Graphical Coordinate Systems

A coordinate system is needed to input, store and display model geometry and graphics. Four different types of coordinate systems are used in a CAD system at different stages of geometric modelling and for different tasks.

?? Model (or World, Database) Coordinate System (MCS)

- a) MCS the reference space of the model with respect to which all of the geometrical data is stored.
- b) It is a Cartesian system which forms the default coordinate system used by a software system.



??Working Coordinate System (WCS)

- a) An auxiliary coordinate system for conveniently entering graphical data into a CAD system.
- b) WCS is normally attached to the modeled object (local coordinate system of a part), or determined by the data acquisition method (cylindrical coordinate system for a single-mirror range finder).

Geometric data in WCS has to be transferred into the MCS for storage and model construction.

?? Screen Coordinate System (SCS)

- a) A 2-D device dependent coordinate system whose origin is usually located at the lower left corner of the graphics display.
- b) The coordinate range of SCS can be either the resolution of the screen, or simply a scale from 0 to 1.
- c) SCS is on the projection plane where projections of the modeled object are displayed.



??Viewing Coordinate System (VCS)

A 3-D Cartesian coordinate system (right hand of left hand) in which a projection of the modeled object is formed. VSC will be discussed in detail under Perspective/Parallel Projections.

Relations between Different Coordinate Systems:

