

# GEETHANJALI COLLEGE OF ENGINEERING & TECHNOLOGY

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## II Year B.Tech. C.E. II – COMPUTER AIDED DRAFTING OF BUILDINGS

1. Introduction to computer aided drafting
2. Software for CAD – Introduction to different software's
3. Practice exercises on CAD software
4. Drawing of plans of buildings using software
  - a) Single storeyed buildings
  - b) multi storeyed buildings
5. Developing sections and elevations for
  - a) Single storeyed buildings
  - b) multi storeyed buildings
6. Detailing of building components like Doors, Windows, Roof Trusses etc. using CAD software
7. Exercises on development of working of buildings

Course outcome / Course Objectives: After completion of the course

- A student will be able to know how to apply engineering drawing using computers
- A student can understand about the scope of Auto CAD software
- A student will know what is plan and how it should be drawn in auto CAD software

### **Exercise 1: Introduction to computer aided drafting ( CAD)**

#### **Introduction**

Computer Aided Drafting can be done by using the graphic commands available in High Level languages(HLL) like BASIC, FORTRAN, PASCAL, C and C++ .

CAD is an important industrial art extensively used in many applications, including automotive, ship building, and aerospace industries, industrial and architectural design, prosthetics, jewellery designing and many more. CAD is also widely used to produce computer animation for special effects in movies, advertising and technical manuals, often called Digital content creation (DCC )

#### **Advantages of using CAD:**

- Increases efficiency of your drawings
- Time saving
- Accurate, precise, & immediately alterable

#### **Disadvantages of using CAD:**

- Financially costs more per license
- Must and should have computer basic knowledge irrespective of concept

CAD is divided in many types

- 2D
- 3D
- Orthographic
- Isometric
- Perspective

**Exercise 2 : Software for CAD – Introduction to different software's**

AutoCAD is a software application for 2D and 3D computer-aided design (CAD) and drafting available since 1982 developed by Autodesk founded by *John Walker*.



Logos of the AUTODESK & AutoCAD® are trade mark registered the diamond like A shape icon shows latest logo of AutoCAD for upcoming 2014 product

Official Name	Version	Release	Date of release	Comments
AutoCAD Version 1.0	1.0	1	1982, December	DWG R1.0 file format introduced.
AutoCAD Version 1.2	1.2	2	1983, April	DWG R1.2 file format introduced.
AutoCAD Version 1.3	1.3	3	1983, August	DWG R1.3 file format introduced.
AutoCAD Version 1.4	1.4	4	1983, October	DWG R1.4 file format introduced.
AutoCAD Version 2.0	2.0	5	1984, October	DWG R2.05 file format introduced.

AutoCAD Version 2.1	2.1	6	1985, May	DWG R2.1 file format introduced.
AutoCAD Version 2.5	2.5	7	1986, June	DWG R2.5 file format introduced.
AutoCAD Version 2.6	2.6	8	1987, April	DWG R2.6 file format introduced. Last version to run without a math co-processor.
AutoCAD Release 9	9.0	9	1987, September	DWG R9 file format introduced.
AutoCAD Release 10	10.0	10	1988, October	DWG R10 file format introduced.
AutoCAD Release 11	11.0	11	1990, October	DWG R11 file format introduced.
AutoCAD Release 12	12.0	12	1992, June	DWG R11/R12 file format introduced. Last release for <a href="#">Apple Macintosh</a> til 2010.
AutoCAD Release 13	13.0	13	1994, November	DWG R13 file format introduced. Last release for Unix, <a href="#">MS-DOS</a> and <a href="#">Windows 3.11</a> .
AutoCAD Release 14	14.0	14	1997, February	DWG R14 file format introduced.
AutoCAD 2000	15.0	15	1999, March	DWG 2000 file format introduced.
AutoCAD 2000i	15.1	16	2000, July	
AutoCAD 2002	15.6	17	2001, June	
AutoCAD 2004	16.0	18	2003, March	DWG 2004 file format introduced.

AutoCAD 2005	16.1	19	2004, March	
AutoCAD 2006	16.2	20	2005, March	Dynamic Block introduced.
AutoCAD 2007	17.0	21	2006, March	DWG 2007 file format introduced.
AutoCAD 2008	17.1	22	2007, March	Annotative Objects introduced. AutoCAD 2008 and higher (including AutoCAD LT) can directly import and underlay <i>DGN</i> V8 files.
AutoCAD 2009	17.2	23	2008, March	Revisions to the user interface including the option of a Microsoft Office 2007-like tabbed ribbon.
AutoCAD 2010	18.0	24	2009, March 24	DWG 2010 file format introduced. Parametrics introduced. Mesh 3D solid modeling introduced. Both 32-bit and 64-bit versions of AutoCAD 2010 and AutoCAD LT 2010 are compatible with and supported under Microsoft Windows 7.
AutoCAD 2011	18.1	25	2010, March 25	Surface Modeling, Surface Analysis and Object Transparency introduced. October 15, 2010 AutoCAD 2011 for Mac was released. Are compatible with and supported under Microsoft Windows 7
AutoCAD 2012	18.2	26	2011, March 22	Associative Array, Model Documentation. Support for complex linetypes in DGN files is improved in AutoCAD 2012. DGN editing.
AutoCAD 2013	19.0	27	2012, March 27	DWG 2013 file format introduced.

AutoCAD 2014	19.1	28	2013, March 26	File Tabs, Design Feed, Reality Capture, Autodesk Live Maps
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**Table showing various versions of AutoCAD since 1982**

### **Top 10 free open source software as alternatives for AutoCAD :**

#### **1. QCAD**

This is an application that will allow you to draft two dimensions objects. It's a great tool for all types of technical drawings, works for Windows, Mac OS X and many Linux and Unix Systems, and of course, it is completely free.

#### **2. Creo Elements**

One of the more popular choices for 3D work. It is a very fast and flexible alternative to AutoCAD with many options included that AutoCAD is known for having.

#### **3. Google SketchUp**

Just as Google seems to have an alternative for just about any paid program you can think of, it has an AutoCAD alternative as well. SketchUp has been lauded as a very versatile and easy-to-use alternative for design students and professionals.

#### **4. FreeCAD**

This is an Open Source 3D modeler that works great for mechanical engineering and product design. The program can help in various types of design and modeling programs and runs exactly the same way on Windows, Mac OSX and Linux platforms.

#### **5. DraftSight**

Great software for students, professionals and teachers which can be used to create, edit and view all types of DWG files, which is the most common format for most CAD-related applications.

#### **6. BRL-CAD**

A cross-platform and open source solid modeling system that has a bunch of different features to offer, including interactive geometry editing, image and signal-processing tools and large libraries for making tons of different types of geometric representations.

#### **7. gCAD3D**

This free software offers many features, including an integrated 3D-OpenGL viewer, a program interpreter for geometry and NC commands in 3D, an integrated NC processor and can be used with Windows and Linux. The website is a little sparse and confusing, but the freeware is not.

### **8. Archimedes**

A 3D modeling application that allows you to create complex compound 3D shapes. It is touted for being one of the most functional free AutoCAD alternatives out there.

### **9. PythonCAD**

One for the Linux users, this is a CAD package that was written in the Python programming language, hence the name. One of the best open-source CAD packages for Linux, and it's also quite simple to use if you have any kind of prior experience with two and three dimensional modeling.

### **10. progeCAD**

This one is free for private use but cannot be used commercially. It reads and writes pretty much all AutoCAD files and has an interface that is very similar to AutoCAD's, which makes it highly recommended among people who have experience with AutoCAD beforehand.

DWG (DraWinG) is a binary file format used for storing two and three dimensional design data and metadata. It is the native format for several CAD packages including DraftSight, AutoCAD, IntelliCAD (and its variants)

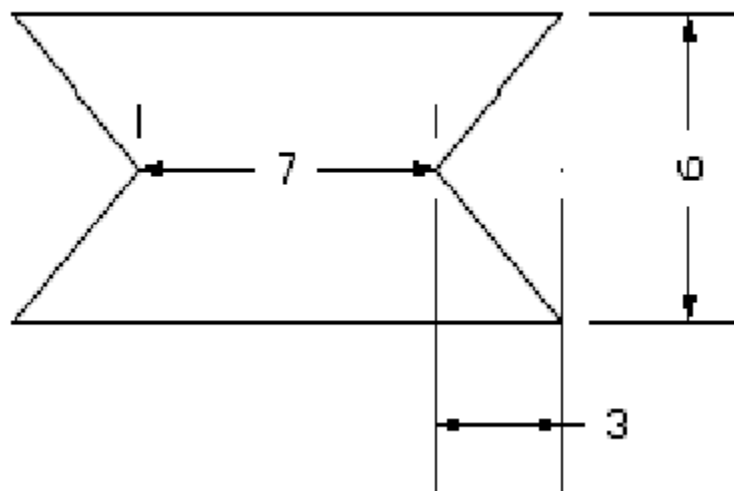
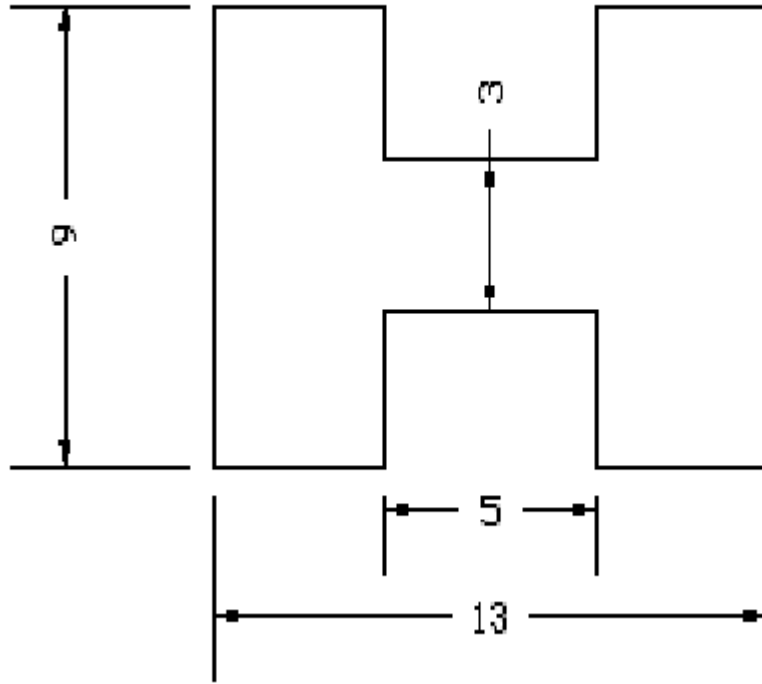
We use *commands* in user interface of AutoCAD.

- Commands are case Insensitive
- Command means which had predefined function .

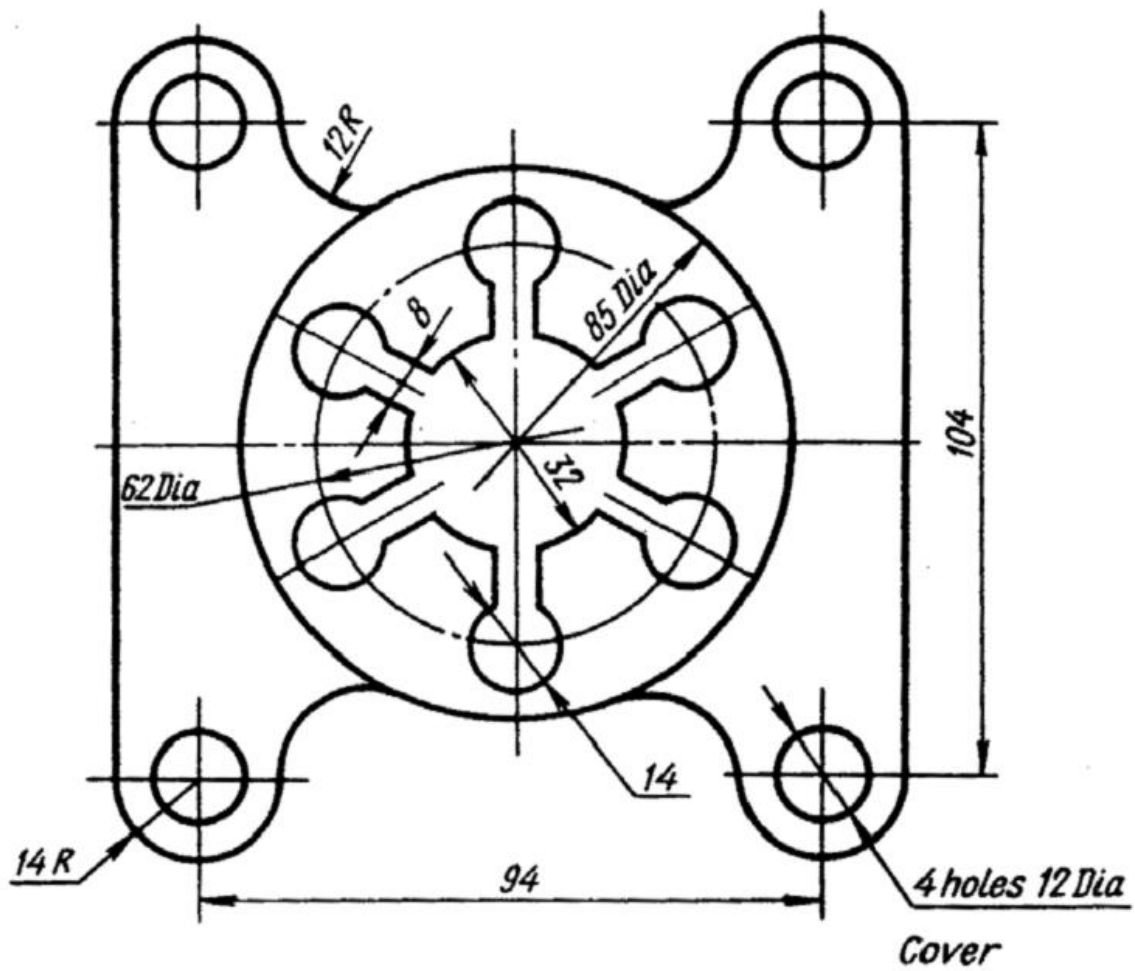
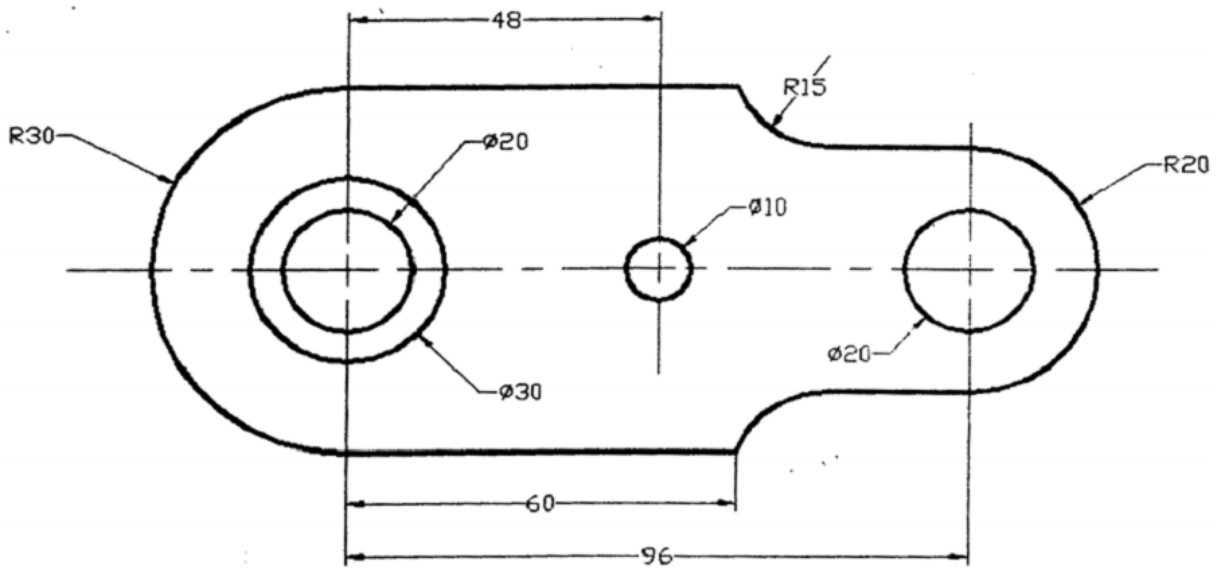
Viva Questions:

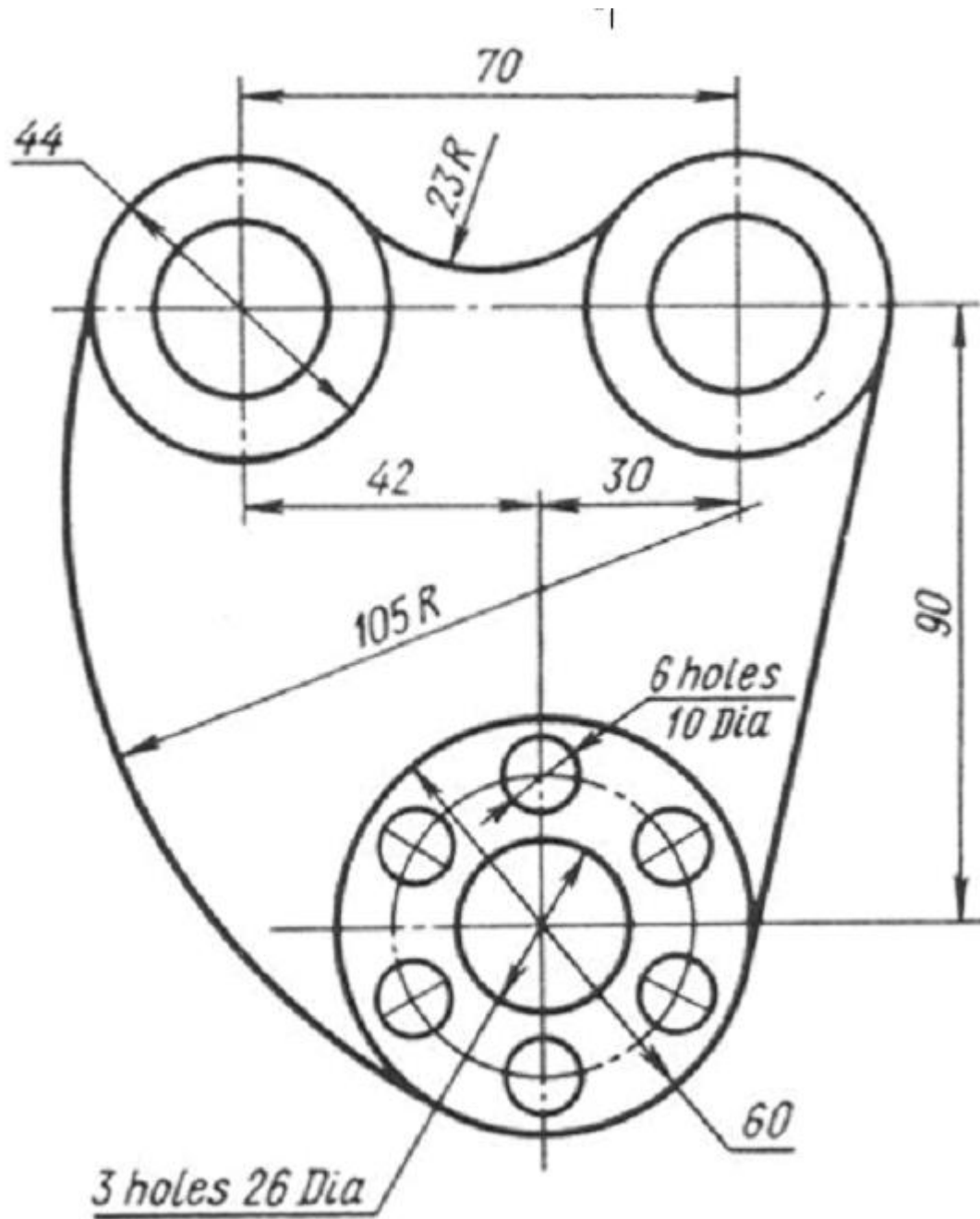
1. Who is the father of AutoCAD?
2. What is the difference between 2D and 3D?
3. What are paid licensed softwares other than AutoCAD?

