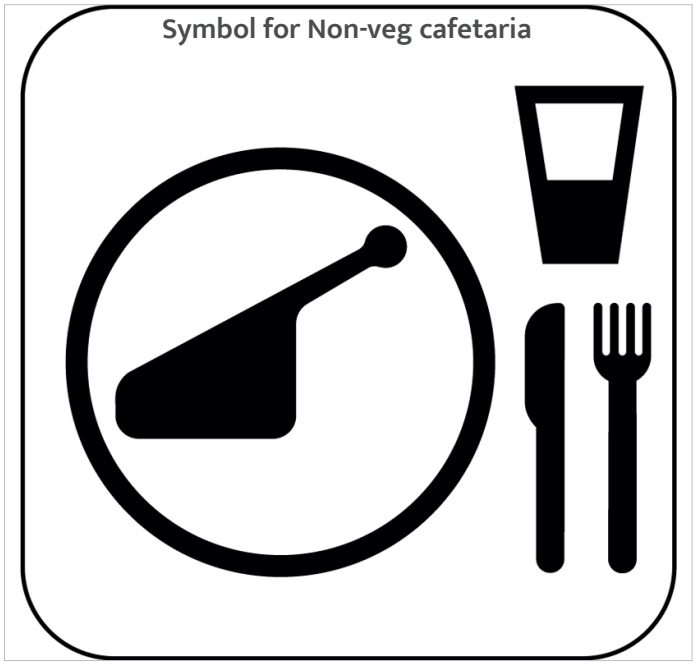

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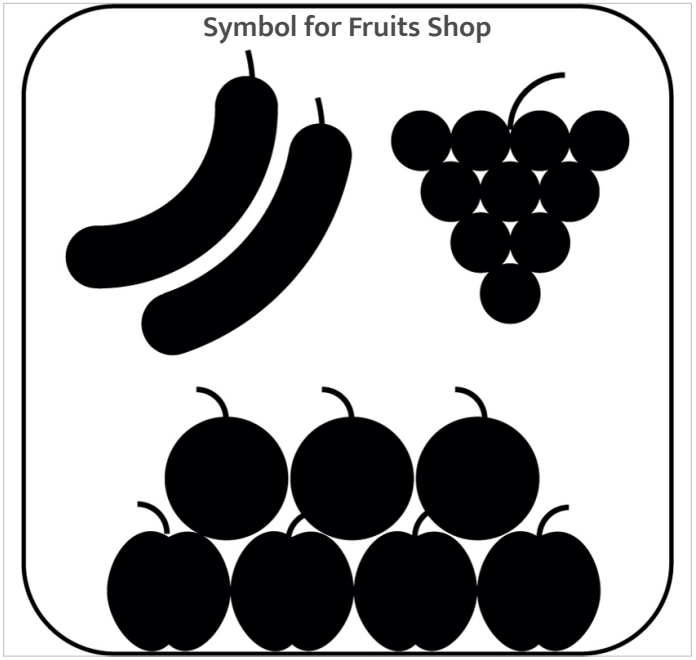

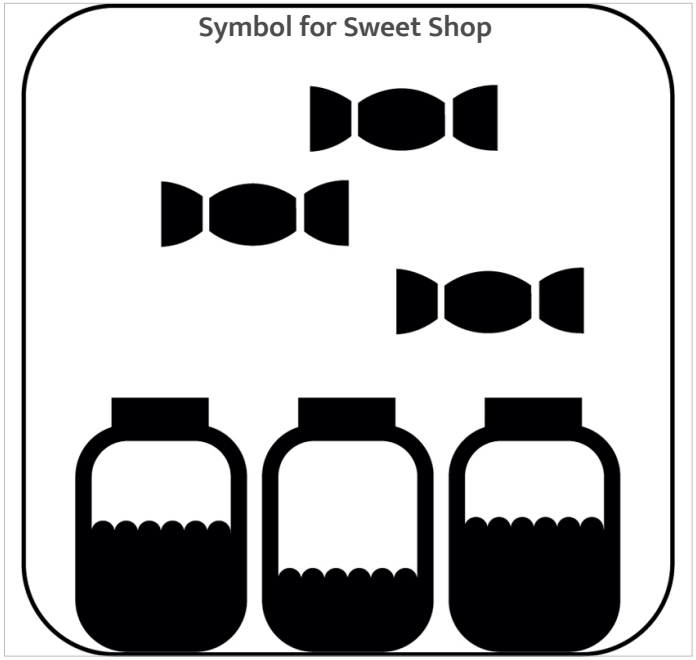

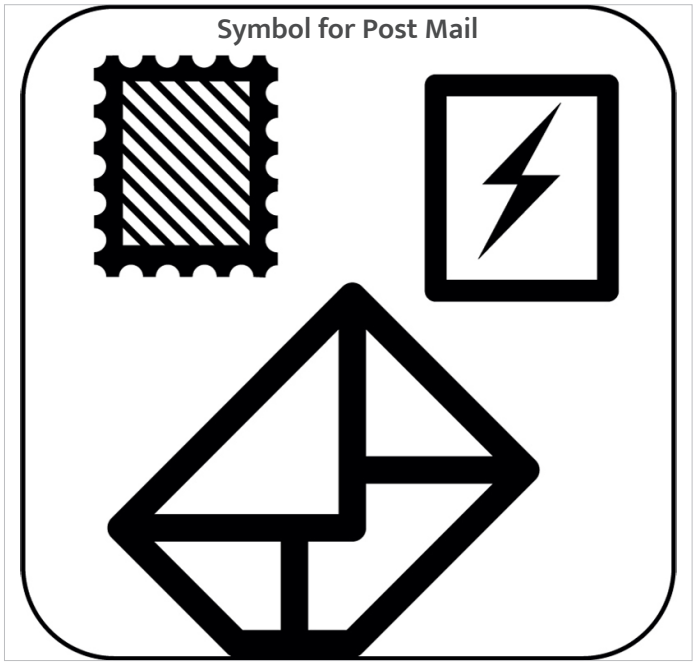

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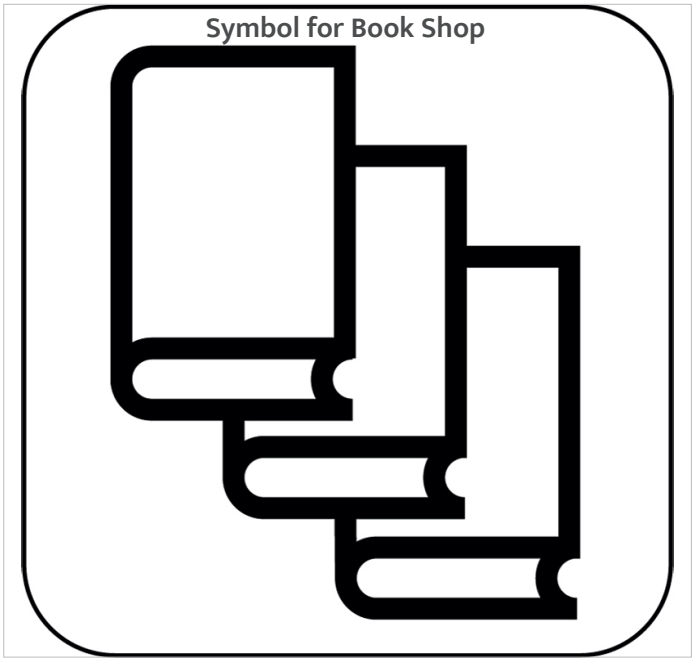
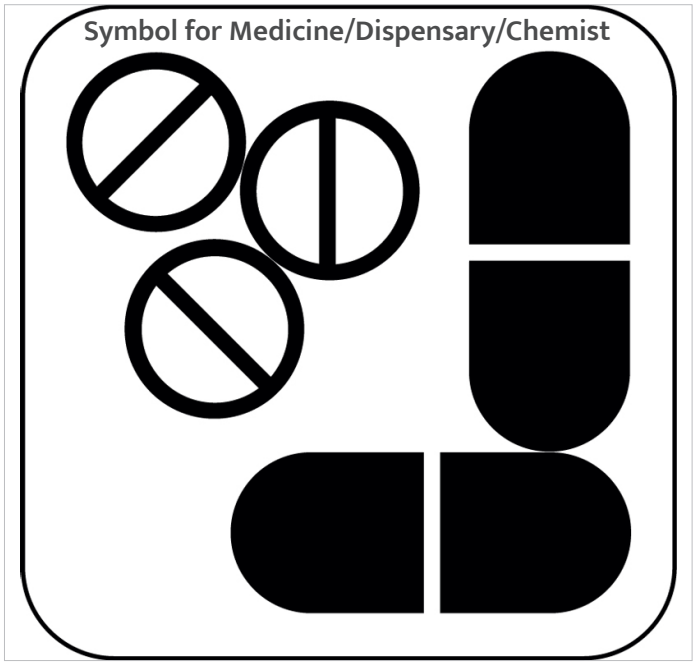
Design of Signage

Different Applications of Signage System

by
Prof. Ravi Poovaiah
IDC, IIT Bombay

Source:
http://www.dsource.in/course/design-signage/symbol/symbols-buildings





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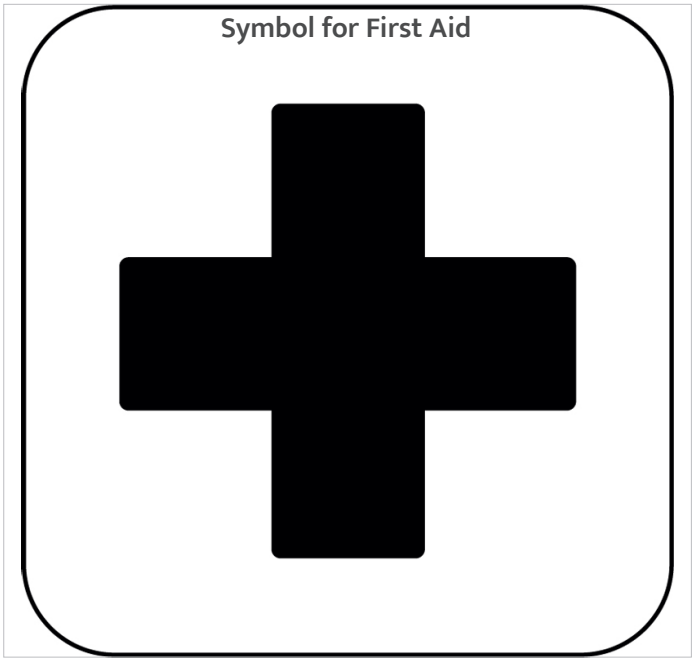

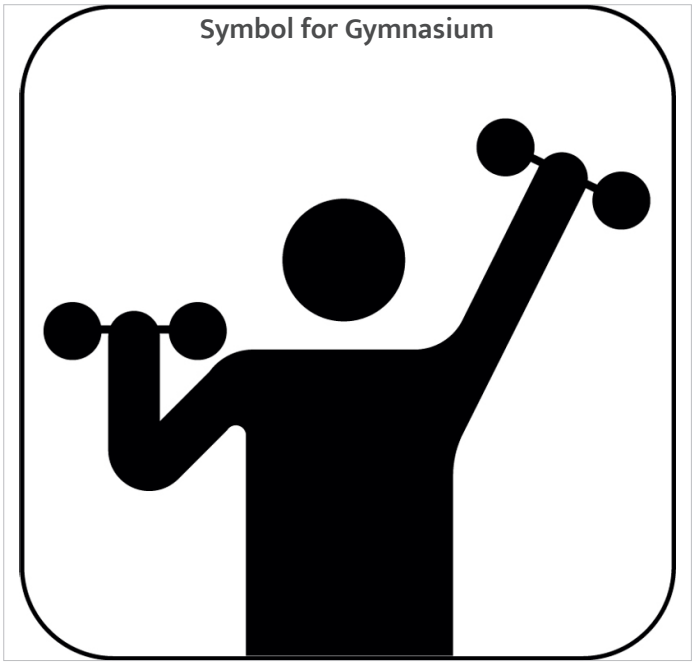

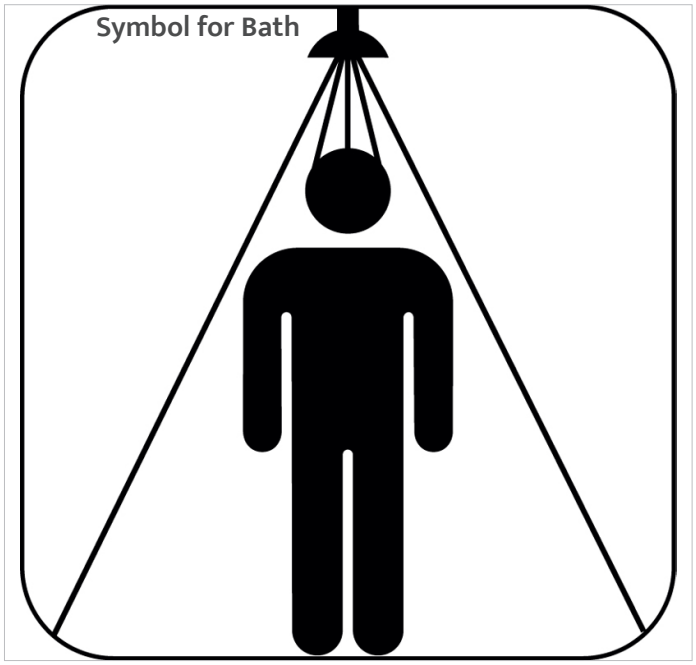

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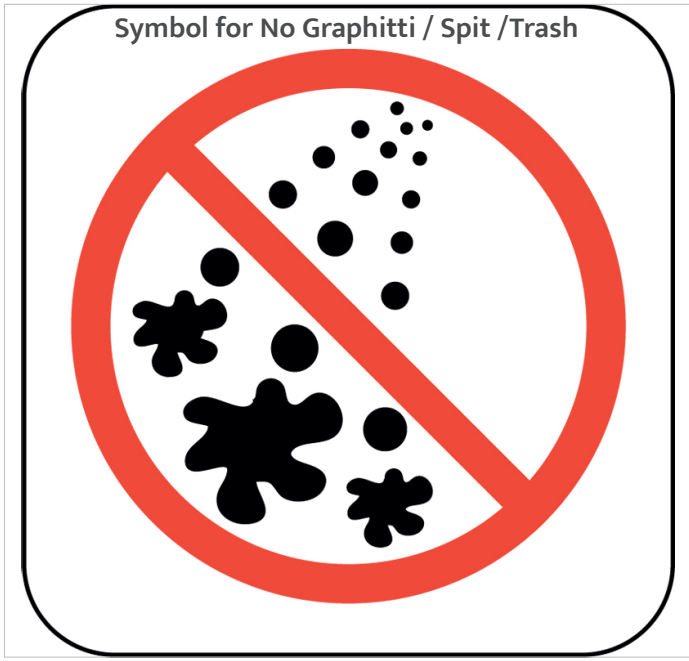

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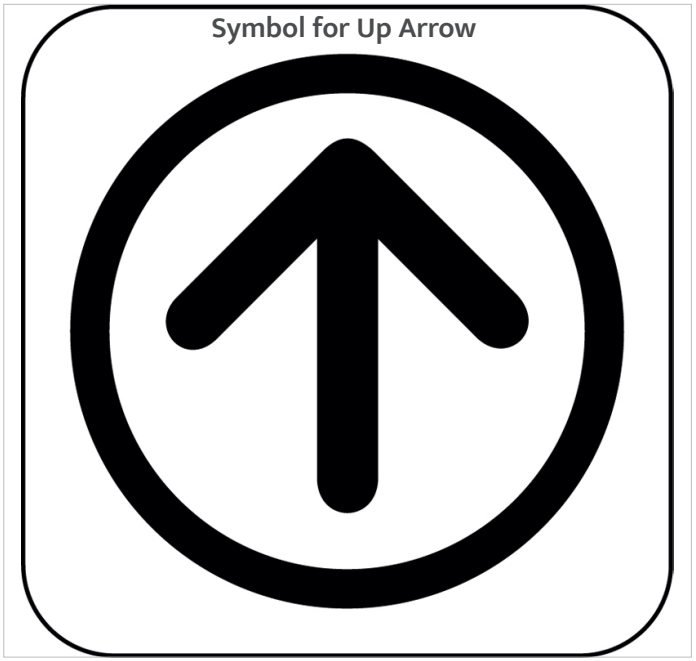

