



UNIVERSITY OF BASRAH



COMPUTER ENGINEERING DEPARTMENT

DRAWING BY AUTOCAD

FIRST CLASS

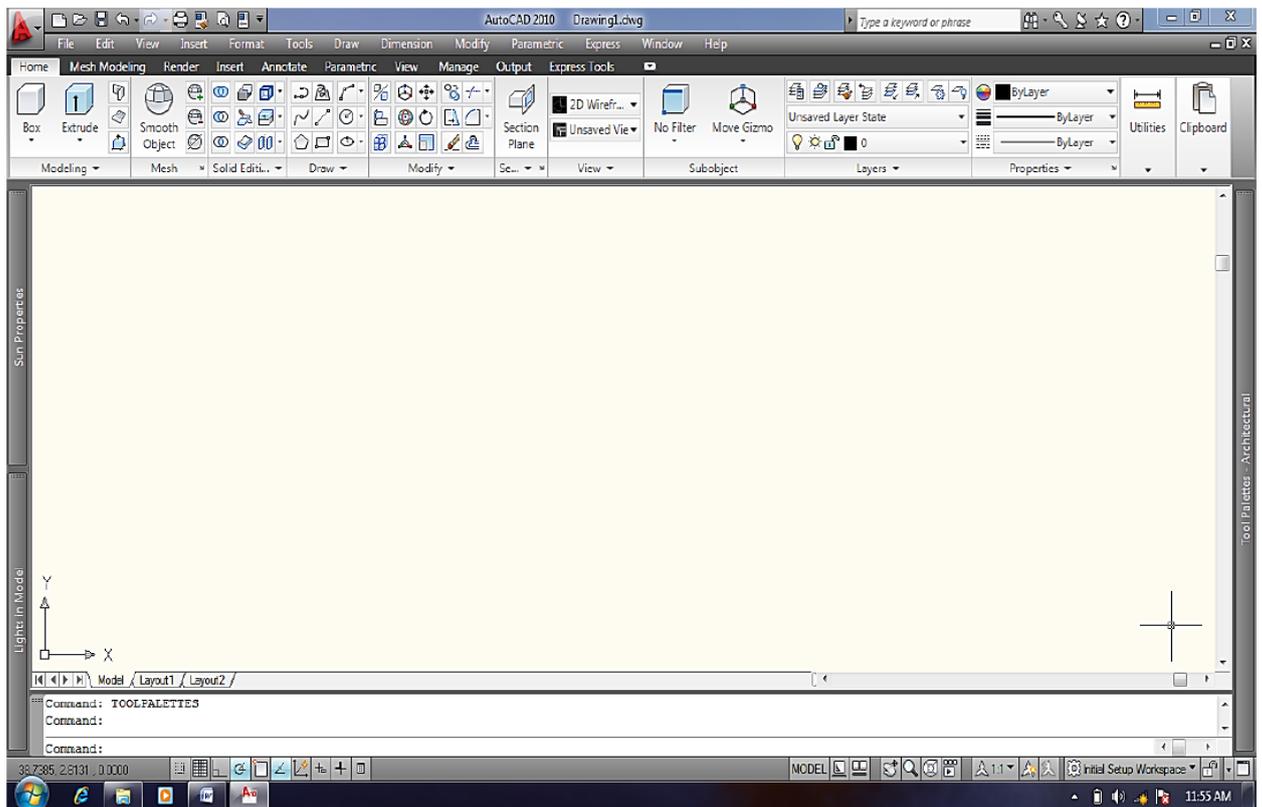


Introduction

AutoCAD provides tools for producing, viewing, and editing 2-dimensional drawings and 3-dimensional models.