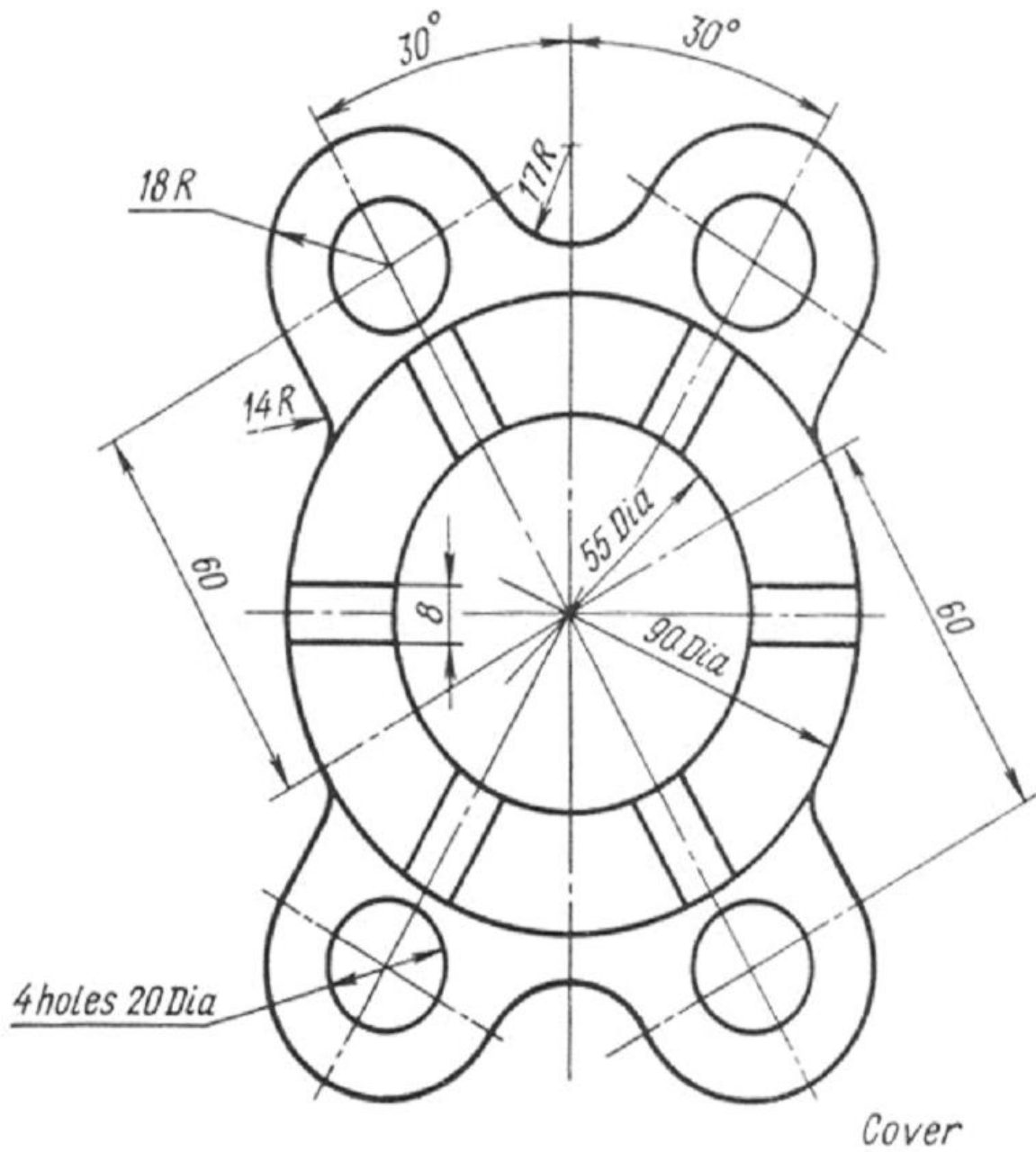
**Exercise 3: Practice exercises on CAD software**