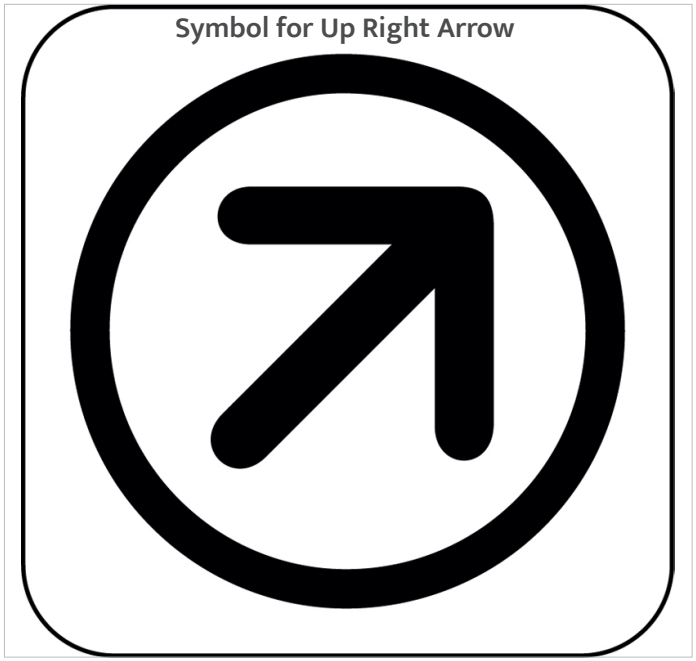

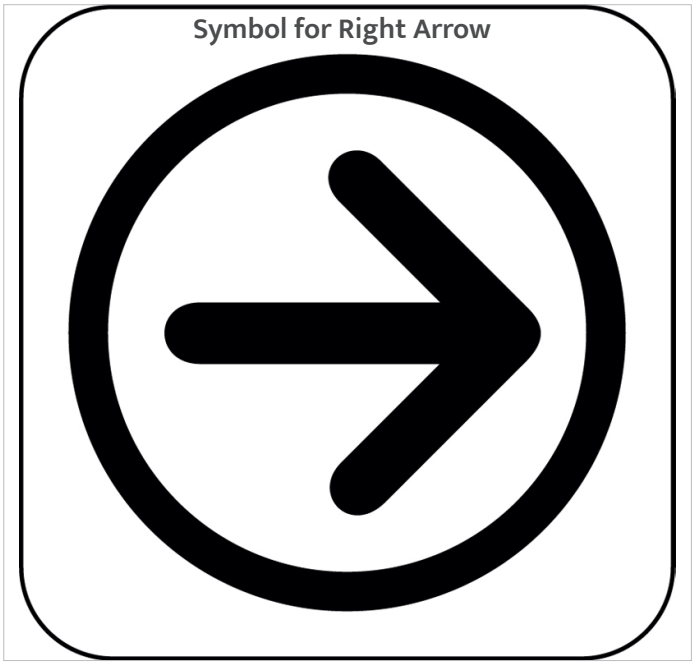

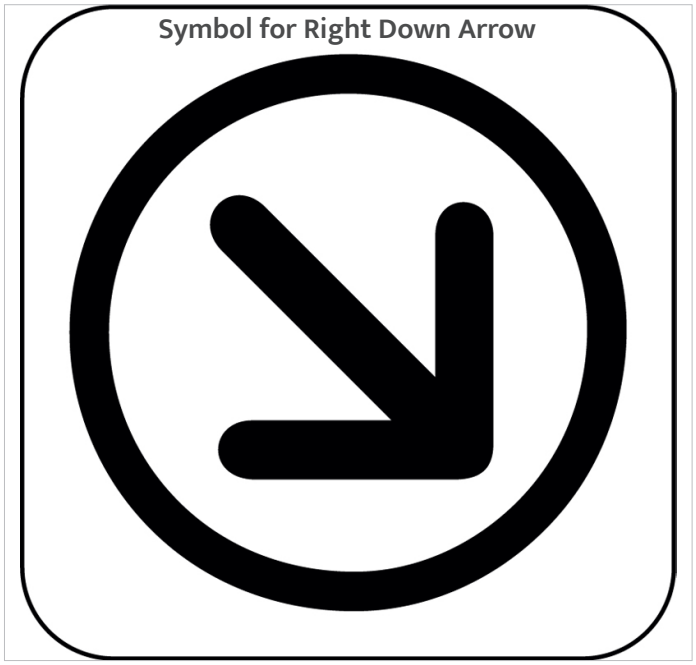

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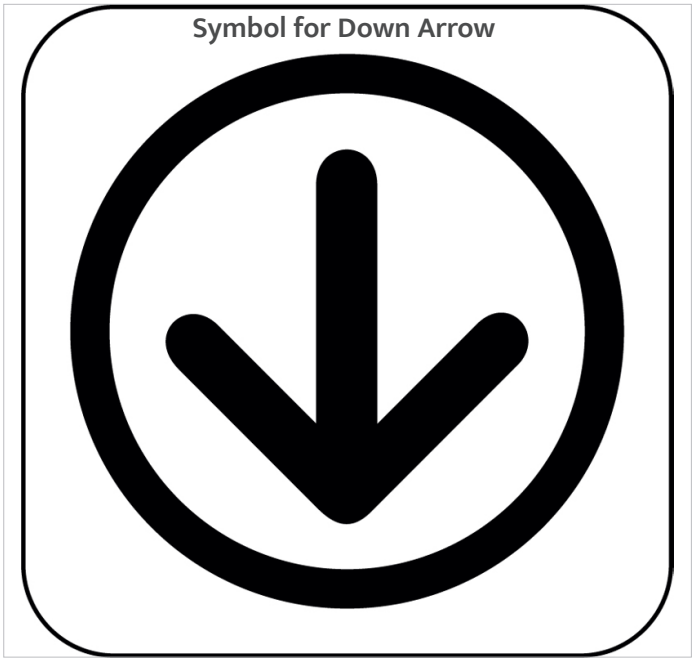

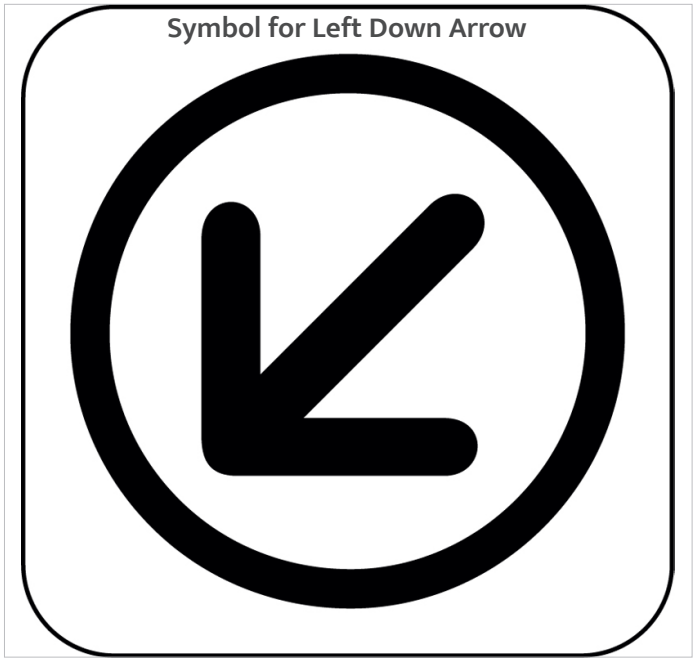

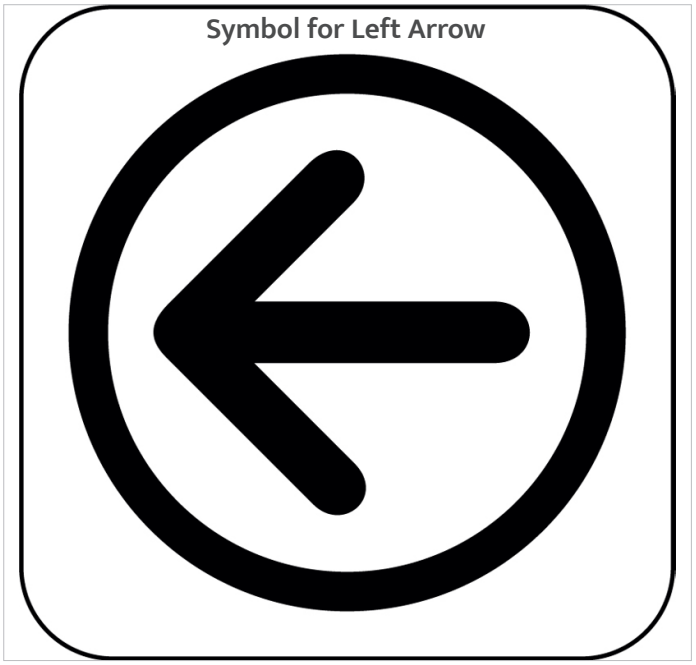

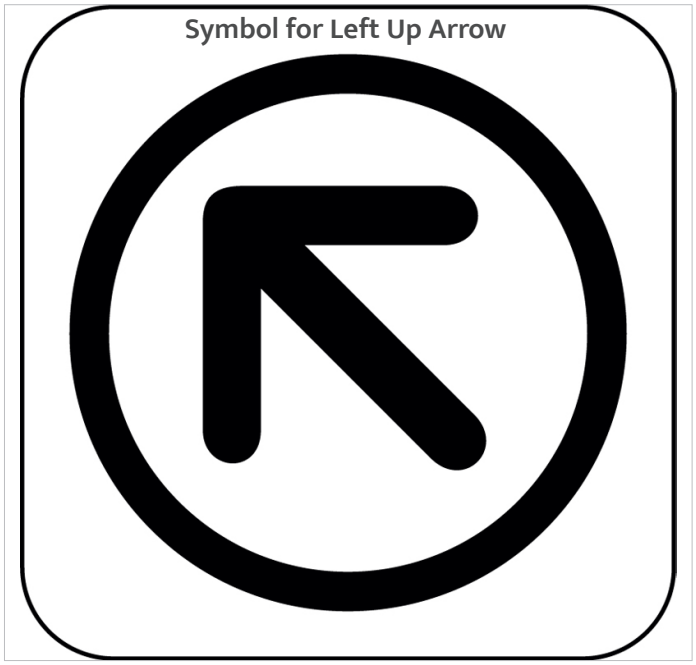

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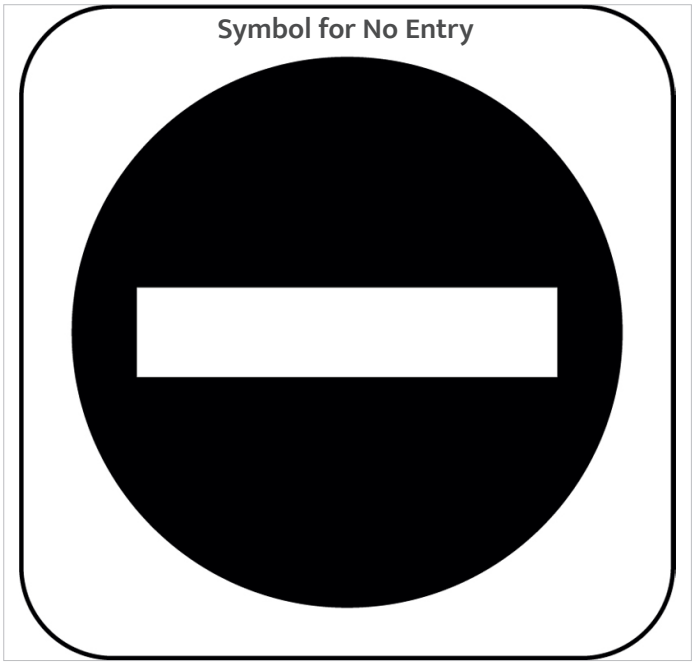

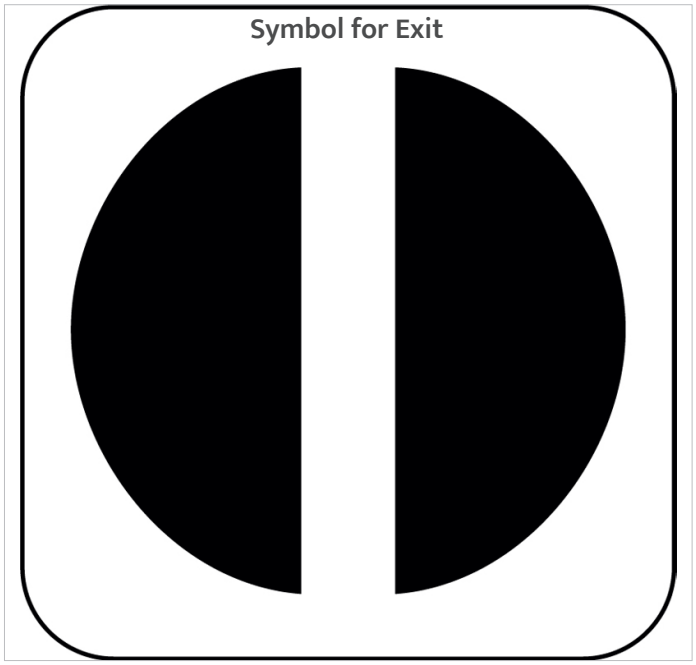

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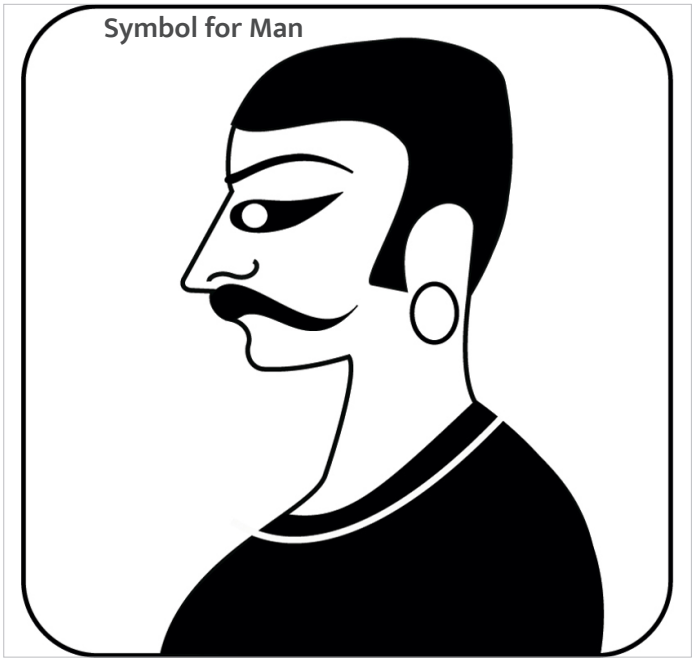

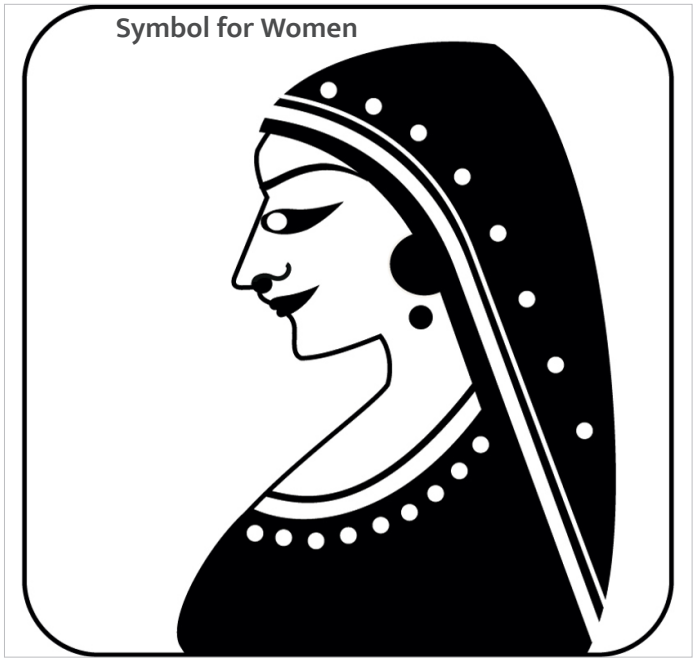

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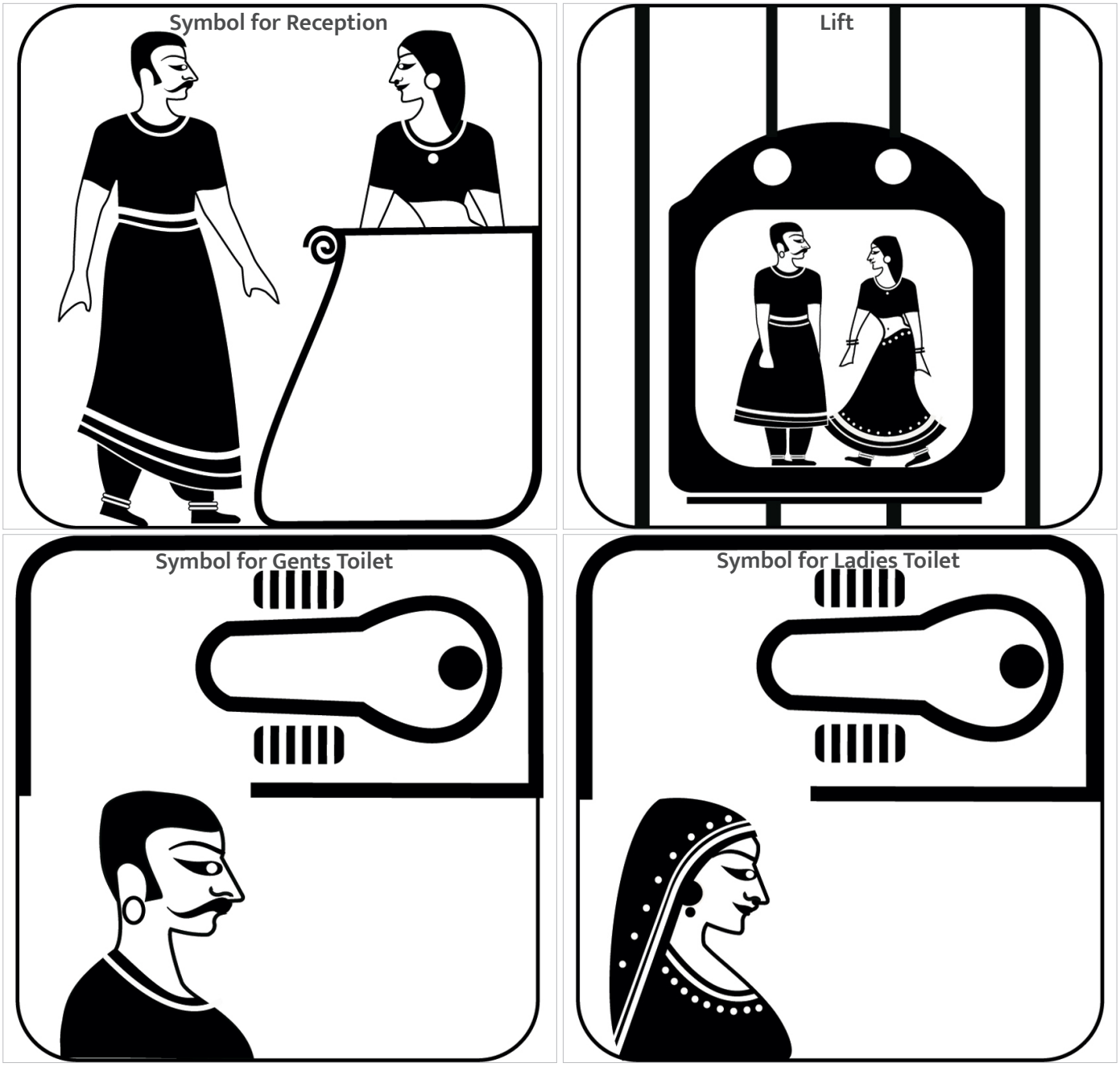