The AutoCAD screen is divided into six distinct areas:

- Title bar
- Menu bar
- Toolbars
- Document window or drawing area
- Command window
- Status bar



The States Bar

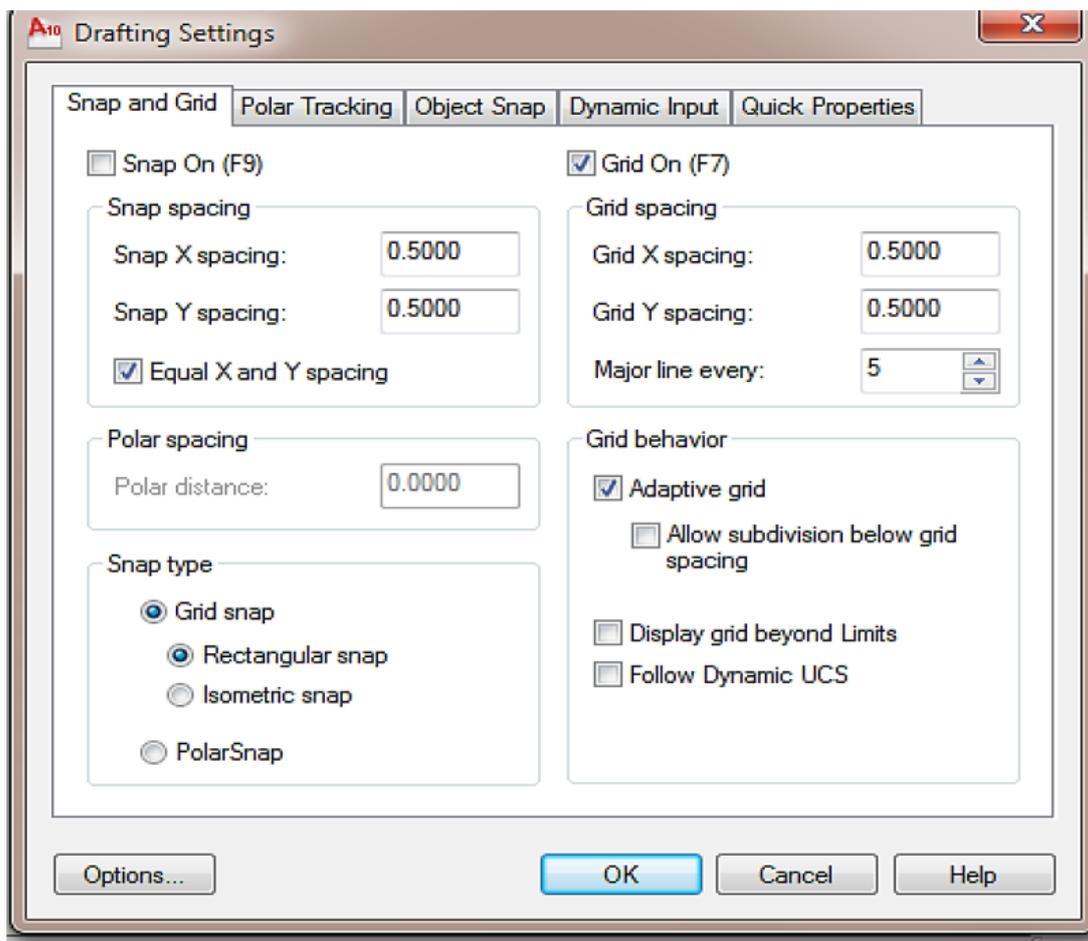
The Status Bar is the area below the command line that shows coordinates, modes, and the current time. To activate SNAP, GRID, ORTHO, OSNAP, OTRACK, POLAR, DYN, LWT and MODEL you must double-click on the mode to change.



a. Alignment Grid

The grid command allows you to set an alignment grid of dots of any desired spacing, making it easier to visualize distances and drawing size. you can turn the grid on and off by pick the grid button located in the status bar or (by pressing Ctrl + g or the F7 function key). The drafting setting dialog box permits you to review and make changes to the grid settings:

- **Menu bar** → **Tools** → **drafting setting**



b. Snap grid

The snap grid is similar to the visual grid, but it is an invisible one. You cannot see the snap feature, but you can see the effects of it as you move the crosshairs. The crosshairs jump from point to point as you move the

pointing device. This allows you to layout drawings quickly, yet you have the freedom to toggle snap off at any time.

