LECTURE # 3

In this lecture you will learn about:

❖Special Features in AutoCAD

❖Line Types in AutoCAD

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SPECIAL FEATURES

LAYERS

An AutoCAD drawing can be constructed over several layers. A layer is like transparent sheet of paper which holds drawing objects. For example, a drawing of plans of house could be constructed as follows. The walls would occupy layer called "Walls", the doors and windows would be placed on layer called "fitting", etc. when a drawing is structured in this way you have control over numerous of works.

AutoCAD supplies you with one default layer named as "0" (Zero). Any other layers must be created by you, the user, although you can assign as many layers as you like to a drawing. A layer is not limited in number of objects it can hold. Each layer should have a distinct name.

LAYERS

Layers always lie directly under each other and cannot be moved. Layer can be made visible or invisible, and can be assigned colour or line type so that each object drawn on the layer will be in specified colour and line type.

Often the colour of line type is used to indicate the thickness of a line. Even if the printer/plotter device you use in monochrome, assigning colours to layers can be very important

SETTING UP NEW LAYER

Here we will set up two layers called walls and fitting. To create a new layer, first issue the layer command.

Command line: layer Menu: format-- layer

1) In the layer properties manger dialogue box, click on new. Controls which layers are displayed in the list here. Hold the names of all the layers setup for this drawing.

2) Type in a layer named "Walls" and press enter. The wall layer is now in place, click on show details to see its properties.

3) Try creating a new layer called "fitting"

ASSIGNING COLOUR TO LAYER

Assigning a colour to a layer that everything drawn on that layer will take on that colour.

1) Click on colour box in the colour column.

2) Click on the colour red for the walls layer in the select colour dialogue box. Click on it.

3) Assign the colour green to the layer fitting.

MAKING A LAYER CURRENT

A layer must be current before you can draw on it. To make the layer "walls" current, carry out the following easy steps:

1) Click on the layer name in the layer properties manager dialogue box, then click on current button

2) Click Ok to return to the Drawing editor

3) The object properties tool bars at the top of the screen, will show the name of the current layer and its colour.

MAKING LAYERS VISIBLE OR INVISIBLE

AutoCAD allows you to switch a layer "off" (invisible) or "on" (visible).

Complex drawing may become cluttered, which can make it difficult to select objects for editing or drawing. This clutter may be reduced by making a layer invisible, if you are not working on it. When a layer is made invisible, the objects drown on it disappear from the screen, but they still exist and part of the drawing. Layer which are invisible are not printed. This has the advantage of allowing you to print selected layer of the drawing.

MAKING LAYERS VISIBLE OR INVISIBLE

For example, a builder of house may not be interested in furnishing which an interior designer has placed on the drawing. The furnishing layer can be made invisible and the drawing is then plotted for builder.

Several layers can be made invisible if required. The icons for visible is a glowing light bulb. Invisibility is shown by a dull light bulb.

LINE TYPES

The default line type in AutoCAD is continuous, everything you draw is shown with a continuous line type. To draw with a dashed or dotted (or other) line type you need to look in the two libraries of line types supplied.

HOW TO ACCESS A LINE TYPE

The steps for using a line type are: firstly the line type must be loaded in AutoCAD from library, and secondly set as current status.

HOW TO USE A LINE TYPE

Once a line type is loaded into AutoCAD, you are ready to use it by making it 'current'. That can be done in one of the following

- Assigning it to layer-this is called the By layer method

- Assign it to a block-this is called by block method

- Assign it to an object-to do this you just make the line type current and draw.

HOW TO LOAD LINE TYPE

1. In the object properties toolbar click on the line type, control down arrow or type line type at the command line.

2. Click on other. The line type manager is displayed.

3. Click on load.

4. Make sure acadiso.lin is in this box. If it is not then click on file and select it from library list.

5. Click on the line type you want to load. - Try dash and click ok.

6. The line type is now loaded and added to the list in the line type manager dialogue box. You may use the line type in your drawing now.

DIMENSION TOOLS

In many application, a precise drawing plotted to a scale is not sufficient to convey the desired information, annotation must be added showing the lengths of objects or the distance or the angles between objects. Dimensioning is the process of adding this annotation to drawing.

In order to understand the dimension features, it is necessary to know few terms that are used very often

DIMENSION LINE

It is a line with arrows at the end which represents the extent of given dimension.

ARROWS

The symbol at the end of the dimension line may vary with the Individuals preference. AutoCAD is very flexible in this feature allowing usual arrow block to be replaced with ticks, dots etc. the size of which can be varied.

EXTENSION LINES

Generally dimension are drown a little away from measured objects. In order to clearly specify the extent of measured dimension two straight lines are drawn from the object perpendicular to the dimension line. These line are known as extension lines.

DIMENSION TEXT

This is the text that specifies the actual measurement. The default text string accompanies the dimension is the one computed automatically by AutoCAD. This text can be replaced with desired text or can be completely suppressed. The dimension text style will be the current text style.

LEADER

Sometimes the dimension text may be moved a suitable place since it does not fit near the object. In such cases a pointer line with an arrow at the end is necessary between the objects and the text.

BLOCKS

A **block** is a collection of objects that are combined into a single named object. Some of these blocks are realistic representations of objects, some are symbols, and one of them is an architectural title block for a D-size drawing. The term "Blocks" is used in AutoCAD to describe repeatable items that you place in your drawings. Also, sometimes called Symbols.