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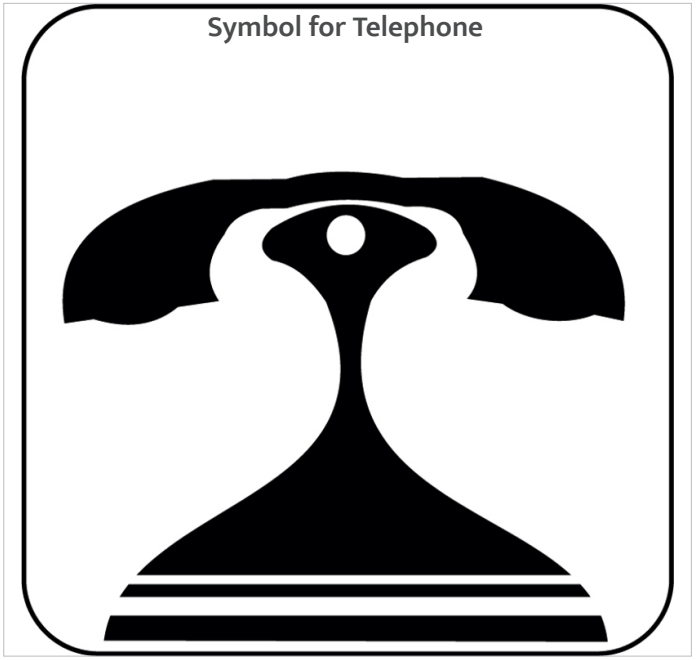

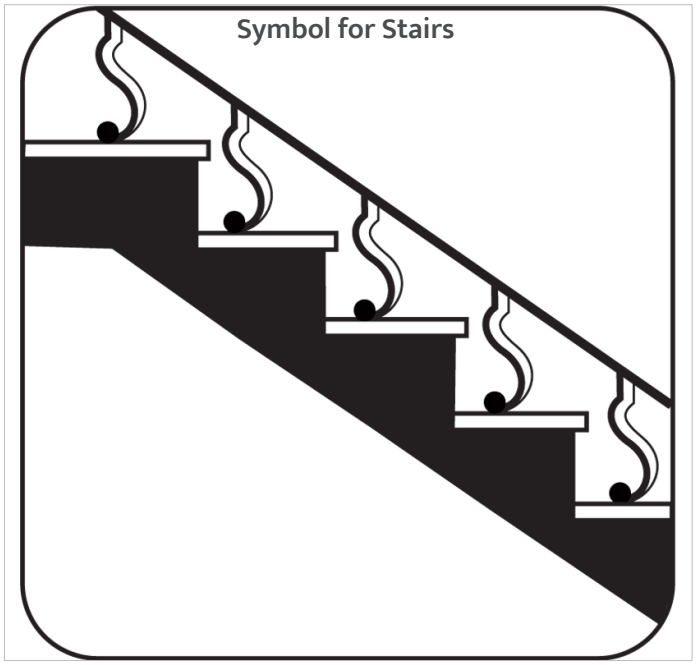

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Source:
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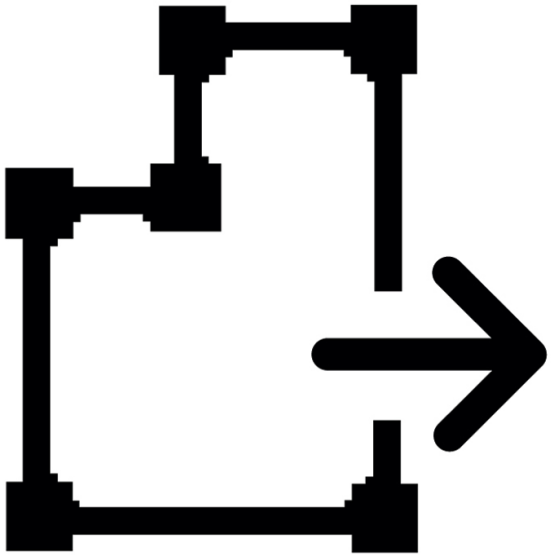
Symbol for Exit



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Source:
http://www.dsource.in/course/design-signage/symbol//symbols-airports

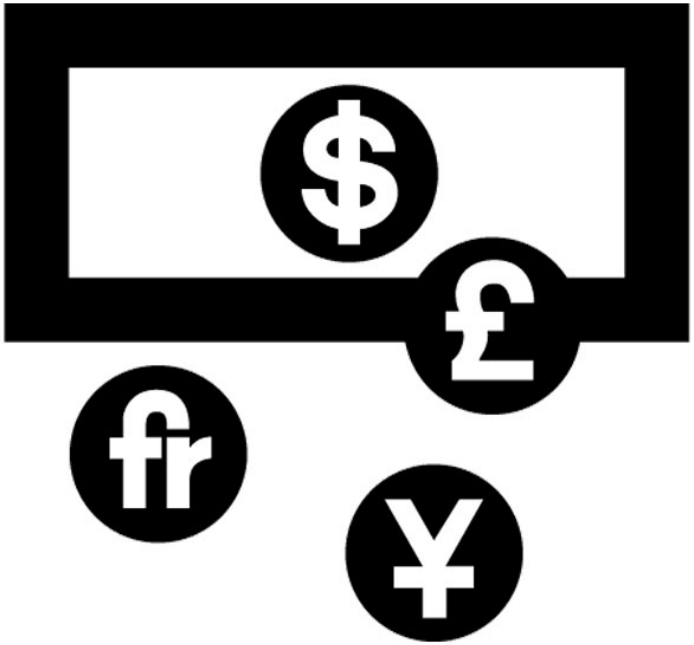
Symbols for Airports

Graphic Symbols for Airports:
_by American Institute of Graphic Arts (AIGA)

The link takes you to graphic symbols designed for use in the Airport environment, that are available courtesy AIGA. The symbols are done with a unique design process and have been adopted in many airports (all US and many others worldwide). These symbols are available free for use.

For Airport Symbols: http://www.aiga.org/symbol-signs

Few of them are mentioned below:



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Source:
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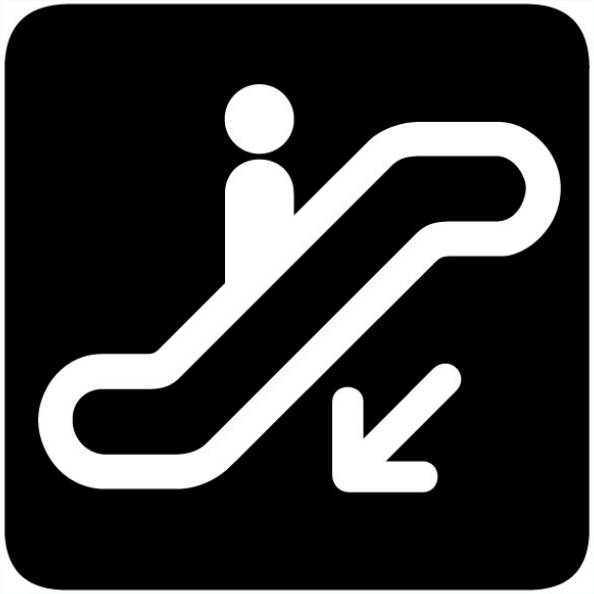

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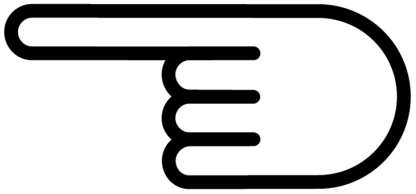
Source:
http://www.dsource.in/course/design-signage/symbol/symbols-using-hands

Symbols using Hands

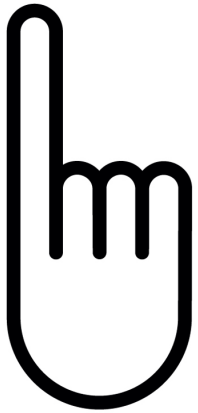
Graphic Symbols using Hands:
_by Ravi Poovaiah

The Graphic Symbols using different positions of fingers and hands. These symbols are available free for use.

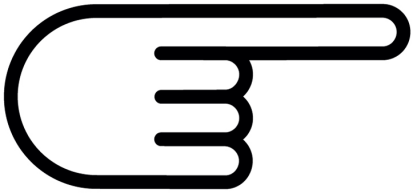
Symbol for Arrow Pointing Left



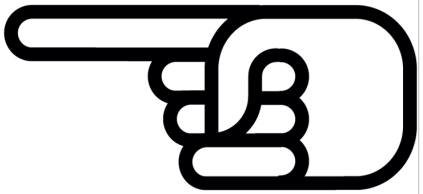
Symbol for Arrow Pointing Up



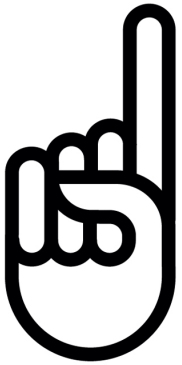
Symbol for Arrow Pointing Right



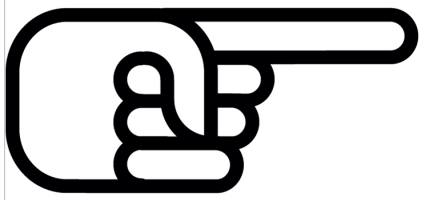
Symbol for Arrow Pointing Left



Symbol for Arrow Pointing Up



Symbol for Arrow Pointing Right



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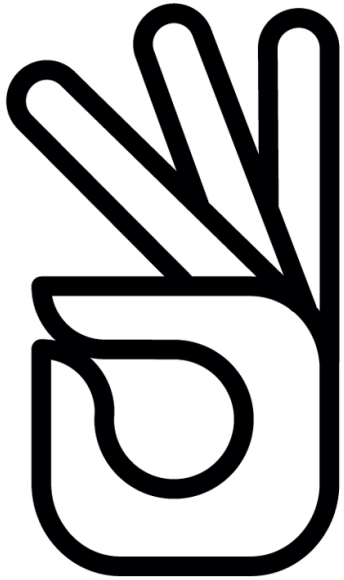
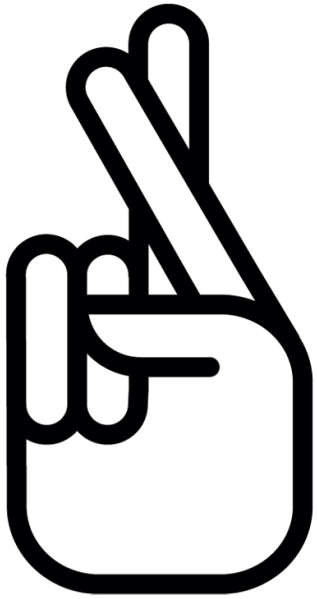
Symbol for Peace

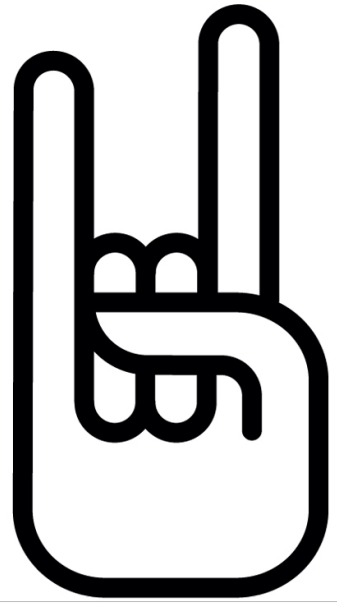
Symbol for Perfect



Symbol for Keep Fingers Crossed



Symbol for Go Ahead



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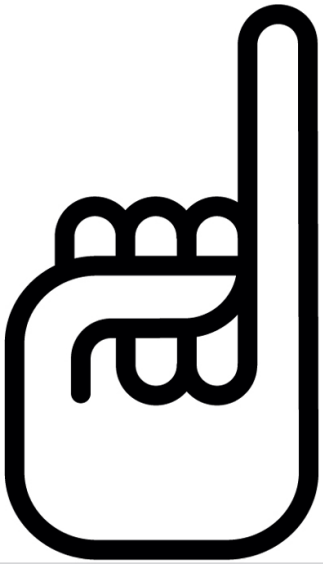
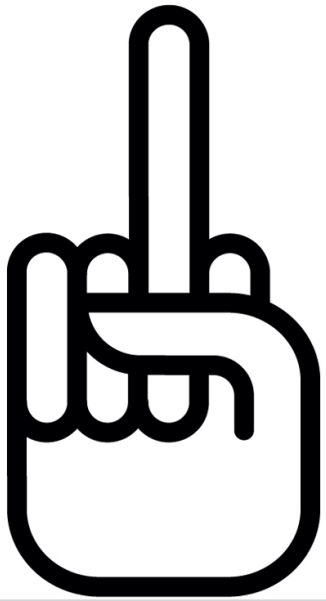
Symbol for Go To Toilet



Symbol for Zzzzzz



Symbol for Stop

Symbol for Stop

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Source:
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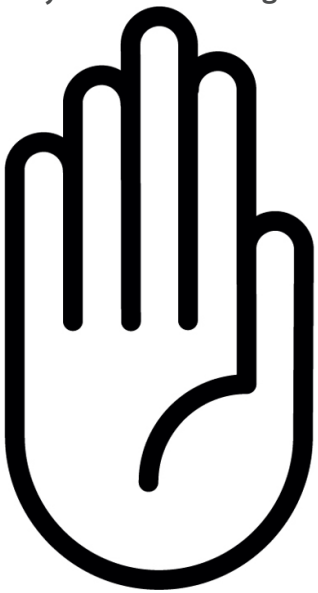
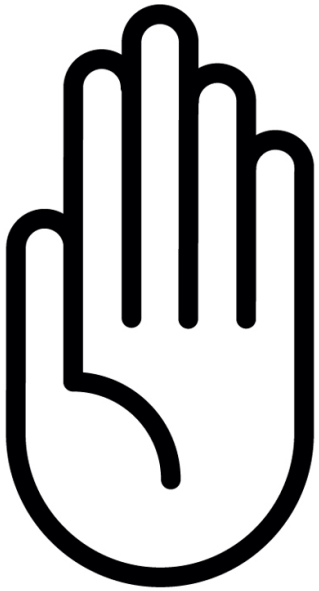
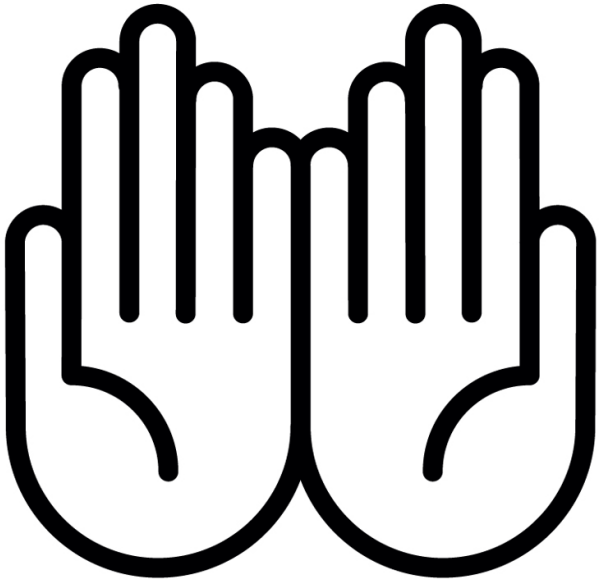
Symbol for Blessing



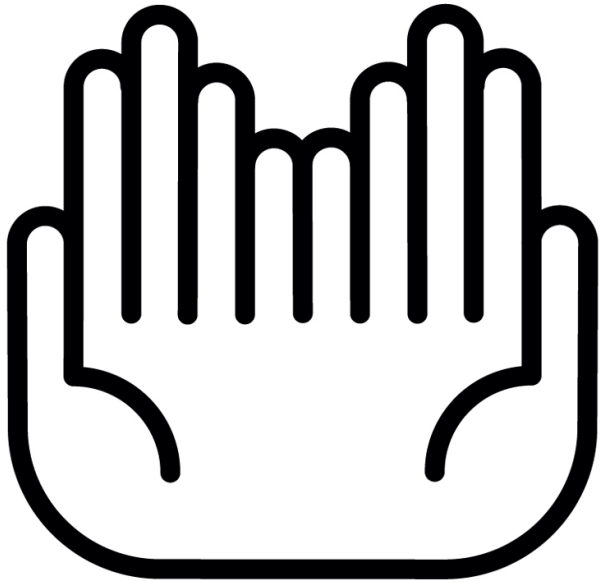
Symbol for Blessing



Symbol for Offerring



Symbol for Offerring



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Source:
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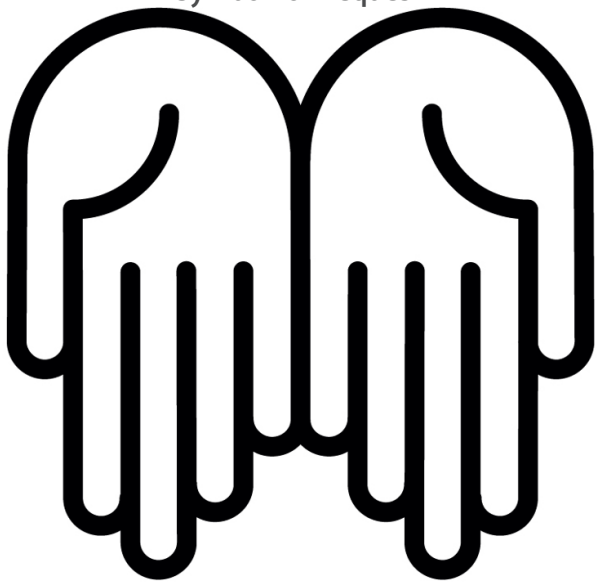
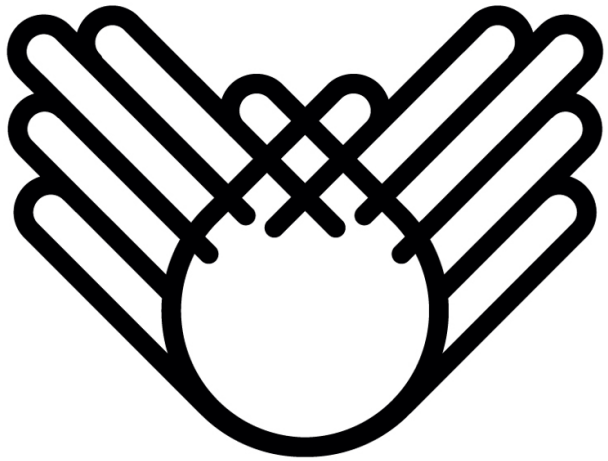
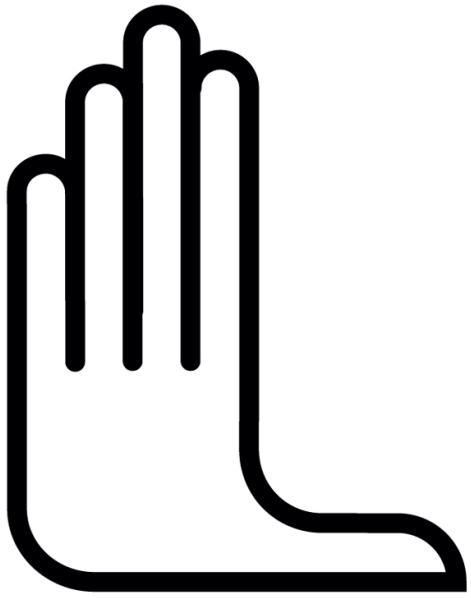
Symbol for Request