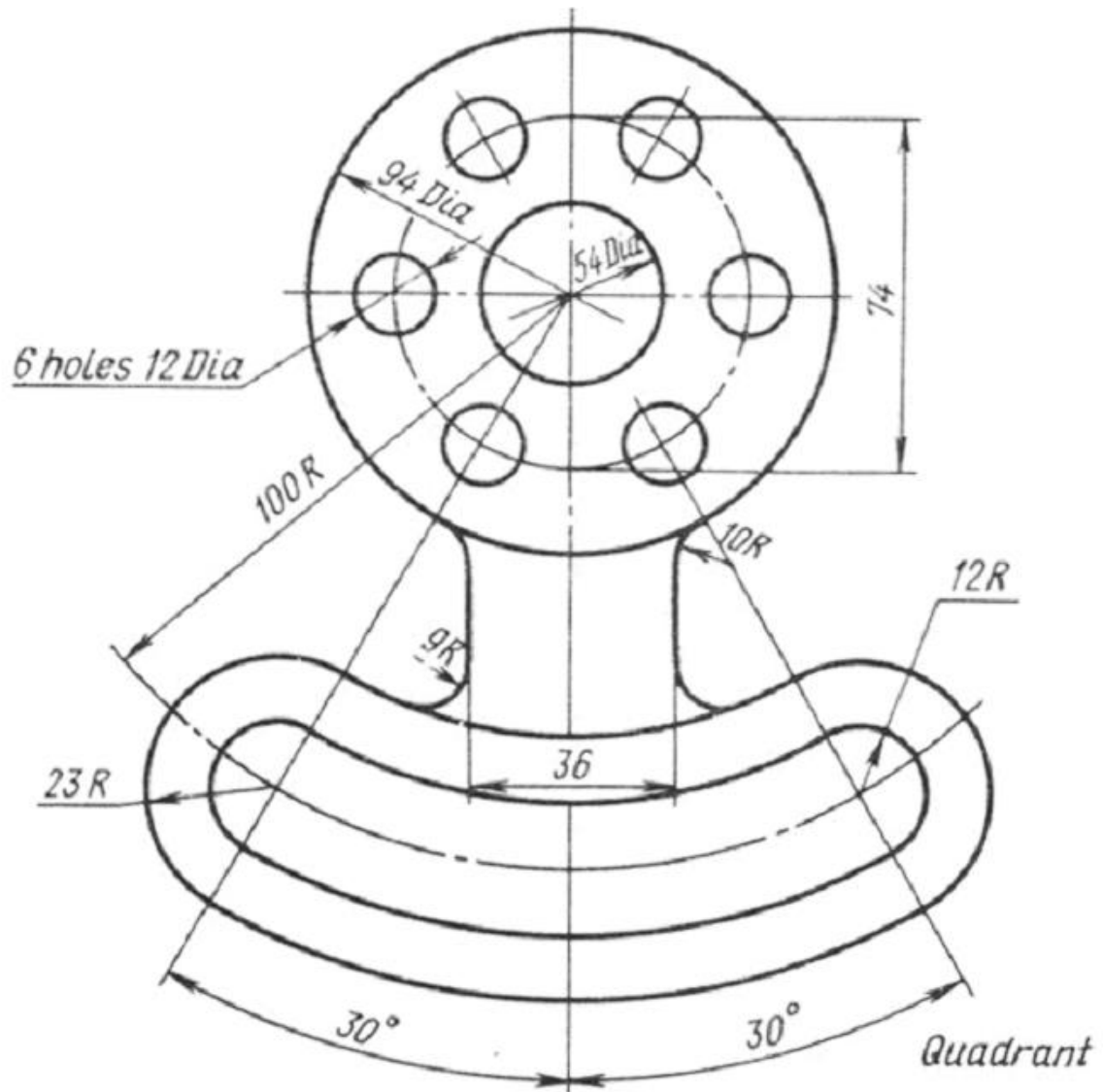


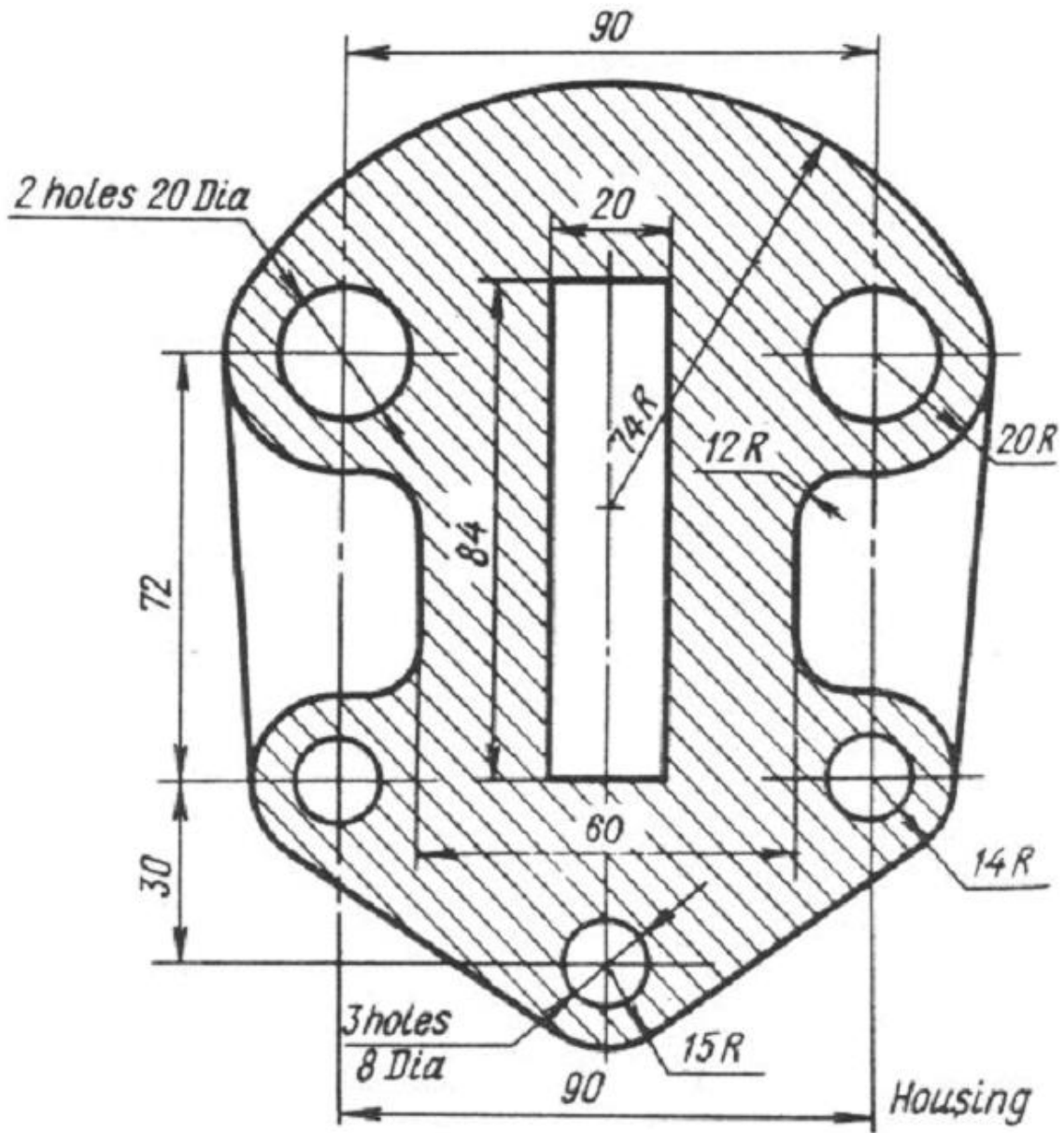


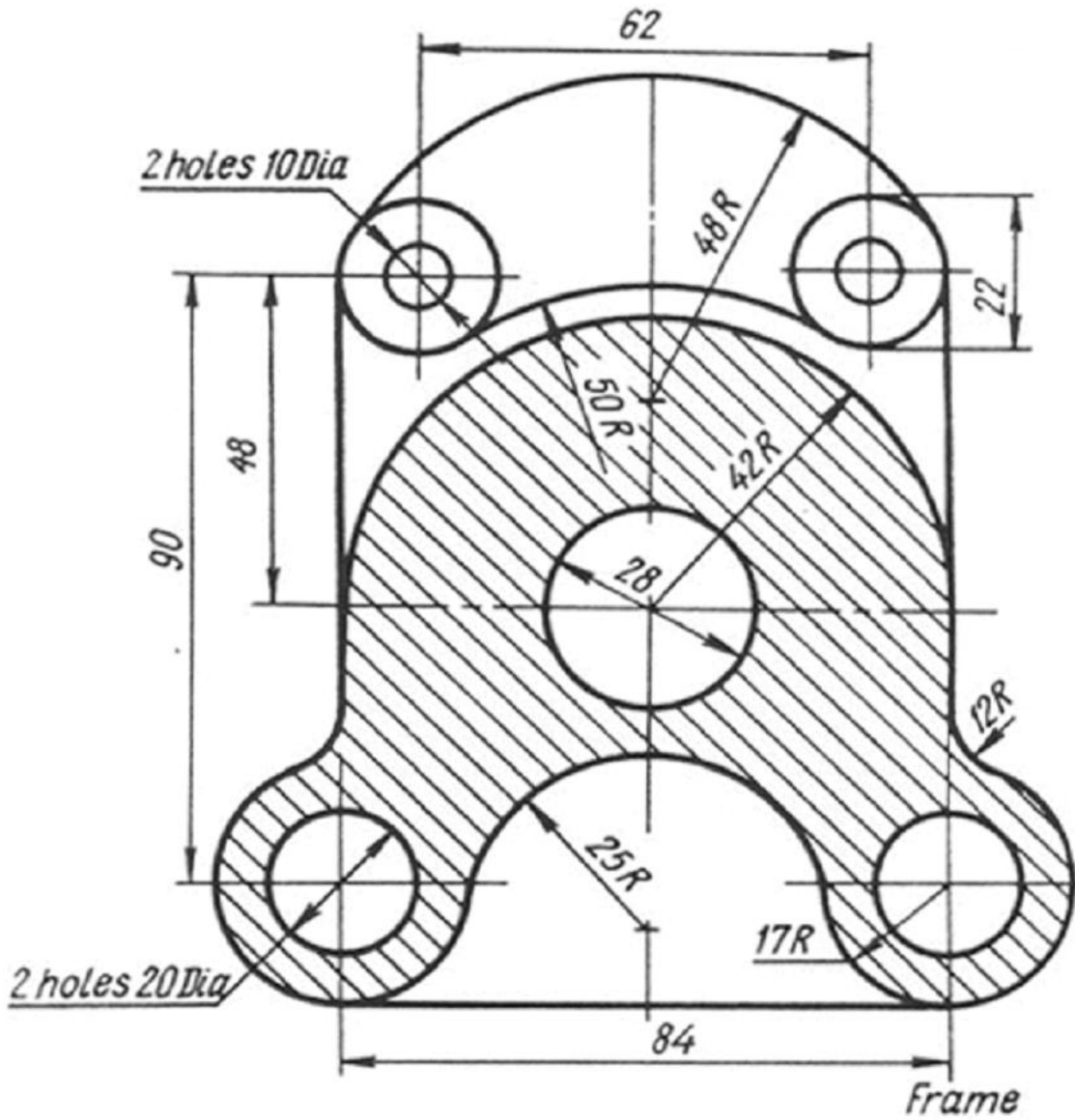












<b><i>Command</i></b>	<b><i>Description</i></b>	<b><i>Options</i></b>
<b>ARC</b> or <b>A</b>	<b>Draws an arc. The default method of drawing arcs is selecting three points (so-called "3 point arc"), which are the two endpoints of the arc and some other point along its locus. Other methods of drawing an arc can be specified by three letters, such as SEA, which means "Start Point, End Point, and Included Angle."</b>	<b>A</b> Included angle <b>C</b> Center point of arc <b>D</b> Direction angle of a line tangent to the arc <b>E</b> Endpoint of arc <b>L</b> Length of chord passing thru both endpoints of the arc <b>R</b> Radius <b>S</b> Start point of arc  <b>&lt;RET&gt;</b> uses the end of the last line or arc as the start point for the arc
<b>BREAK</b>	<b>Erases part of a line, arc or circle, or splits it into two lines or arcs</b>	<b>F</b> allows respecification of first point
<b>CHAMFER</b>	<b>Creates a chamfer (a angled line connection) at the intersection of two lines</b>	<b>D</b> Sets chamfer distances <b>P</b> Chamfers an entire polyline
<b>CIRCLE</b> or <b>C</b>	<b>Draws a circle of any size. The default method is to pick a center point and pick a point on the radius or type the radius dimension, but other methods can be selected.</b>	<b>2P</b> Specifies circle by picking 2 points on the diameter <b>3P</b> Specifies circle by picking 3 points through which the circle will pass <b>D</b> Allows entering the diameter dimension instead of radius dimension <b>TTR</b> Specifies circle by picking two lines, arcs or circles for the circle to be tangent to, and entering the dimension of the radius <b>&lt;RET&gt;</b> Enters radius of circle (the default)