Pick the snap button in the status bar to turn on the snap grid , (or pressing Ctrl + b or the F9 function key).

c. The Ortho Mode

Ortho short for orthogonal, allows you to draw horizontal or vertical lines quickly and easily.

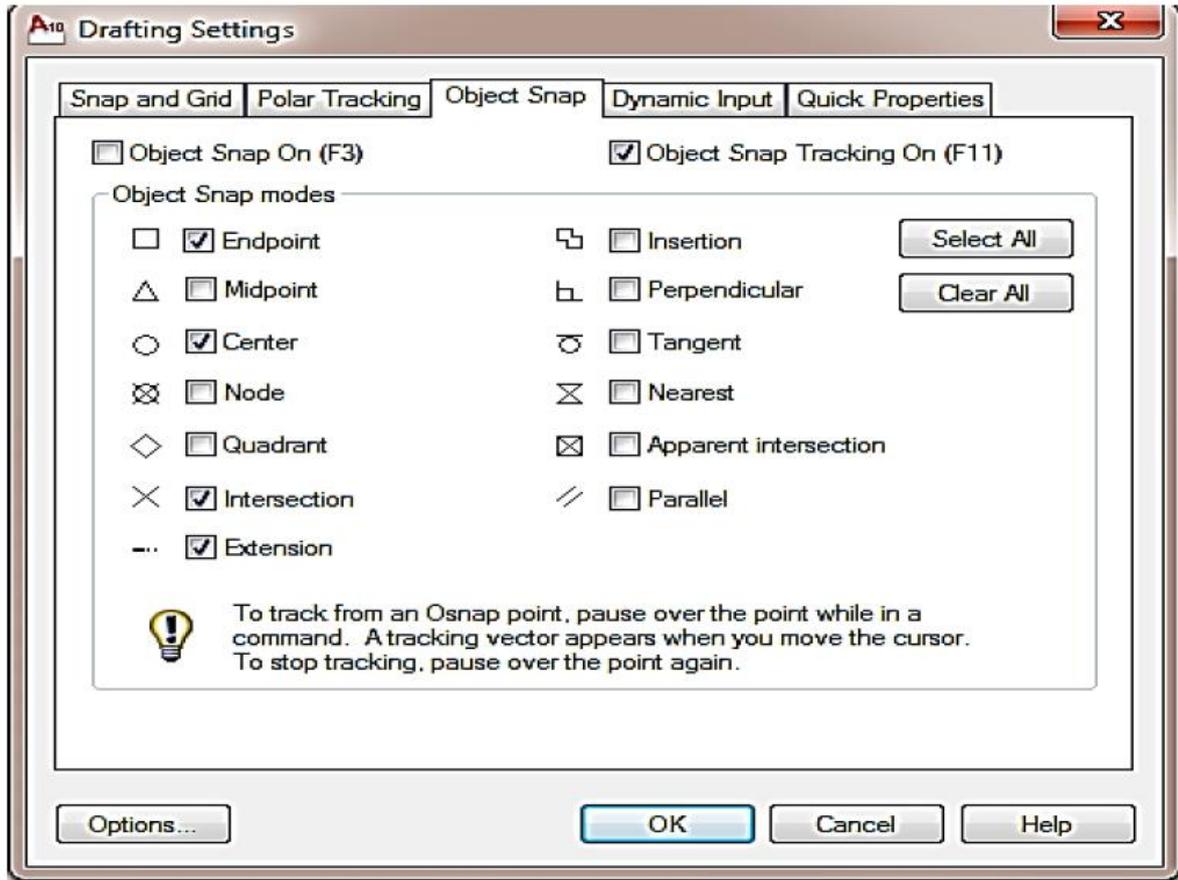
Ortho is on when the Ortho button  on the status bar is depressed. You can toggle Ortho on and off by clicking the Ortho button. (or press F8 function key).