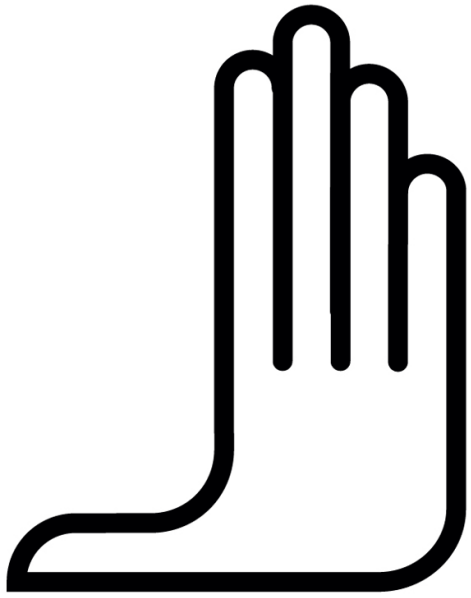
Symbol for Flight



Symbol for Right Frame



Symbol for Left Frame



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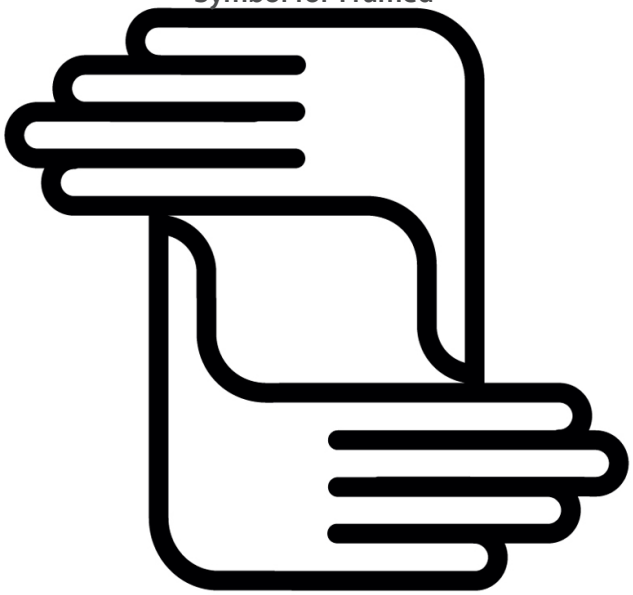
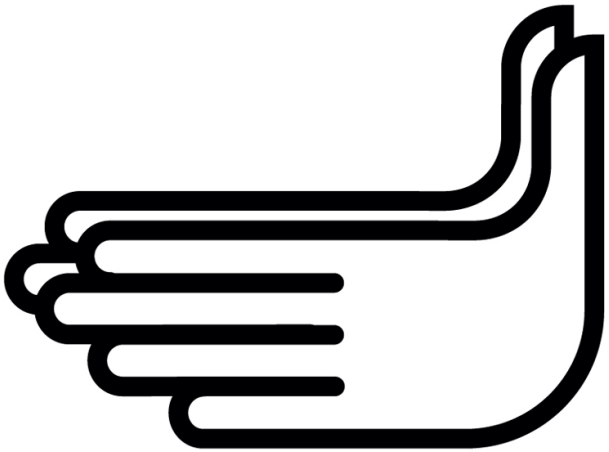
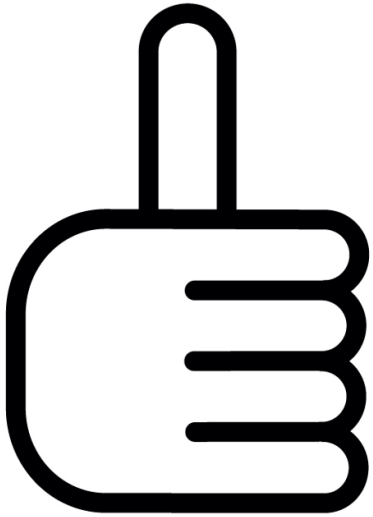
Symbol for Framed



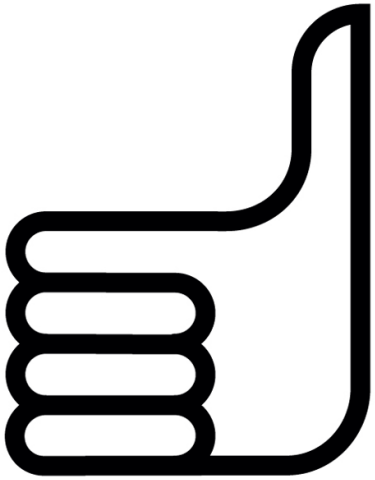
Symbol for Pray



Symbol for Thumbs Up



Symbol for Thumbs Up



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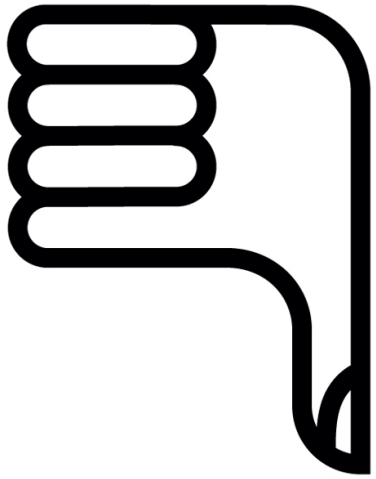
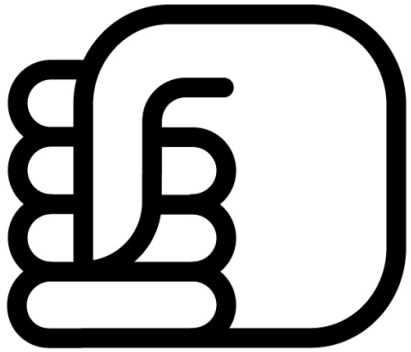
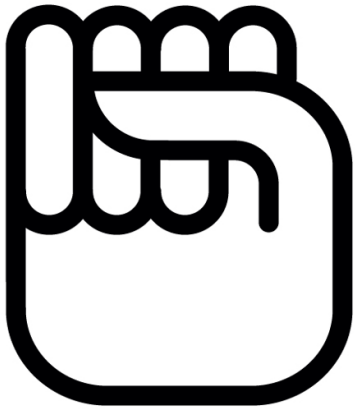
Symbol for Thumbs Down



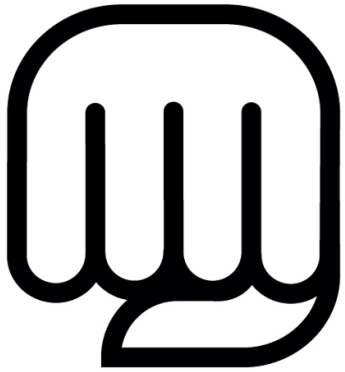
Symbol for Thump



Symbol for Power



Symbol for Go Punch



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IDC, IIT Bombay

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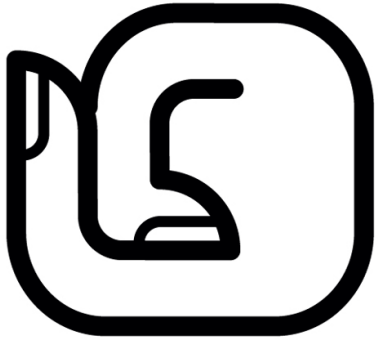
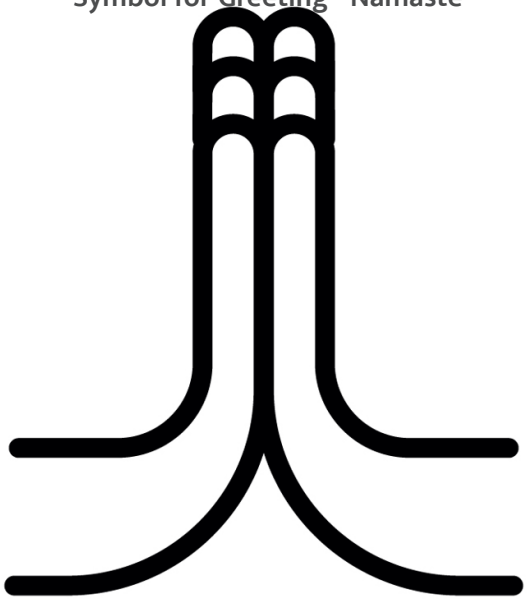
Symbol for Clench Fist

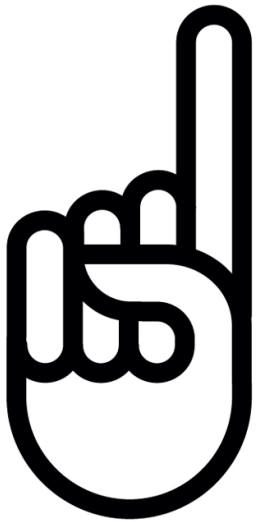


Symbol for Hand Shake

Symbol for Greeting - Namaste



Symbol for Number one



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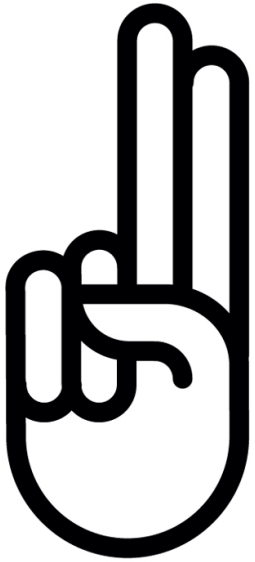
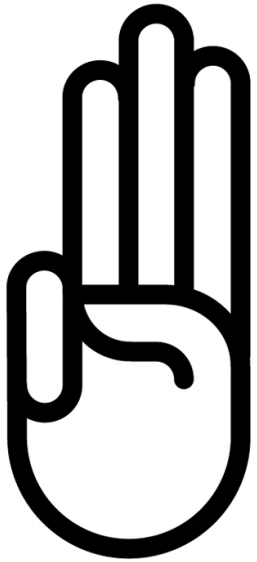
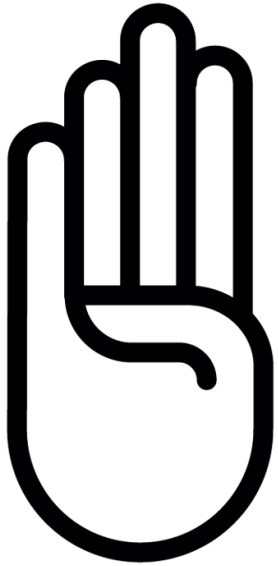
Symbol for Number Two



Symbol for Number Three



Symbol for Number Four



Symbol for Number Five

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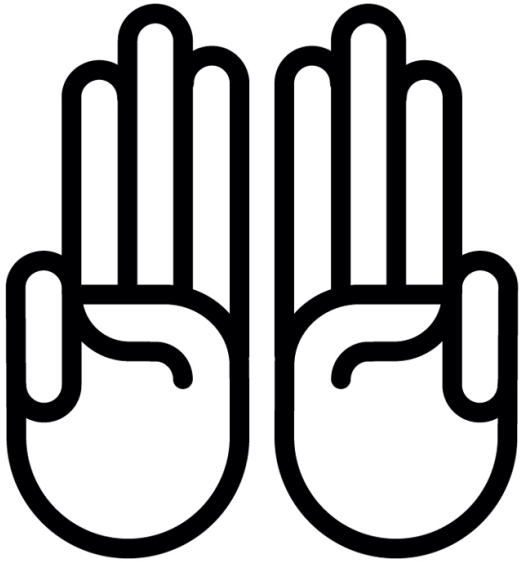
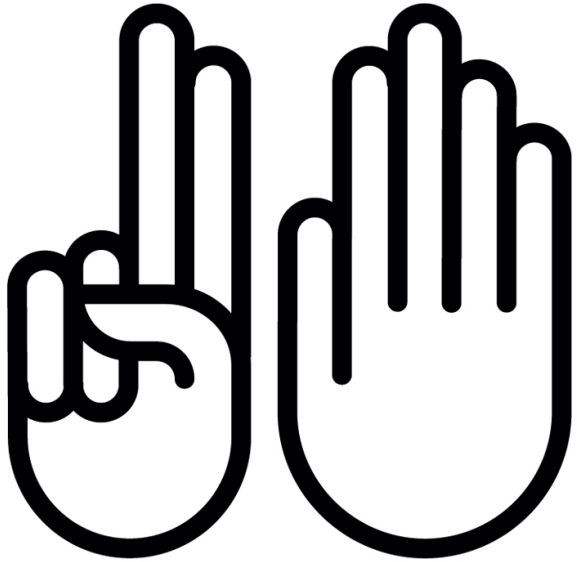
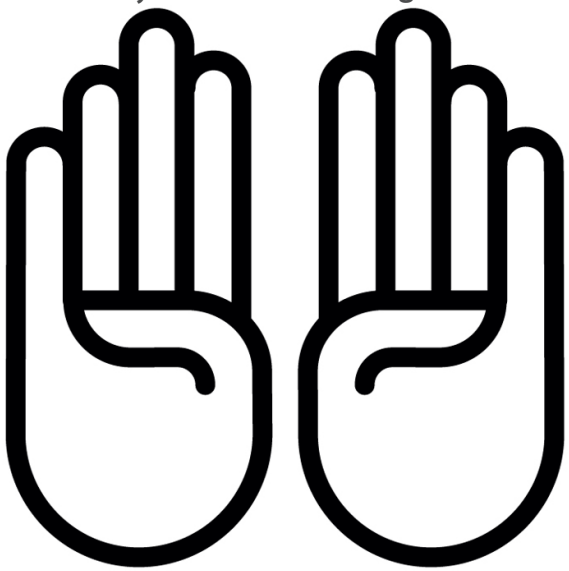
Symbol for Number Six



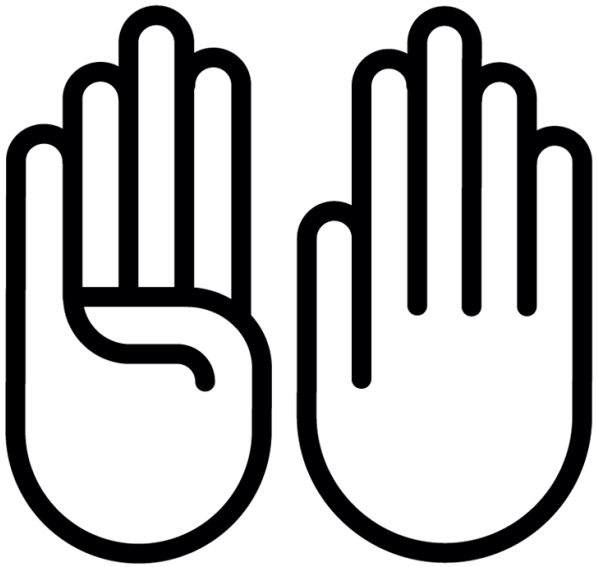
Symbol for Number Seven



Symbol for Number Eight



Symbol for Number Nine



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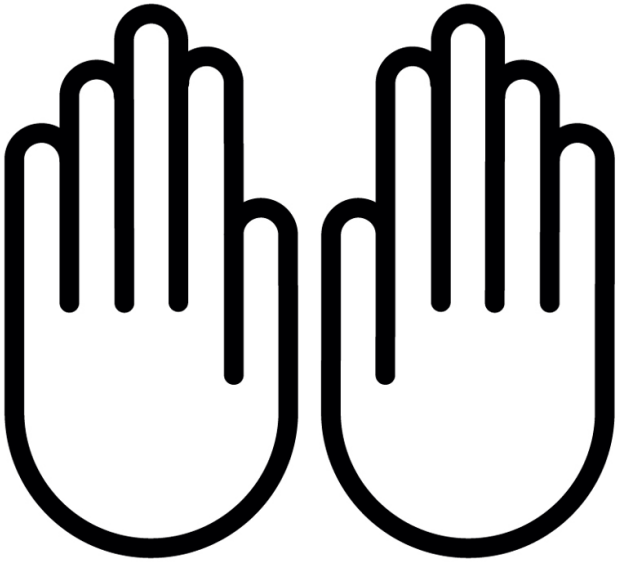
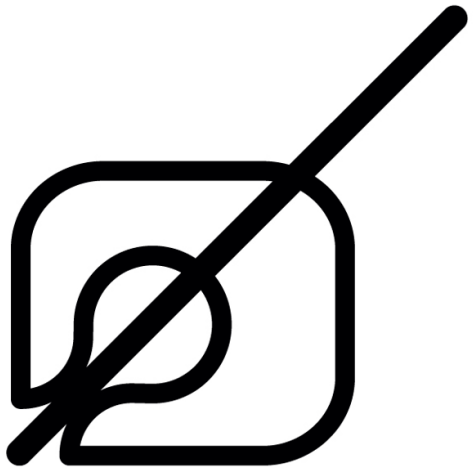
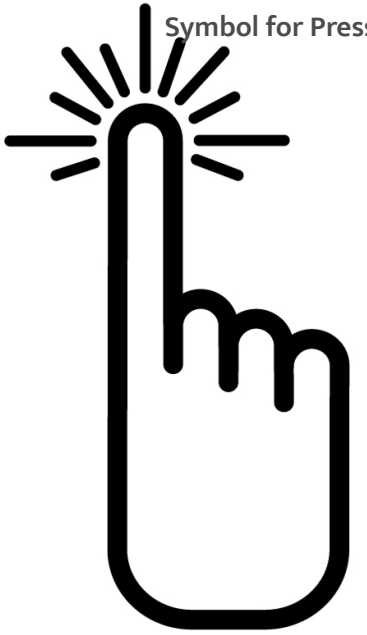
Symbol for Number Ten



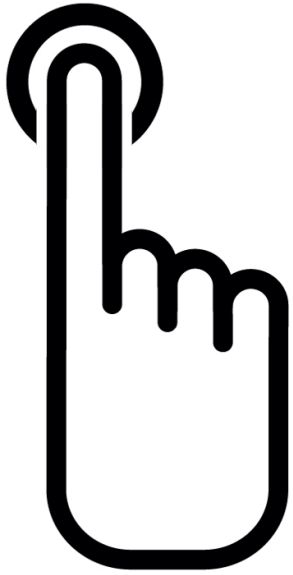
Symbol for Write



Symbol for Press Switch



Symbol for Press Button



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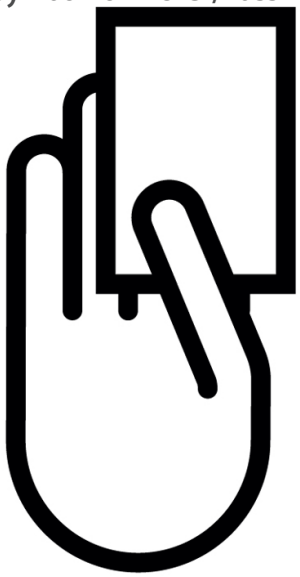
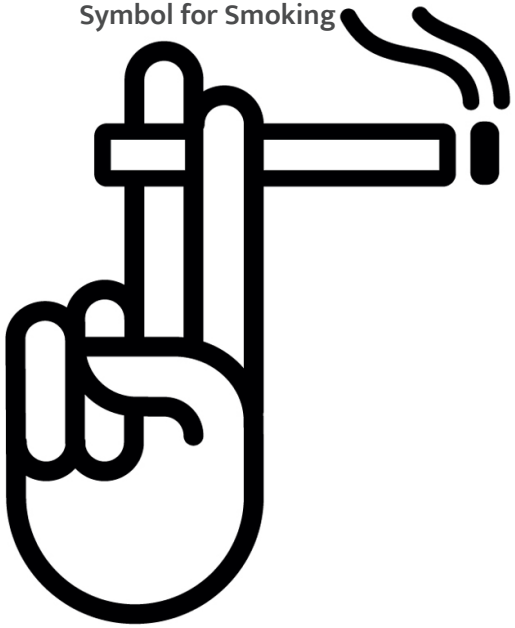
Symbol for Ticket/Pass



Symbol for Smoking



Symbol for Danger don't Press

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IDC, IIT Bombay

Source:
http://www.dsource.in/course/design-signage/symbol//generic-signage

Generic Signage

Graphic Symbols of Generic Signage:
_by Anisha Malhotra

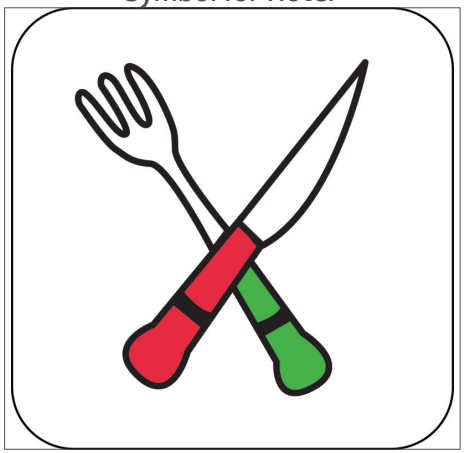
A set of graphic symbols designed for children which can be put at multiple places like railway stations, airport, libraries, hospitals, etc. The set includes instructional, directional, general and place identification signage.

Few of them are mentioned below:

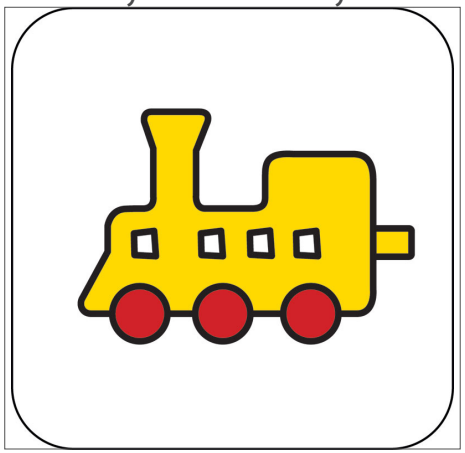
Symbol for Airport

Symbol for Hospital

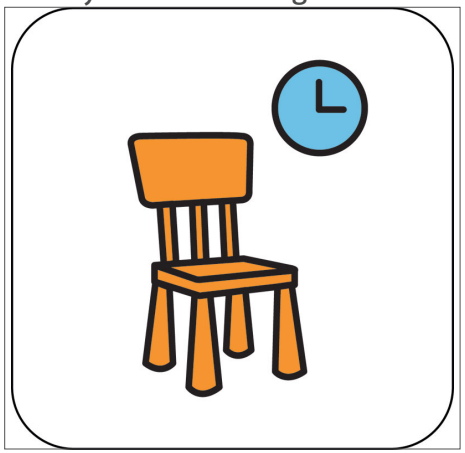
Symbol for Hotel



Symbol for Railway



Symbol for Waiting-Room



Symbol for Boys-Toilet

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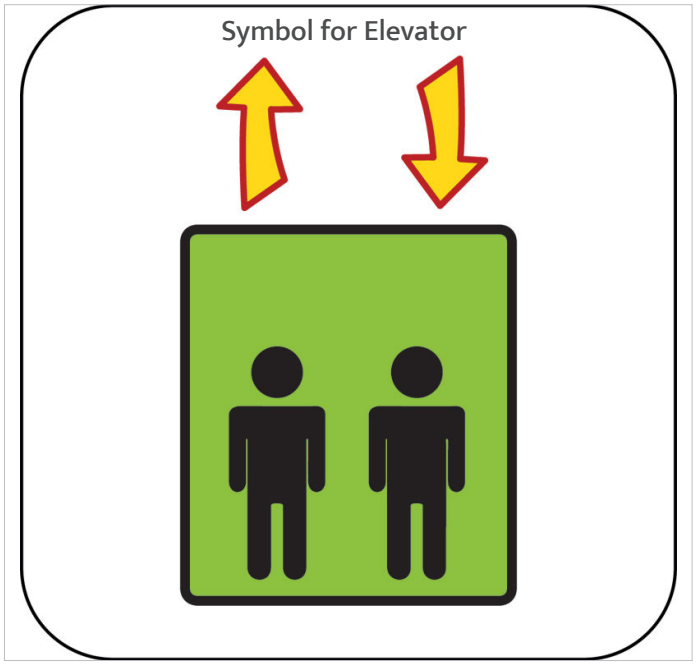
Source:
http://www.dsource.in/course/design-signage/symbol//generic-signage



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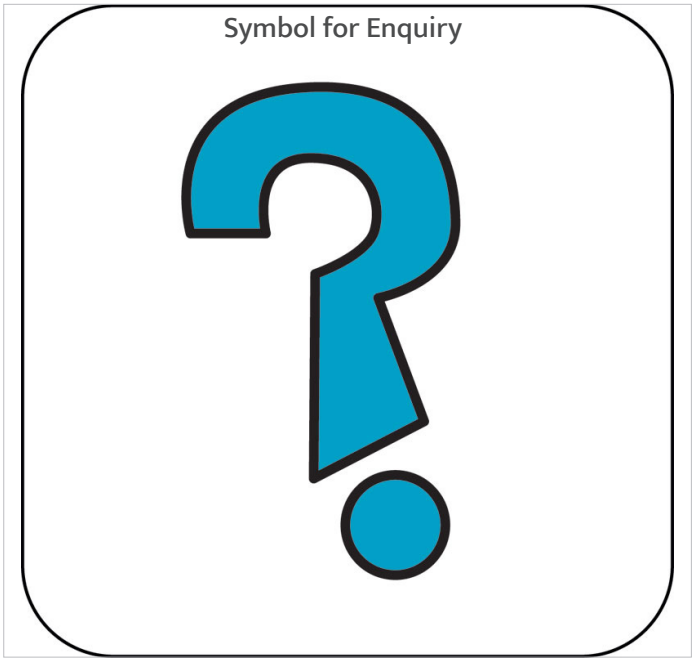

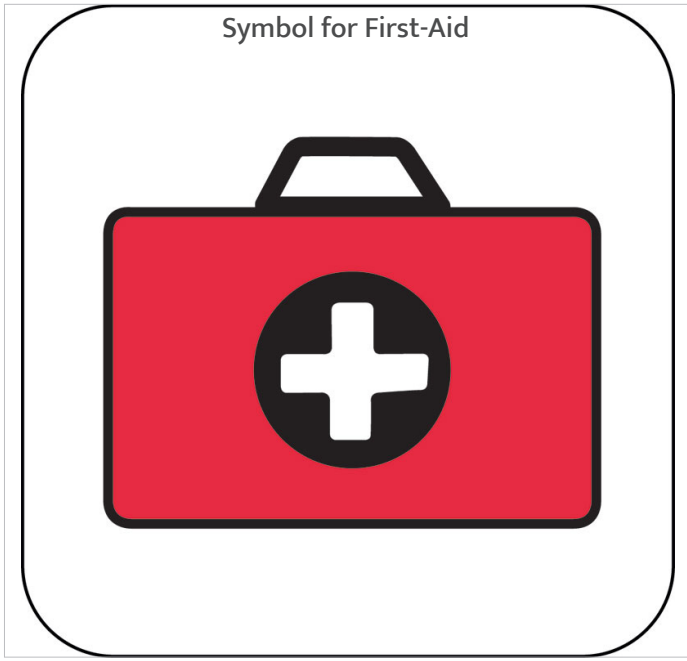

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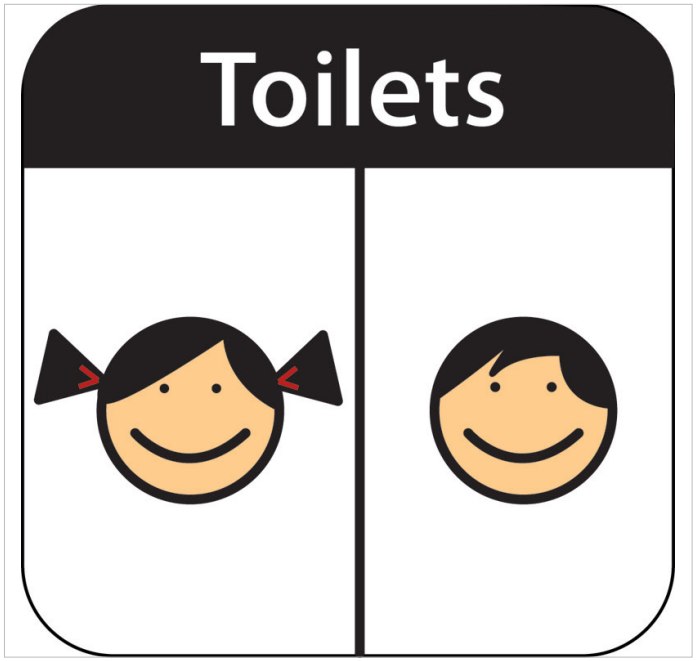

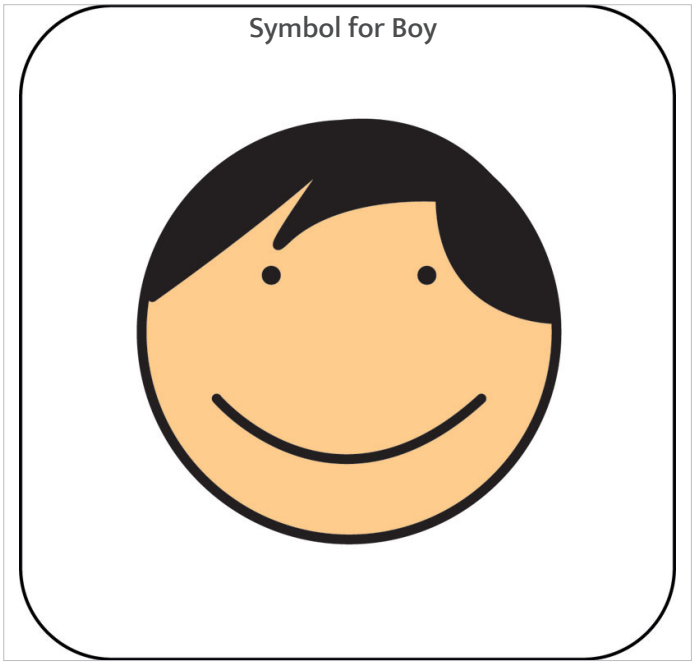

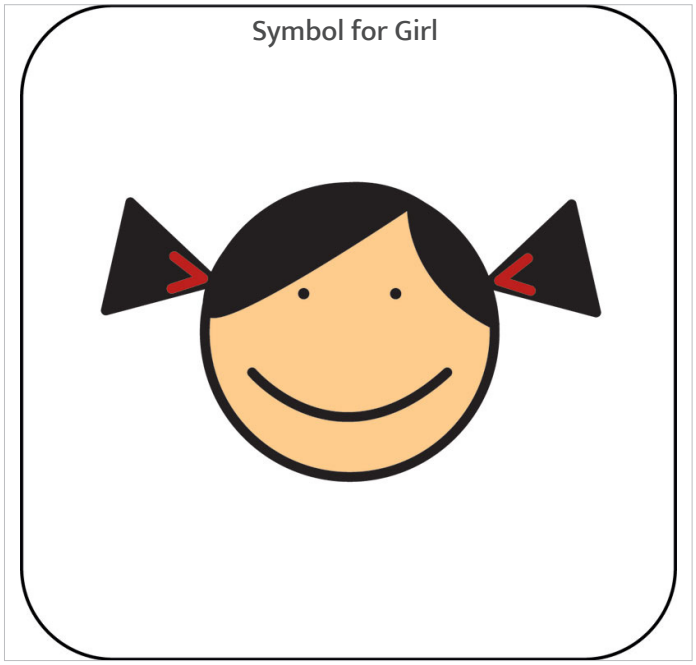

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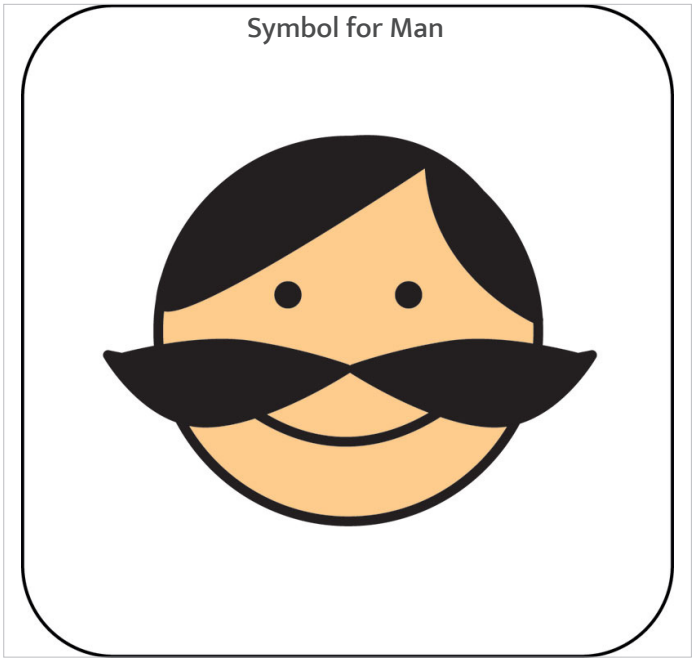