<p><b>COPY</b> or <b>CP</b></p>	<p>Draws a copy of selected objects using two methods -- "base point" method, or "displacement" method.</p>	<p><b>M</b> Allows multiple copies to be made of an object</p>
<p><b>ELLIPSE</b></p>	<p>Draws ellipses</p>	<p><b>C</b> Allows specification of Center point of ellipse rather than first axis endpoint  <b>R</b> Allows specification of eccentricity rotation rather than length of second axis  <b>I</b> Draws Isometric circle in current isoplane</p>
<p><b>EXTEND</b></p>	<p>Lengthens a line, arc, or polyline to meet a specified "boundary edge"</p>	<p><b>U</b> Undoes effect of last Extend command</p>
<p><b>EXPLODE</b></p>	<p>Separates a block, dimension or hatch pattern into its constituent entities or makes a polyline into a series of straight lines. In the case of a block that is exploded, if it was originally drawn on the 0 layer, it returns to that layer, regardless of the layer it was inserted on, and it loses its referential connection to the original block. In the case of a dimension or hatch pattern that has been exploded, their parts go back to the 0 layer, and are assigned the logical color (BYBLOCK) regardless of the layer they were drawn on. In the case of an exploded polyline, it loses any width it may have had.</p>	
<p><b>ERASE</b> or <b>E</b></p>	<p><b>Erases selected entities from the drawing</b></p>	