d. Polar

Polar makes it easy to draw lines at regular angular increments, such as 30, 45, or 90 degree. Using the F10 key or polar button toggles polar tracking on or off.

e. Object Snap (OSnap)

AutoCAD provides a capability called "object snap", or OSNAP for short, that enables you to "snap" to existing object end points, midpoints, centers , intersections, etc. available object snap mode are illustrated bellow:



g. DYN

DYN, or dynamic input, is a feature that helps you visualize and specify coordinate values and angular values when drawing lines, arcs, circles, etc. DYN may display absolute Cartesian coordinates (X and Y values) or relative polar coordinates (distance and angle) depending on the current command prompt and the setting you prefer. Pick the DYN button  in the status bar to turn on the dynamic, (or press the F12 function key).

Drawing Limits

Limits used to determine the limits of board. Setting the Drawing Limits controls the extents of the display of the grid. It also serves as a visual reference that marks the working area. It can also be used to prevent construction outside the grid limits and as a plot option that defines an area to be plotted/printed. The command is access by:

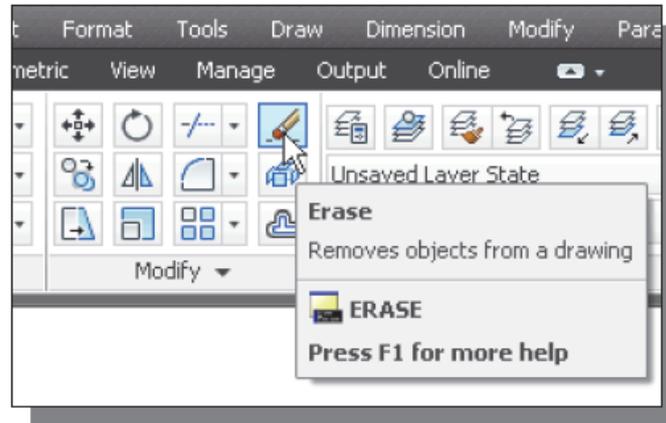
- *Menu bar* ⇒ *format* ⇒ *Drawing limits*

Specify lower left corner or [on / off] <0.0000, 0.0000>:

Specify upper right corner or [on / off] <200,200>:

The ERASE Command

One of the advantages of using a CAD system is the ability to remove entities without leaving any marks. Pick Erase in the Modify toolbar. The message “Select objects” is displayed in the command prompt area and AutoCAD waits us to select the objects to erase.



1.5. Methods of Zooming

Zoom: zooming does not change the size of the drawing objects, zooming change only the display of objects.

- ✚ **Real-time:** Real time is the default option of zoom. If you type zoom, just press enter to activate the real-time option. You can type Rtzoom to invoke this option directly.
- ✚ **Window :** Zoom with a window is to draw a rectangular window around the desired viewing area. The windowed area is magnified to fill the screen.
- ✚ **All :** AutoCAD zooms the drawing to its original size.
- ✚ **Extents:** AutoCAD zooms the drawing as large as possible while still showing the entire drawing on the screen.
- ✚ **Scale:** this option allows to enter a scale factor for the desired display.
- ✚ **In:** zoom in magnifies the current display by a factor of 2X.
- ✚ **Out:** zoom out makes the current display smaller by a factor of 0.5X.
- ✚ **Center:** First specify a location as the center of the zoomed area. Then specify either a magnification factor, a height value for the resulting display, or pick two points forming a vertical to indicate the height for the resulting display.
- ✚ **Previous:** Selecting this option automatically changes to the previous display.

Pan: Pan means to move the display area slightly without changing the size of current view window.