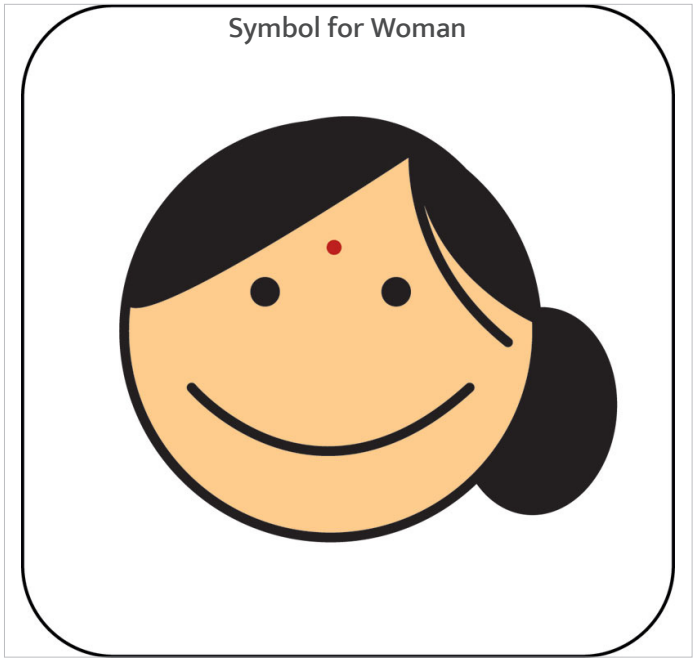

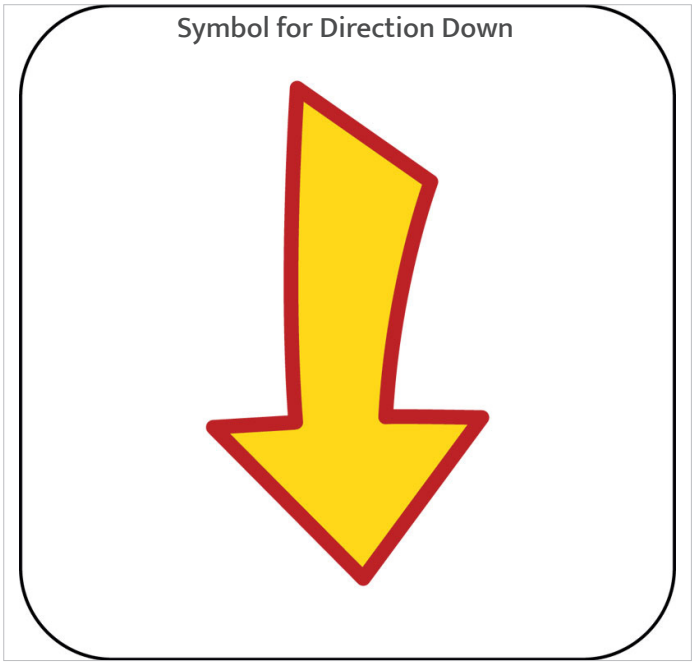

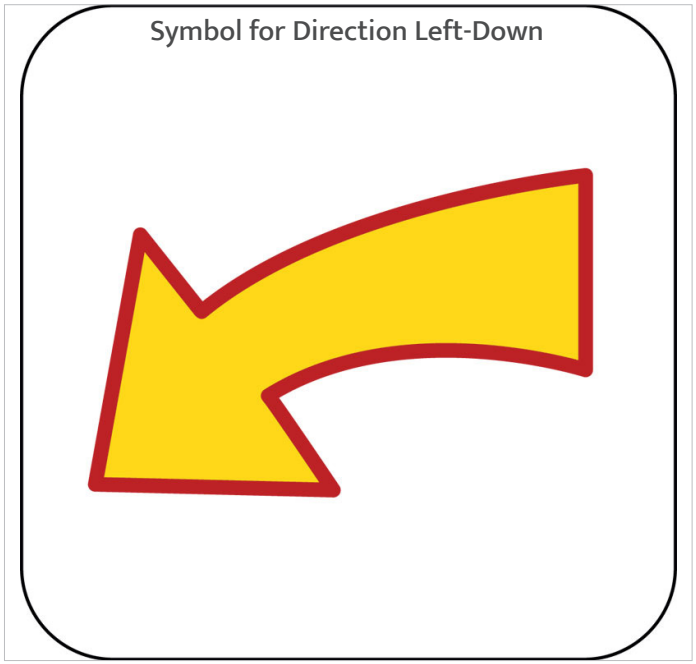

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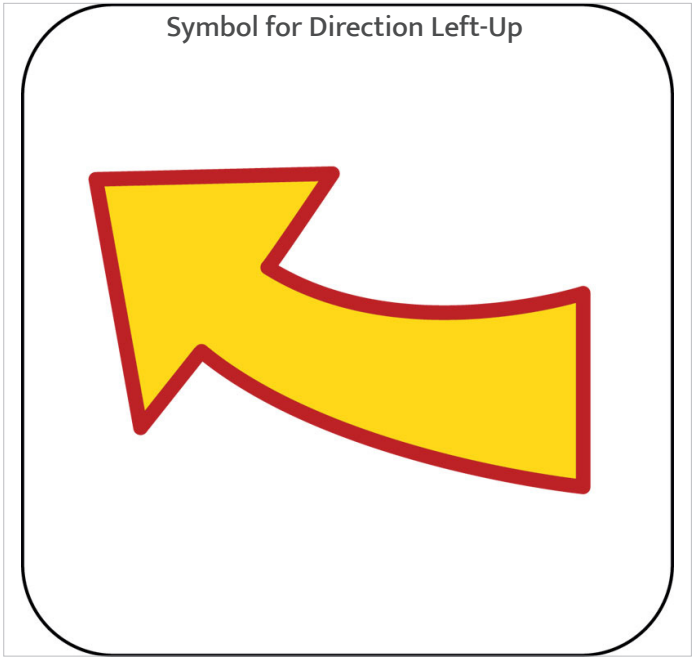

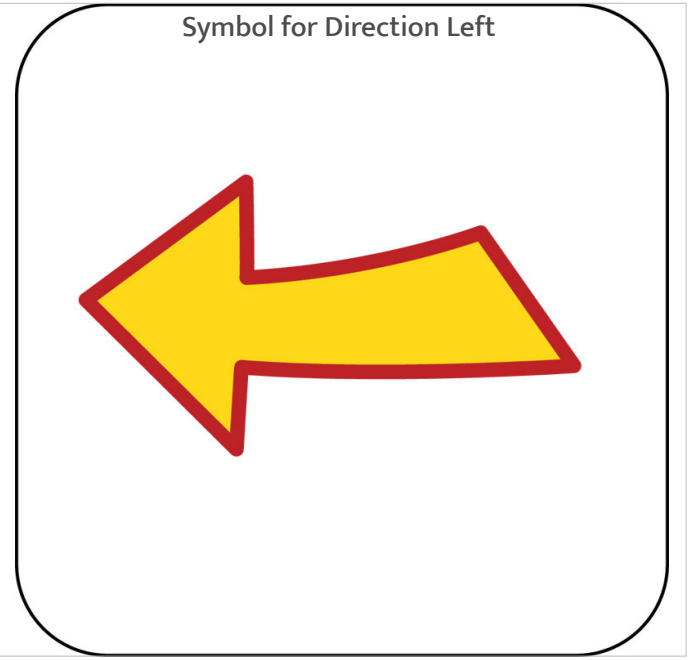

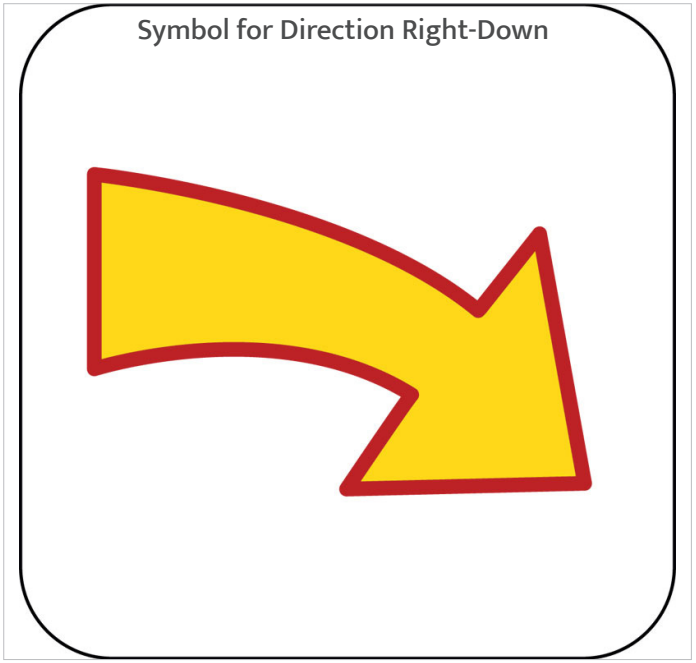

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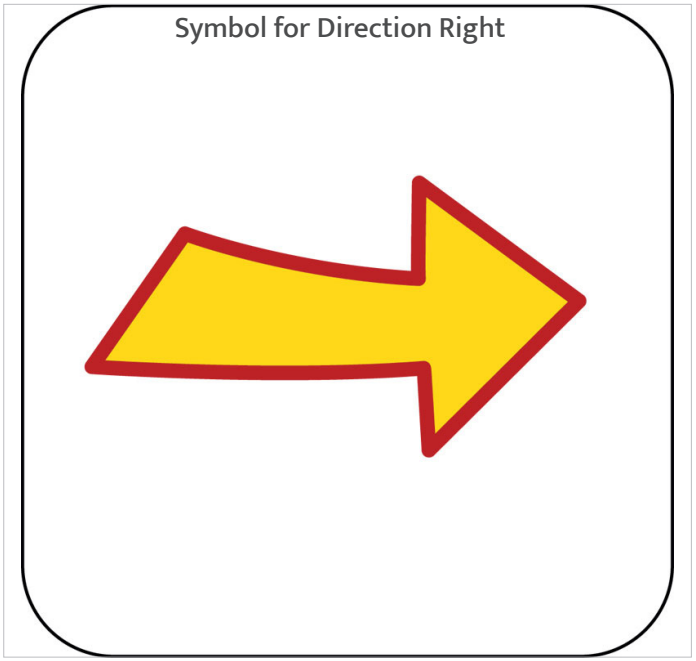

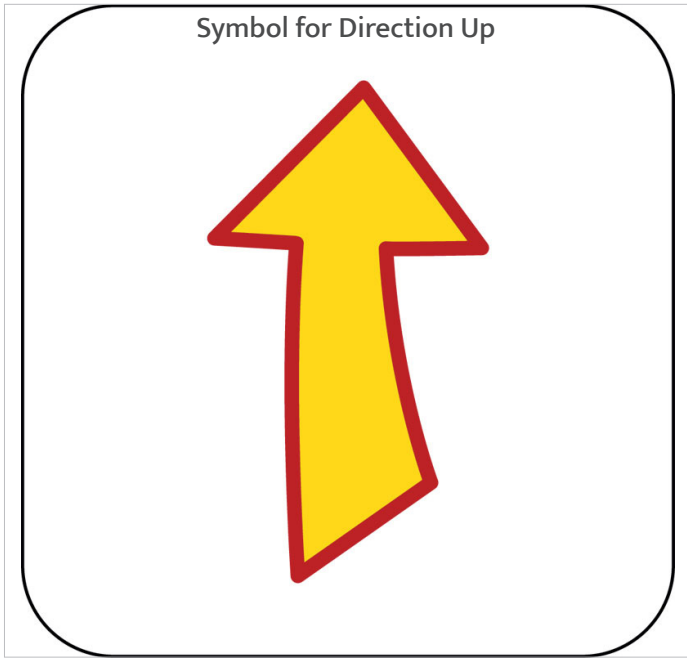

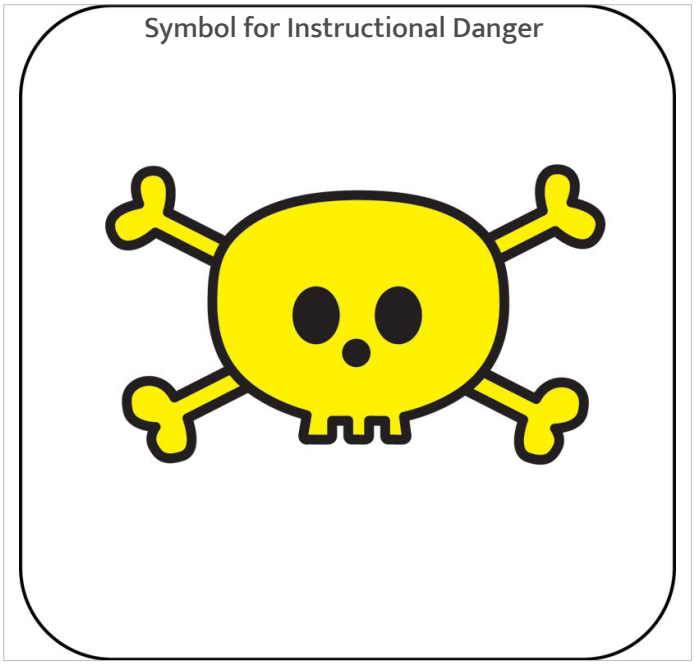

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Symbol for Instructional No-Photography

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Source:
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Generic Signage

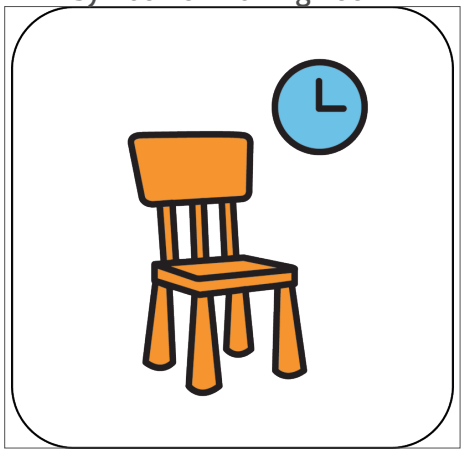
Graphic Symbols of Generic Signage:
_by Anisha Malhotra

A set of graphic symbols designed for children which can be put at multiple places like railway stations, airport, libraries, hospitals, etc. The set includes instructional, directional, general and place identification signage.

Few of them are mentioned below:

Symbol for Auditorium

Symbol for Waiting Room



Symbol for Boys Toilet

Symbol for Drinking-Water

Symbol for First-Aid

Symbol for Girls-Toilet

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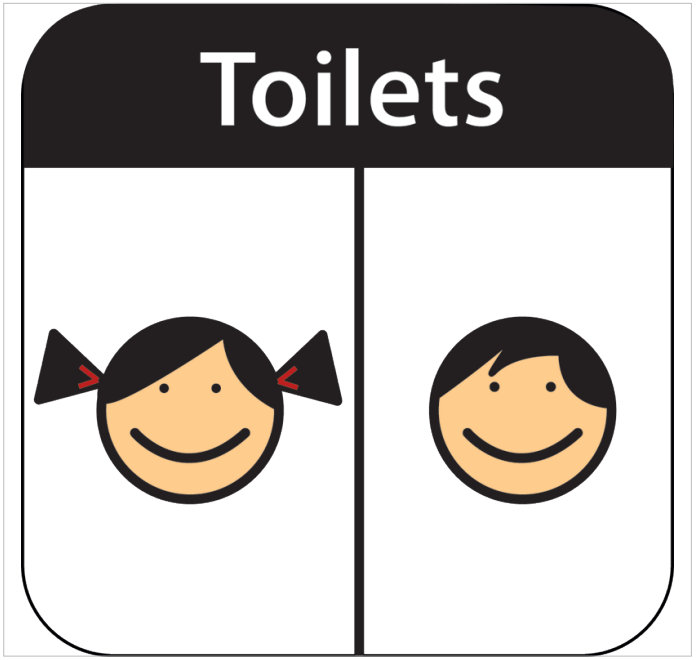