<p><b>FILLET</b></p>	<p>Constructs an arc of specified radius between two lines, arcs, circles, or will create arcs of the specified radius at the vertices of a polyline. Radius of the arc to be constructed may be set to 0, which will make a sharp corner</p>	<p><b>P</b> Fillets an entire Polyline at the vertices  <b>R</b> Allows setting of the fillet radius. Default value is 0. Radius remains set until changed again</p>
<p><b>HATCH</b></p>	<p>Allows drawing of cross-hatching and pattern filling</p>	<p>&lt;pattern-name&gt; uses hatch pattern name from library file to fill designated area with a pseudo-block hatch entity -- can be reduced to individual lines and points by EXPLODEing it.          &lt;*pattern-name&gt; uses hatch pattern name from library file to fill designated area with individual lines and points, not a block  <b>U</b> "User-defined" hatch pattern drawn of parallel lines with a specified distance between, at a specified angle, and either single-hatching or double (cross)-hatching  <b>?</b> Lists names of available hatch patterns          &lt;pattern-name&gt; or <b>U</b> can be followed by a comma and the following sub-commands:  <b>I</b> Ignores any boundaries inside the outermost boundary  <b>N</b> Normal style of selecting boundaries with alternating hatched and unhatched nested areas  <b>O</b> Hatches outermost boundary area only</p>
<p><b>LIMITS</b></p>	<p>Changes the imaginary boundaries of the drawing, and controls whether drawing can be made outside of the boundaries. If Limit-checking is ON, drawing cannot be done outside of limits.</p>	<p>can be transparent          &lt;2 points&gt; Sets lower-left and upper -right drawing limits  <b>ON</b> Enables limit-checking  <b>OFF</b> Disables limit-checking</p>

<p><b>LINE</b> or <b>L</b></p>	<p><b>Draws straight lines</b></p>	<p><b>&lt;RET&gt; In reply to From Point:</b> prompt, line begins at end of previous line or arc <b>C In reply to To point: prompt,</b> closes the polygon back to first "From Point" <b>U In reply to To point: prompt,</b> undoes last line segment</p>
<p><b>MEASURE</b></p>	<p><b>Places points (or, optionally, Blocks) at intervals along a selected line, polyline, arc or circle. The interval distance is given by the user. If points are used as the marker to be placed along the entity, they are not visible unless the Point type is set to type 3 with the PDMODE command.</b></p>	<p><b>B specifies that a defined Block is to be used as a marker instead of a point.</b></p>
<p><b>MIRROR</b></p>	<p><b>Reflects designated entities about a user-specified axis</b></p>	
<p><b>MOVE</b> or <b>M</b></p>	<p><b>Moves designated entities to another location</b></p>	
<p><b>OFFSET</b></p>	<p><b>Creates a new line, polyline arc or circle parallel to the entity and at a specified distance from it.</b></p>	<p><b>&lt;number&gt; specifies offset distance</b> <b>T "Through" allows specification of a point through which the offset line, polyline, arc or circle is to pass</b></p>
<p><b>OSNAP</b></p>	<p><b>Enables points to be precisely located on reference points of existing objects. This is the so-called "Running Mode" of OSNAP, which sets selection method to run continuously until set to NON (none) or until overridden by selecting another "Interrupt Mode" OSNAP method from the cursor menu. Combinations of OSNAP methods can be used by selecting</b></p>	<p><b>can be transparent</b> <b>CEN CENTER</b> of arc or circle <b>END</b> closest <b>END</b>point of arc or line <b>INS</b> <b>INS</b>ertion point of Text or Block <b>INT</b> <b>INT</b>ersection of line, arc, or circle <b>MID</b> <b>MID</b>point of line, arc, rectangle side, or polygon side <b>NEA</b> <b>NEA</b>rest point selected by aperture on line, polyline, arc, or</p>

	<p>a series of options separated by commas. For instance, if you want to always pick either endpoints or intersection points when locating endpoints of lines, you would issue the command as follows:  <b>OSNAP &lt;RET&gt; END,INT &lt;RET&gt;</b></p>	<p>circle  <b>NOD NODE</b> (another name for a Point)  <b>NON NONE</b> -- used when a "Running OSNAP" is on to temporarily turn off OSNAP selection  <b>PER PER</b>pendicular point to line, arc or circle -- when used with an arc or circle it will draw a line to the surface of the arc or circle heading toward the center point  <b>QUA QUAD</b>rant point of arc or circle (top, bottom, right or left side)  <b>QUI QUI</b>ck mode -- this is a modifier to one of the other OSNAP options -- it will find the first point that meets the requirements, not necessarily the closest point to the aperture.  <b>TAN TAN</b>gent point to arc or circle</p>
<p><b>PEDIT</b></p>	<p>Allows editing of polylines which are already drawn</p>	<p><b>C</b> Closes an open polyline  <b>D</b> Decurves, or returns a Spline curve to its control frame or series of connected straight lines  <b>E</b> Edit vertices  <b>F</b> Fits curve to a polyline -- makes a series of straight lines into a curve which will pass through the vertices  <b>J</b> Joins a line or arc or another polyline to an open polyline  <b>L</b> Toggles line type generation to be either a continuous pattern of dashes passing through the vertices, or a pattern which starts and ends at each vertex  <b>O</b> Opens a closed polyline  <b>S</b> Uses the polyline vertices as a frame for a Spline Curve -- type of Spline Curve is set by the Variable "Splintype."</p>

		<p><b>U</b> Undoes one editing operation  <b>W</b> Sets a uniform width for the Polyline</p>
<b>PLINE</b>	<p>Draws a 2D polyline, which are connected line or arc segments with user-determined width and taper</p>	<p><b>H</b> sets the half-width of the polyline segments  <b>U</b> Undoes previous segment  <b>W</b> sets the width of polyline segments  <b>&lt;RET&gt;</b> Exits the Pline command  The following options are available only as long as you are drawing in Line mode:  <b>A</b> Switches to the Arc mode to allow integration of arcs into the polyline  <b>C</b> Closes the polyline with straight segment  <b>L</b> Segment length (continues previous segment)  The following options are available only as long as you are in the Arc mode:  <b>A</b> Included angle  <b>CE</b> Center Point  <b>CL</b> Closes with arc segment  <b>D</b> Starting direction  <b>L</b> Chord length, or switches to line mode  <b>R</b> Radius  <b>S</b> Second point of 3-point arc</p>
<b>PLOT</b>	<p>Plots a drawing to a plotting device, a printer, or to a "Plot File."</p>	
<b>POINT</b>	<p>Draws single points. Appearance of the points is set by the Variable PDMODE</p>	
<b>POLYGON</b>	<p>Draws regular polygons with a specified number of sides. Polygons are Polyline entities.</p>	<p><b>E</b> Specifies size and rotation of polygon by picking endpoints of one edge  <b>C</b> Circumscribes polygon around a</p>