There are two main reasons why we use blocks in our AutoCAD drawings. The first reason is speed, once we draw a symbol, we will never have to draw it again. We have to select it and drop it into our drawing The second reason is file size, using blocks will greatly reduce the file size of your saved drawing sheet.

CREATING BLOCK

1. Create the objects for the block.

2. Start the BLOCK command.

3. Enter a name for the block

4. Select the objects that you created for the block

5. Specify the block insertion point.

6. Choose Convert to block.

7. Click OK.

SAVING THE BLOCK

1. Type wblock in the command bar.

2. Give a name to the block.

3. Click on browse and choose a location where you want to save the block.

4. Click OK.

INSERTING BLOCK

1. Type I on the command bar.

2. Locate the file that you saved as a block.

3. Specify the insertion point

4. Click OK.

DYNAMIC BLOCKS

Dynamic blocks contain rules, or parameters, for how to change the appearance of the block reference when it is inserted in the drawing.

With dynamic blocks you can insert one block that can change shape, size, or configuration instead of inserting one of many static block definitions. For example, instead of creating multiple interior door blocks of different sizes, you can create one resizable door block.

TO TAKE THE PRINT

Click on plot from application menu. Choose the page size and click ok.
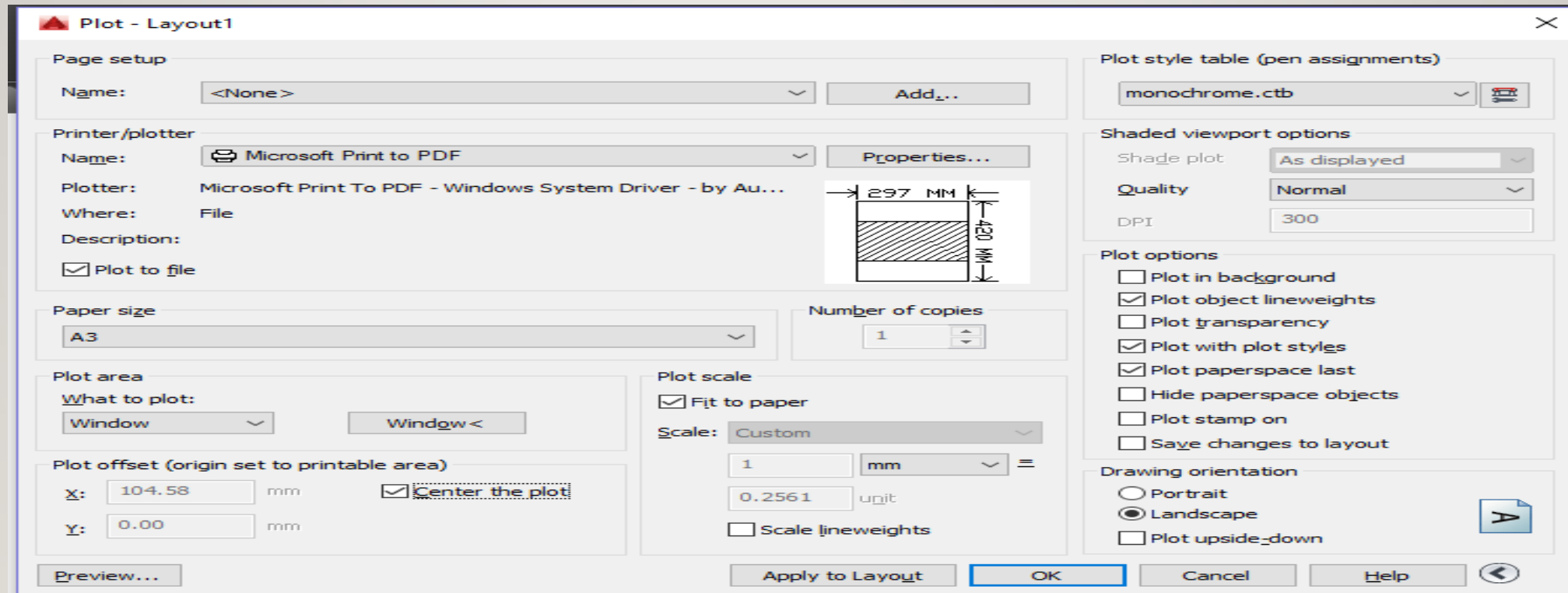
EXTERNAL REFERENCE (XREF)

You can insert any drawing file as an external reference or *xref* in the current drawing.

You can attach an entire drawing file to the current drawing as a referenced drawing (*xref*). With xrefs, changes made in the referenced drawing are reflected in the current drawing. Attached xrefs are linked to, but not actually inserted in, another drawing. Any changes to a referenced drawing are displayed in the current drawing when it is opened or reloaded. Therefore, with xrefs you can build drawings without significantly increasing the drawing file size.

EXTERNAL REFERENCE (XREF)

By using referenced drawings, you can

- Coordinate your work with the work of others by referencing other drawings in your drawing to keep up with the changes being made by other designers. You can also assemble a master drawing from component drawings that may undergo changes as a project develops.

- Ensure that the most recent version of the referenced drawing is displayed. When you open your drawing, each referenced drawing is automatically reloaded, so it reflects the latest state of the referenced drawing file.

EXTERNAL REFERENCE (XREF)

- Keep the names of layers, dimensioning styles, text styles, and other named elements in your drawing separate from those in referenced drawings.

- Merge (bind) attached referenced drawings permanently with your current drawing when the project is complete and ready to be archived.