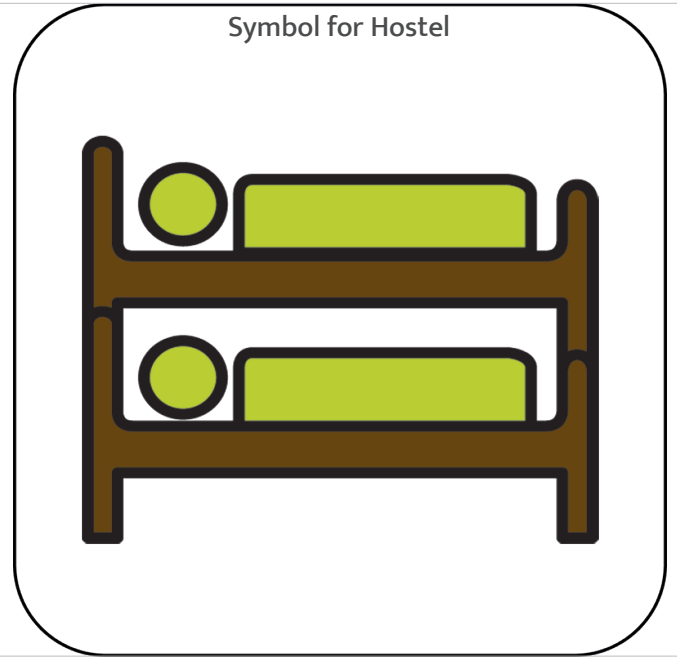

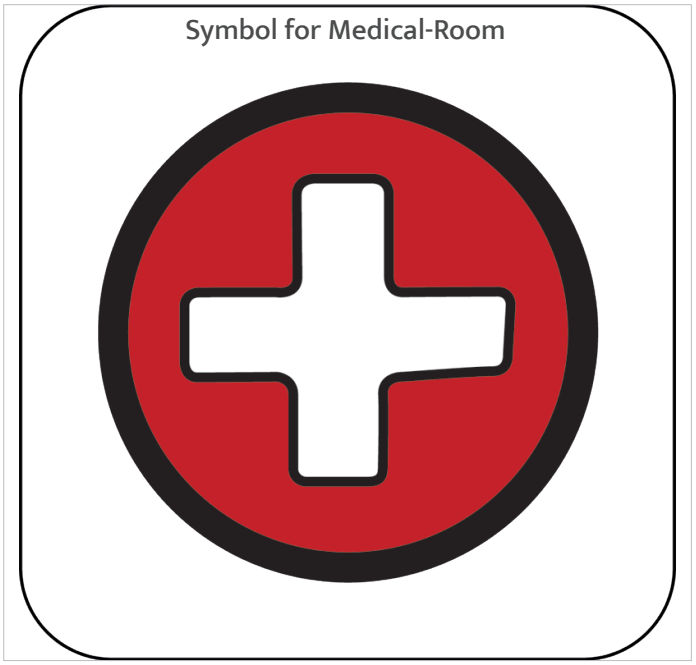

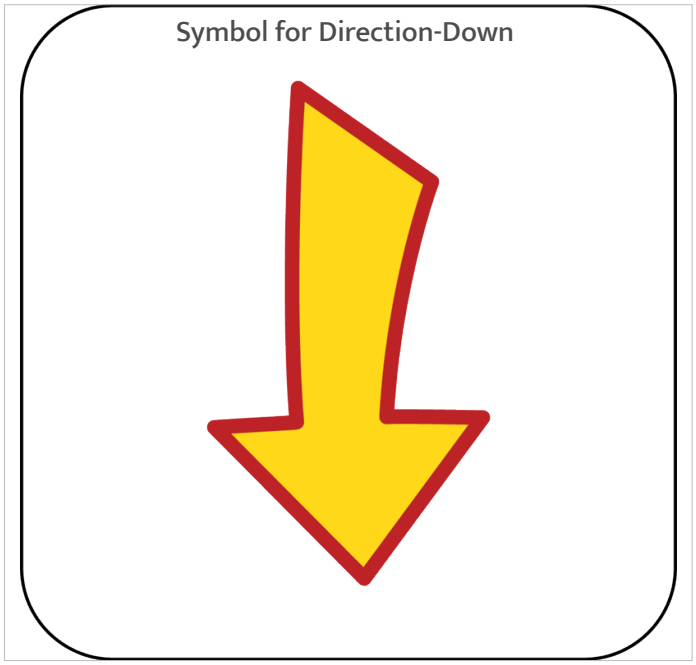

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Source:
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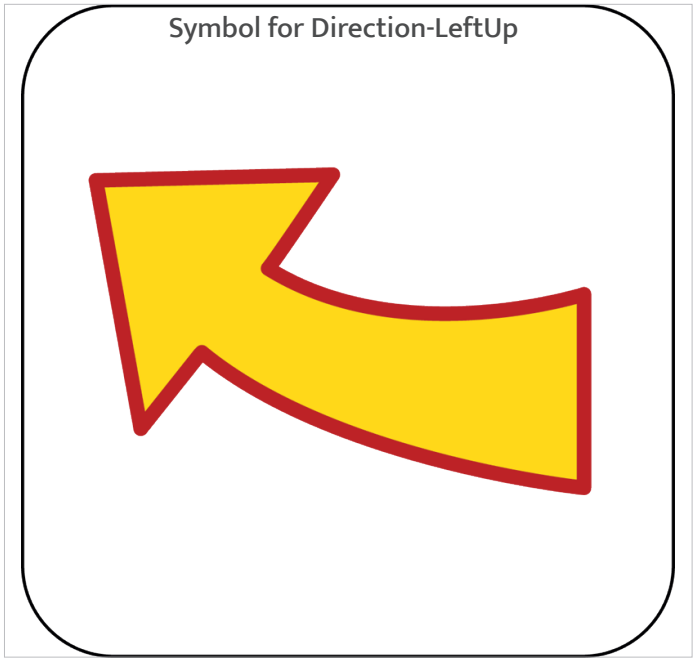

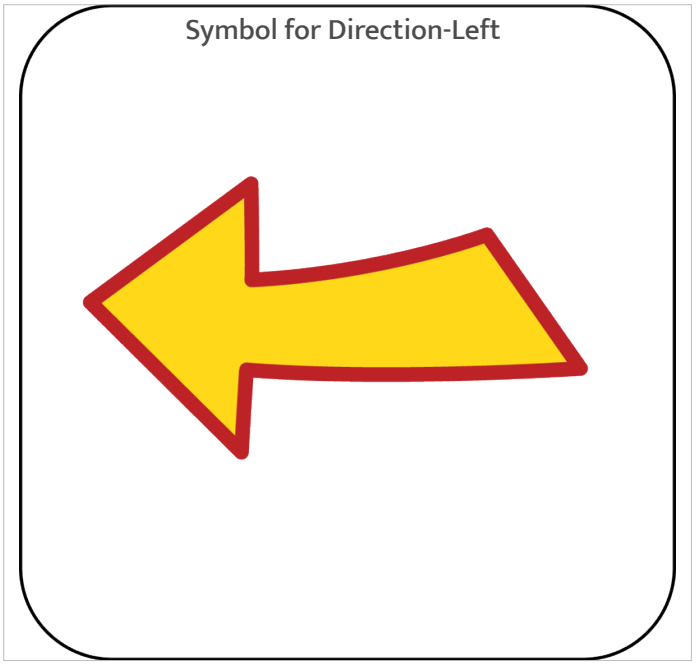

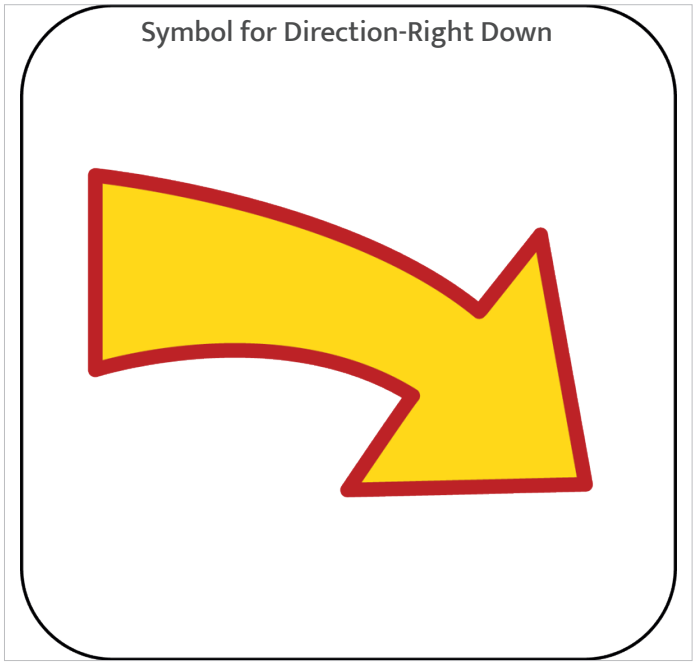

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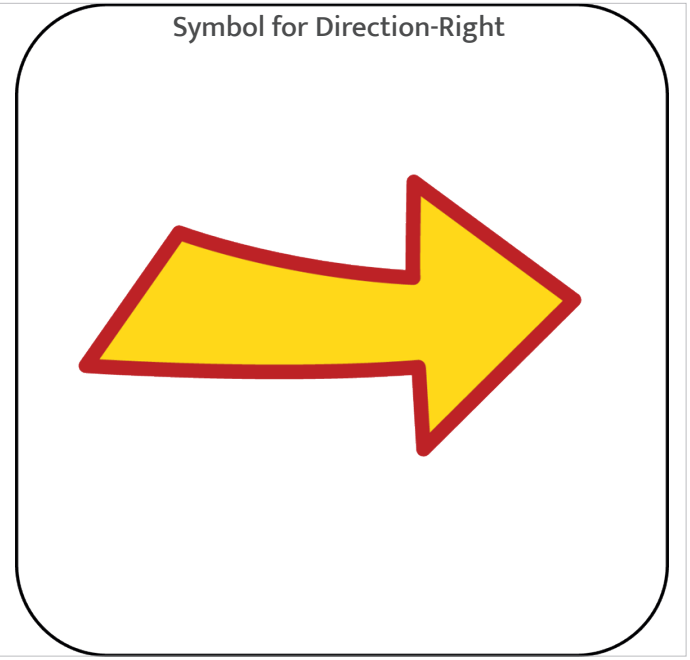

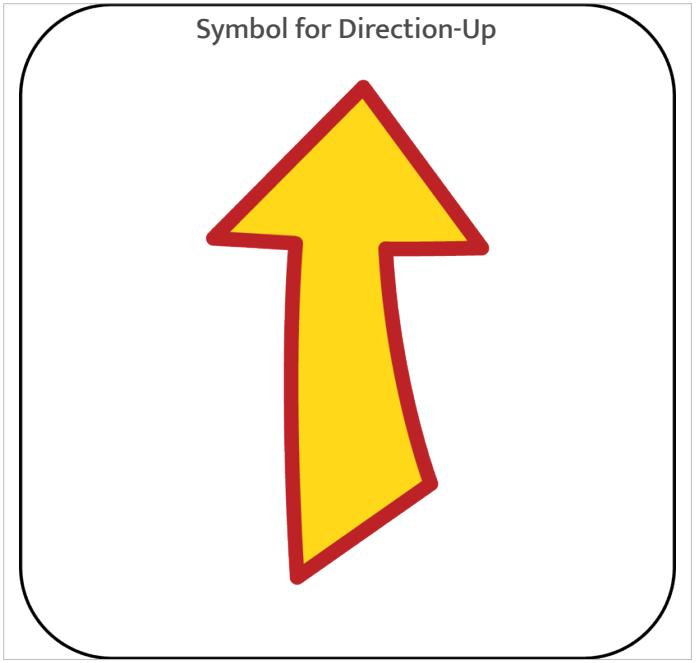

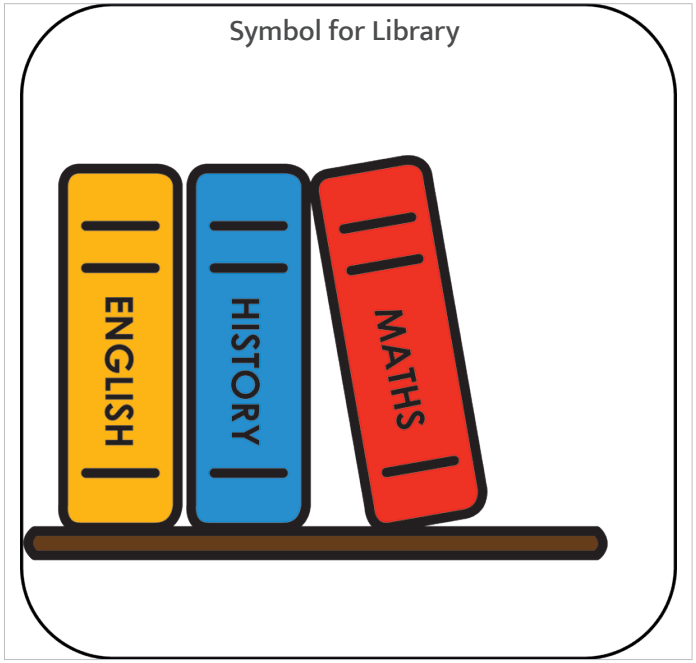

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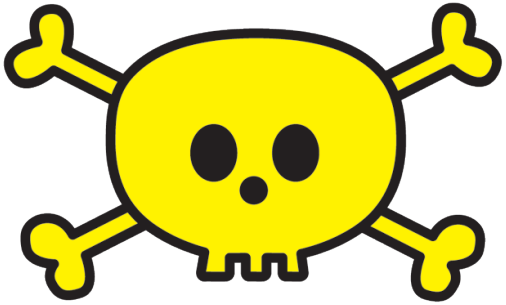
Symbol for Biology-Lab

Symbol for Instructional Danger



Symbol for Instructional No-Noise

Symbol for Chemistry-lab

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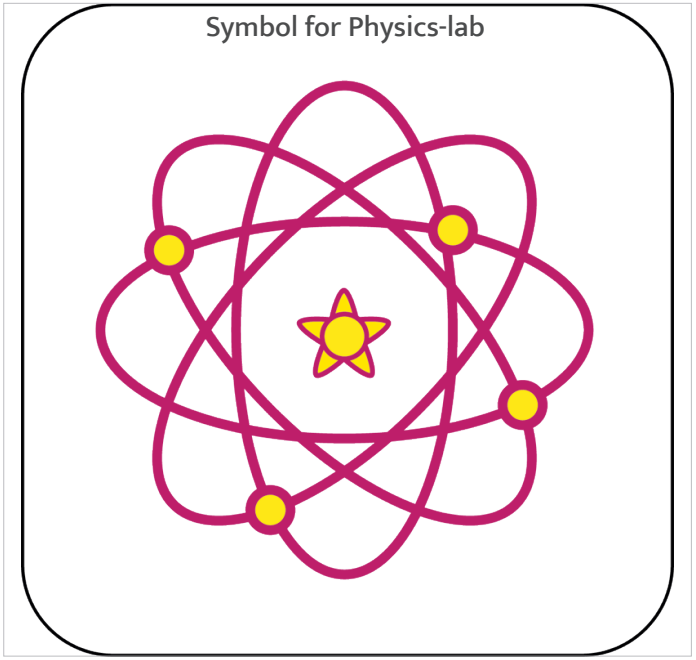

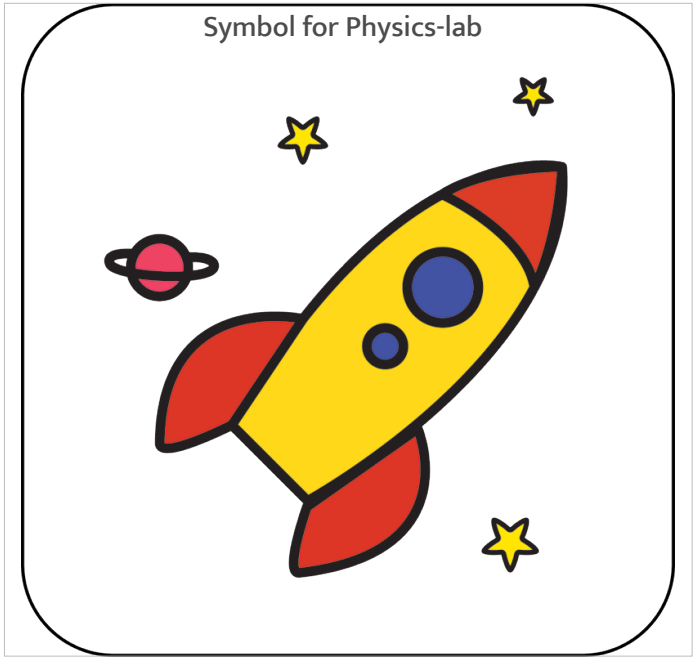

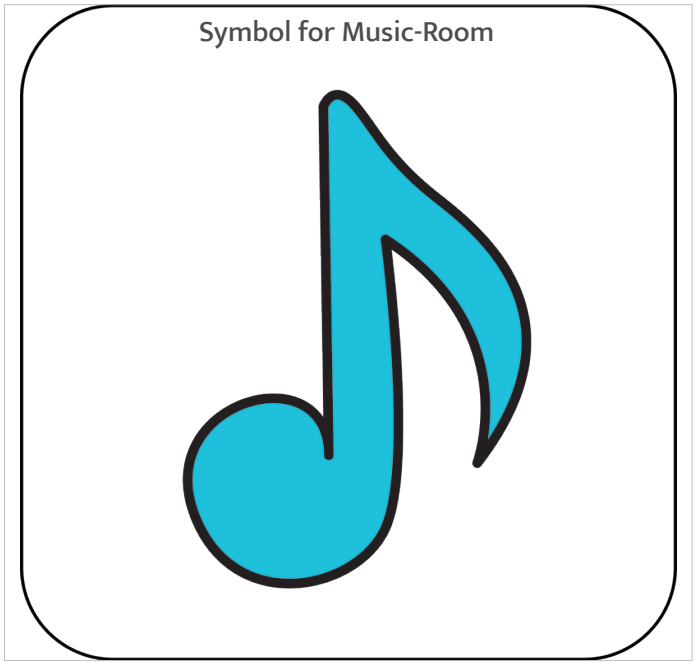

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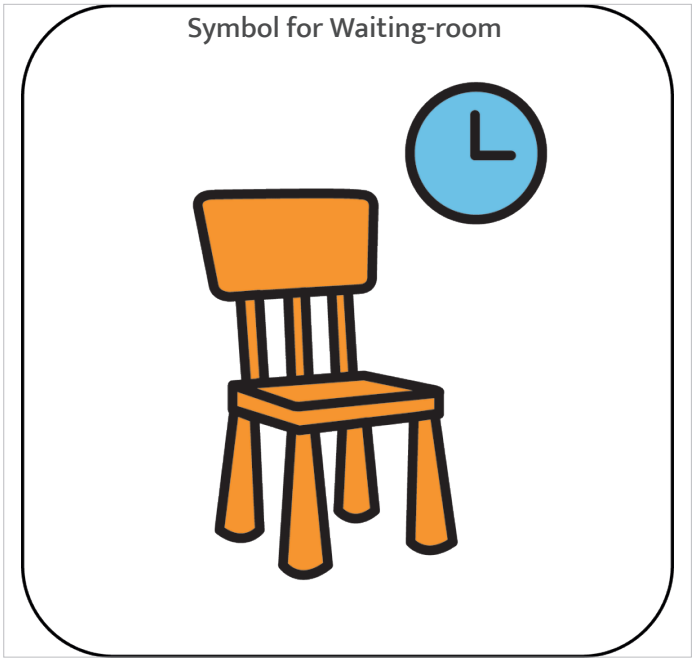

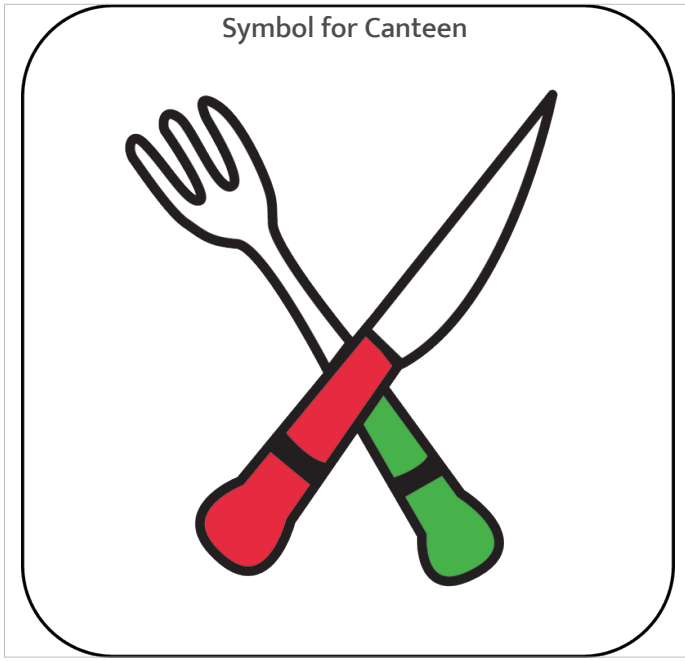

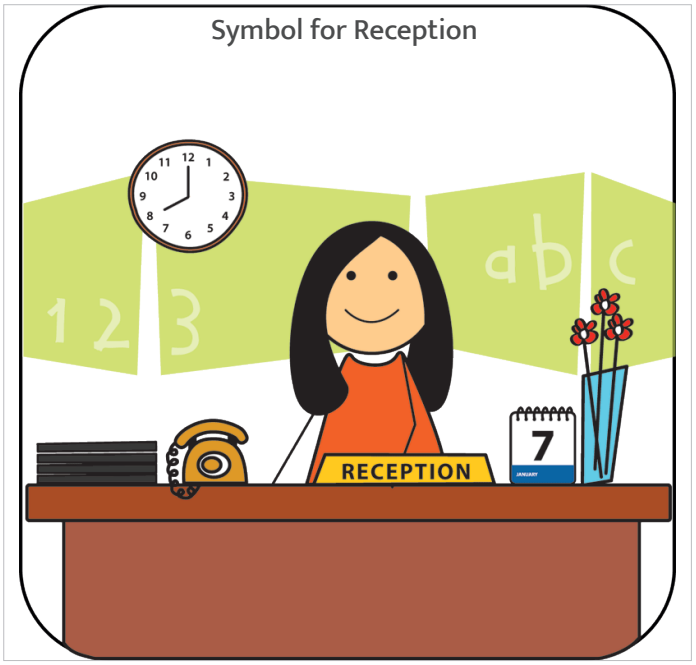

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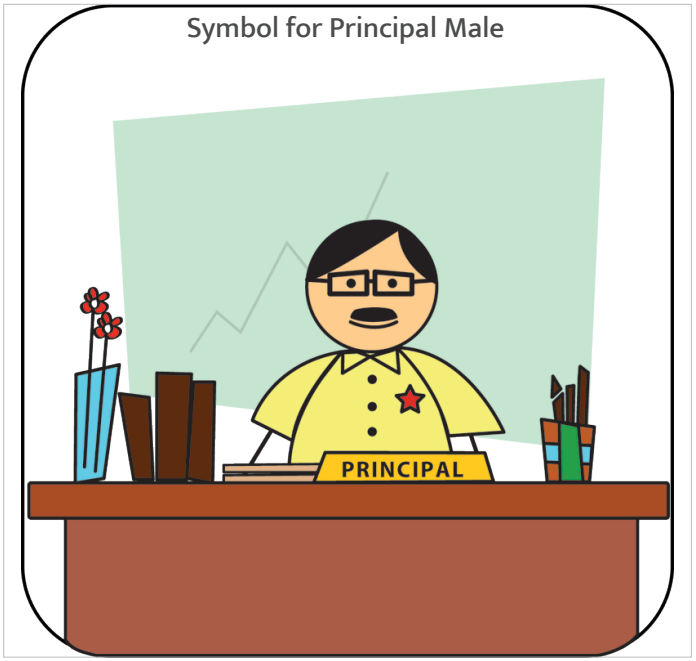

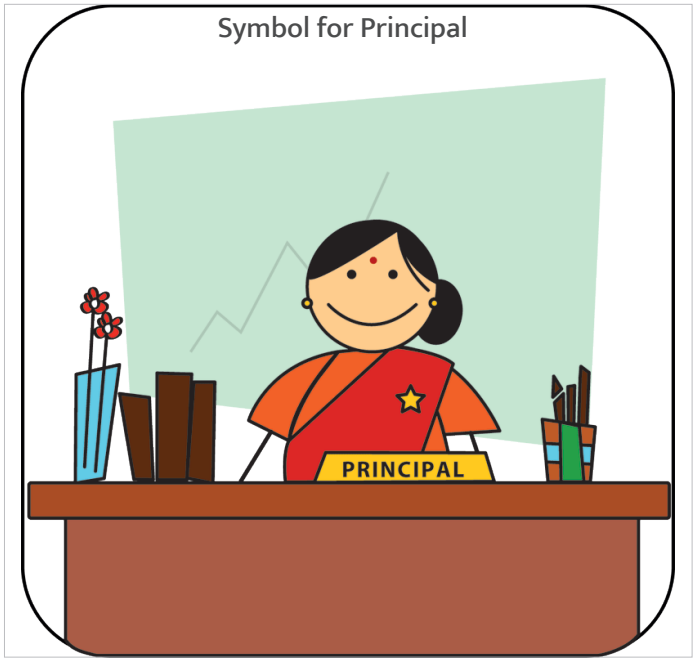

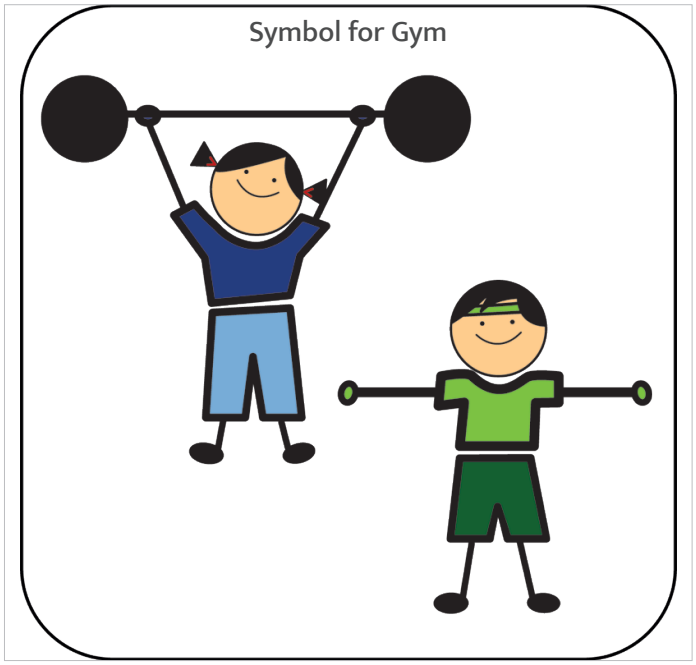

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Symbol for Swimming-Pool

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Technology

Specifications of materials commonly used in Signage systems:
Details of material specifications of signage's for use in different environmental conditions are given in below sections.

References include the proper treatment for materials like FRP, MS, Aluminium, GI Sheets, Plastics, Vinyls, etc.

Introduction


Material Specifications

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Introduction

Specifications of materials commonly used in Signage systems:

- Acrylic Sheets
- Aluminium Composite Material Sheets
- Aluminium Components
- Overall Surface Quality and Finish
- Overlaminate Sheets
- Fibreglass Reinforced Polyester
- Nuts and Bolts
- MS for structure
- MS Sheets for outdoors
- Polycarbonate Sheets
- Rubber Beading
- Vinyl Sheets

For details check: Material Specifications

Please Note:
The specifications and processes mentioned above are a suggestion for proper treatment of materials used in Signage's. They in no way indicate absolute figures and also there may be other ways of achieving the same.

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Material Specifications

Specifications of materials commonly used in Signage Systems.
Material and Process Specifications:

• **Acrylic Sheets:**
Signage's need acrylic sheets that are white in colour and translucent so that this could be used for backlighting. It is suggested to use sheets of thickness 2 to 3mm for this purpose. It is essential that these sheets are UV stabilized - especially if they are used outdoors.

The Impact modified acrylic sheets have increased impact strength with no substantial loss of rigidity, and have better light transmission and weathering performance over the acrylic sheets.

Hot Forming:
The sheets can also be Vacuum formed into different forms using a mould.

Specifications:
Tensile strength: 62 MPa
Water absorption: 0.36 %
Light transmission: ca 92%

Suggested manufacturer: ICI Acrylics

• Aluminium Composite Material Sheets:
Aluminum Composite Material has two coil coated aluminum sheets on either side bonded to a thermoplastic inner material. This is available in a wide variety of finishes and colors.

The main advantages of using this material for signage's is that you can get metallic finishes, its durable and maintenance free and easy to fabricate.

Specifications:
Suggested manufacturers: Di Bond and Aluco Bond

• Aluminium Components:
Fabrication:
- Cleaned and straightened
- Cut to size on shearing m/c

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- Bent using guides and fixtures on bending press (only)
- All screw holes drilled

Treatment: Cleaned

Finish:
- Stoving painting withe poxy based paints (baking in oven). or
- Powder coating using epoxy based powders.

• Overall Surface Quality and Finish :

Surface Quality and Finish for all signage's:
To maintain the quality of the signage the following points may be considered:

- No screws, nuts, bolts, welding marks, cutting marks, edge of the MS sections should be prominently visible from the outside. All details should be worked out from the inside.

- It's a good option to provide grooves to have the fixing details embedded so that they are not prominently visible from outside. Place visible hinges, screws inside these grooves. If you do not want the grooves to be visible a beading could be fixed to cover it.

- Do not use putting and patching up to cover up misalignments in the panel sizes. Make use of jigs, fixtures and guides while fabricating the parts so that all of them match and align properly.

- Do not use hand painting to finish the surface. The paint should be sprayed in the factory in proper painting booths and not at site. This way you can maintain the required finish (glossy, matt, shiny or dead matt) constantly all over the signage.

- Do not directly paint the MS components - that are prone to rusting. Mild Steel (MS) parts have to be properly treated according to procedure and then only the final coat of finish should be applied.

• Over-laminate Sheets:
Vinyl signage's can be protected with a transparent and clear, non-reflective, matt UV guard Cast over-laminate film. This will increase the life of the Vinyl stickers as well as offer additional protection from the weather.

Specifications:
- Construction: Polyvinyl Fluoride

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- Thickness: 1.9 mil (with adhesive)
- Adhesive thickness: 0.9-1mil
- PVF thickness: 1mil
- Adhesive: PSA acrylic
- Film Cover: Clear
- Adhesive colour: Clear
- Liner: Poly-coated paper
- Dimension Stability: .5%
- Suggested manufacturer:
- Tedlar 7001 manufactured by DuPont,
- Gerber UVGuard by Arrow coated Products,
- 8910 by 3M India,
- DOL 1000 by Avery Dennison.

• Fibreglass Reinforced Polyester:
Glass Reinforced Polyester (GRP) is commonly known as fibreglass. Hand laid process is the simplest form.

In this process chopped glass fibre strand or mat is impregnated with Polyester resin. The application of several layers results in a laminate the thickness of which can be controlled (common thickness between 2mm-3mm). Hand lay process is carried out at room temperature and allows the use of relatively inexpensive mould made out of wood, plaster or GRP. This process is done on the negative mould so that a positive can be taken out.

Process:
- A release agent (wax or polyvinyl alcohol) is applied to the clean mould surface to prevent the laminate from sticking.

- Two coats of UV stabilized gel coat with pigment and along with catalyst and accelerator are applied to give the part its colour and to achieve the desired surface finish. This protective layer thickness should be 0.3mm ± 10% and it is normally given a drying time of between 15 to 30 mins. Depending on the room temperature, humidity and other conditions.

- A coat of UV stabilized Isophthalic Polyester resin along with pigments is applied. One layer of surfacing mat is applied wherever the surface has curves or bends. Once it has gelled to the gel coat another layer of UV stabilized Isophthalic Polyester resin is applied.

- Two layers of fibre glass chopped strand mat in criss cross directions are laid in position. Each mat layer is laid in different directions to maximize strength. A brush or roller is used to remove air bubbles and to make sure

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the mats are saturated in resin. A drying time of between 4-6 hours is given to this. Use of fillers in fabricating gel coat/laminates is strictly disallowed. Similarly, no additional monomer such as styrene should be added in the resin.

- A coat of UV stabilized Isophthalic Polyester resin is applied and it is left for curing and the surplus fibre and resin at the edges are trimmed away. Curing time can be between 8 to 20 hours.

- After release from the mould, there should not be any blistering or cracking on the surface.

- The finished FRP laminate should have 27%-30% glass loading by weight. This will usually correspond to 1 Kg fibre glass mat: 2Kg resin. Approved Polyurethene painting system on the final surface is also to be applied.

Materials and quantities:
- Fibreglass chopped strand mat (min. density 450gm per sq m) and surfacing mat (30 gsm) are to be used.

- Only UV stabilized Isophthalic polyester resin (UV stabilizer content 0.6%by weight) should be used.

- Gel coat is UV stabilized Isophthalic resin with catalyst methyl Ethyl ketone Peroxide (min 3% sol mixed in the ratio of 2% by weight) with accelerator Cobalt octate(min 3% sol mixed in the ratio of 2% by weight). Pigment (mixing ratio 20% by weight) also needs to be added.

- Manufacturers UV Stabilized Isophthalic Polyester Resin, catalyst Methyl Ethyl Ketone Peroxide, accelerator Cobalt Octoate:
  . M/s Bakelite Hylam Pvt. Ltd.,
  . M/s Network Polymers Pvt. Ltd.,
  . M/s Sunteck Fibre Pvt. Ltd.

- Surfacing mat is in nominal thickness of 0.05cm supplied usually in 1m width rolls of 250m.
  Manufacturers:
  . M/s FGP Ltd.,
  . M/s Owens Corning
  . M/s UP Twiga

- Fibreglass chopped strand mat of density 450 gsm. Emulsion bonded:
  . M/s FGP(450E), M/s Owens Corning(M705), M/s UP Twiga
  . Powder bonded: M/s FGP(450P), M/s Owens Corning(M723), M/s UP Twiga.

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- Pigments for FRP: M/s Kerox Ltd., Bangalore.

Warning:
If FRP is not properly UV stabilized, then it will develop cracks after a period of 2-3 years.

• Nuts and Bolts:
All Screws, nuts and bolts that are exposed to outside preferably should be Stainless Steel Fasteners that are Cold Forged. Hexagonal Bolts and Nuts (IS 1364-1983) can be used.

Process:
The nut should be welded to the structure and the bolt inserted from outside.

Suggested Party: M/s Kundan Industries Ltd

Note:
Use of hot dip zinc galvanized MS nuts and bolts are recommended for fixing the structure on to the concrete.

• MS used for Structure:
Fabrication:
- Cleaned and Straightened
- Welded and or bolted together as per relevant drawing and specification
- All screw holes tapped

Treatment:
- Sand Blasting or wire brushing
- Either cold dip phosphating or should be Zinc Galvanized as per IS: 2629-1985 or clean with Metal-prep -25
- Primer Coating (first coat)

Final Finish:
Primer Coated. (Second Coat)

• Mild Steel Components:
MS if used on the outside surface:

Fabrication:
- Cleaned and Straightened
- Cut to size on shearing m/c

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- Bent using guides and fixtures on bending press (only)
- All screw holes drilled

Treatment:
- Alkaline degreasing
- Water bath
- HCL acid rerusting
- Water bath
- Water bath
- Phosphating
- Water bath
- Ceiling for crystallization

Finish:
IOC beige colour
- Stoving painting with epoxy based paints (baking in oven) or
- Powder coating using epoxy based powders

Warning:
If the above treatment is not done properly then the MS components will start rusting in humid climates after a period of one year.

• Polycarbonate Sheets:
Polycarbonate is a polymer that is produced as a resin and marketed by GE Plastics under the trade name 'Lexan'. Lexon polycarbonate is available in sheet form. The material is very strong and has tremendous impact resistance and also acts as fire retardant.

Signage's need polycarbonate sheets, which are white in colour and translucent so that this could be used for backlighting. It is suggested to use sheets of thickness 3mm for this purpose. It is essential that these sheets are UV stabilized - especially if they are used outdoors.

Cold Forming:
The sheets can be cold formed and bent using the normal sheet bending equipment. Experience in this is essential; otherwise the sheets will get bent in odd directions.

Hot Forming:
The sheets can also be Vacuum formed into different forms using a mould. Experience in this is essential, and it is

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not as easy as vacuum forming acrylic sheets.

Specifications:
- Lexan S - 305 sheets,
- suggested manufacturer: GE Plastics
- Thickness: 2mm, 3mm, 5mm
- UV Stabilized
- Transparency: 32-35%

• Rubber Beading:
Rubber Beading is essential for fixing the polycarbonate sheet to the FRP cladding, to prevent water leakages, etc. made of UV stabilized EPDM rubber with min. 3 years outdoors life should have only carbon constituents with no mineral filling.

Specifications:
- Hardness (shore A): 70 + or - 5
- Specific Gravity: 1.2
- Tensile strength: 90-100 kg per sq cm
- Elongation min: 300%
- Ash content: 10% max
- Suggested Party: M/s Lion Rubber Industries

• Vinyl Sheets:
Self adhesive vinyls are sheets of pre-coloured adhesive vinyl's for pasting on top of other materials like FRP, Polycarbonate etc. The pre-coloured sheets come in many of the pantone colour ranges.

Text and graphics on pre coloured vinyl sheets can be cut using a drafting cutter connected to a computer that can generate these fonts. The text and graphics can also be screen printed using UV stabilized inks on a clear transparent vinyl.

Vinyl's and printing inks are made by many suppliers and the prices can vary drastically depending on their quality. It is essential to have the following specifications so that quality can be maintained.

Specifications for Vinyl:
- Film: Premium quality Cast Vinyl film
- Film thickness: 65 - 70 microns without adhesive and 100 microns with adhesive
- Life: make sure it comes with a guarantee of colour stability outdoors for atleast 4 years

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Suggested manufacturers:
Avery Dennison or 3M-India

Specifications for the printing inks:
UV stabilized printing inks with an outdoor life of atleast 4 years

suggested manufacturer:
3M-India
Sericol India Pvt. Ltd.

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Contact Details

This documentation for the course was done by Professor Ravi Poovaiah, faculty at IDC, IIT Bombay.

You can get in touch with Professor Bibhudutta Baral at ravi[at]iitb.ac.in

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