		<p><b>circle</b>  <b>I</b> Inscribes polygon within a circle</p>
<b>PURGE</b>	<p>Removes unused Blocks, Text Styles, Layers, Linetypes, and Dimension Styles from current drawing</p>	<p><b>A</b> Purges All unused named objects  <b>B</b> Purges unused Blocks  <b>D</b> Purges unused Dimstyles  <b>LA</b> Purges unused LAYers  <b>LT</b> Purges unused Linetypes  <b>SH</b> Purges unused Shape files  <b>ST</b> Purges unused Text Styles</p>
<b>QSAVE</b>	<p>Saves the current drawing "Quickly" without requesting a filename (as long as file has already been given a name)</p>	
<b>QTEXT</b>	<p>Controls display of text -- command stands for "QuickTEXT"</p>	<p><b>ON</b> Lines of text displayed as rectangles  <b>OFF</b> Lines of text displayed as text</p>
<b>QUIT</b>	<p>Exits AutoCAD -- if the current drawing has not been Saved in its current state, a dialogue box will appear asking if you want to Save the drawing, Discard the changes, or Cancel the Exit command</p>	
<b>REGEN</b>	<p>Regenerates the current Viewport by recalculating the vector locations of all endpoints</p>	
<b>ROTATE</b>	<p>Rotates existing objects parallel to the current UCS</p>	
<b>SAVE</b>	<p>Requests a filename and saves the drawing</p>	
<b>SAVEAS</b>	<p>Same as SAVE, but also renames the current drawing and keeps the new name current</p>	
<b>SCALE</b>	<p>Alters the size of existing objects</p>	<p><b>R</b> Resizes with respect to a reference size</p>

<b>STRETCH</b>	<b>Allows moving a portion of a drawing while retaining their connections to other parts of the drawing. You cannot stretch Blocks, Hatch patterns, or Text entities, however.</b>	
<b>TEXT</b>	<b>Draws text characters of any size with selected styles</b>	<p>J Prompts for justification options</p> <p>S Lists or selects text style</p> <p>A Aligns text between two points, with style-specified width factor, AutoCAD computes approximate height proportional to length of text line</p> <p>C Centers text horizontally about a defined point</p> <p>F Fits text between two points, with specified height, AutoCAD computes approximate width factor to fill the distance between the two points</p> <p>M Centers text horizontally and vertically about a defined point</p> <p>R Right-justifies text</p> <p>BL Bottom Left justification</p> <p>BC Bottom Center justification</p> <p>BR Bottom Right justification</p> <p>ML Middle Left justification</p> <p>MC Middle Center justification</p> <p>MR Middle Right justification</p> <p>TL Top Left justification</p> <p>TC Top Center justification</p> <p>TR Top Right justification</p>
<b>TRIM</b>	<b>Erases a portion of selected entities that cross a specified "cutting edge"</b>	U Undoes last trim operation
<b>U or undo</b>	<b>Reverses the effect of the previous command</b>	
<b>UCS</b>	<b>Defines or modifies the current User Coordinate System</b>	<p>D ("Delete") Deletes one or more saved coordinate systems</p> <p>E ("Entity") Sets a UCS with the same extrusion direction as that of the selected entity</p>

		<p>O ("Origin") Shifts the origin of the current coordinate system  P ("Previous") Restores the Previous UCS  R ("Restore") Restores a previously saved UCS  S ("Save") Saves the current UCS  V ("View") Establishes a new UCS whose Z-axis is parallel to the current viewing direction  W ("World") Sets the current UCS to the World Coordinate System  X Rotates the current UCS around the X-axis  Y Rotates the current UCS around the Y-axis  Z Rotates the current UCS around the Z-axis  ZA Defines a UCS using an origin point and a point on the positive portion of the Z-axis  3 Defines a UCS using an origin point, a point on the positive portion of the X-axis, and a point on the positive Y-portion of the XY plane  ? Lists specified saved coordinate systems</p>
<p><b>UCSICON</b></p>	<p><b>Controls visibility and placement of the User Coordinate System Icon, which graphically indicates the origin and orientation of the current UCS. The options normally affect only the current viewport.</b></p>	<p>A Changes settings of all active viewports  N ("NoOrigin") Displays the UCSICON at the lower-left corner of the viewport (i.e., not at the Origin)  OR ("ORigin") Displays the UCSICON at the origin of the current UCS, if possible (if the origin point is not within the current viewport, the location of the UCSICON defaults to the lower-left corner of the viewport)  OFF Turns the UCSICON off  ON Turns the UCSICON on</p>
<p><b>UNDO</b></p>	<p><b>Reverses the effect of multiple commands, and provides control over the "Undo" facility</b></p>	<p>&lt;number&gt; Undoes the &lt;number&gt; of most recent commands in reverse order  A ("Auto") Controls treatment of menu items as UNDO "Groups"  B ("Back") Undoes back to previous UNDO "Mark"  C ("Control") Enables/disables the UNDO feature  E ("End") Terminates an UNDO Group (a</p>

		<p>sequence to be treated as one command)                  G ("Group") Begins an UNDO Group (a sequence to be treated as one command)                  M ("Mark") Places "marker" in UNDO file (for use with "Back")                  Control Sub-Options                  All Enables the full UNDO feature                  None Disables U and UNDO entirely, and discards any previous UNDO information saved earlier in the editing session                  One Limits U and UNDO to a single operation</p>
<b>UNITS</b>	<b>Selects coordinate and angle display formats and precision</b>	can be transparent
<b>ZOOM</b>	<b>Enlarges or reduces the display magnification of the drawing, without changing the actual size of the entities</b>	<p>can be transparent                  &lt;number&gt; multiplier from original magnification                  &lt;number X&gt; multiplier from current magnification                  &lt;number XP&gt; multiplier of magnification relative to paper space -- used for plotting to get right plot scale in each viewport                  A ("All") fills limits of drawing to screen                  C ("Center") makes picked point the center of the screen                  D ("Dynamic") makes an adjustable rectangular lens appear on the screen which is capable of being made smaller or larger and moved to different positions over the drawing and once set by the user, the drawing will quickly zoom to the location and magnification set for the lens. This sub-command is no longer useful because all computers have very fast zooms naturally now.                  E ("Extents") makes the farthest edges of the actual visible drawing fill up the graphics screen                  L ("Lower-Left") makes the point picked become shoved to the lower-left corner of the graphics screen                  P ("Previous") zooms back to whatever the</p>



		<p>last zoom, previous to the current zoom was -                  - AutoCAD stores about 10 of these, so you can walk backward in zoom magnification 10 times</p> <p>V ("Virtual Screen") makes the largest area available to the graphics card fill the graphics screen -- this varies with the quantity of graphics RAM that your graphics card has</p> <p>W ("Window") asks you to pick the lower left corner and the upper right corner of a zoom window and then fits that window to the graphics screen</p>
<p><b>3DPOLY</b></p>	<p><b>Creates a 3D polyline</b></p>	<p>C Closes the polyline back to the first point                  U Undoes (deletes) the last segment entered                  &lt;RET&gt; Exits 3DPOLY command</p>

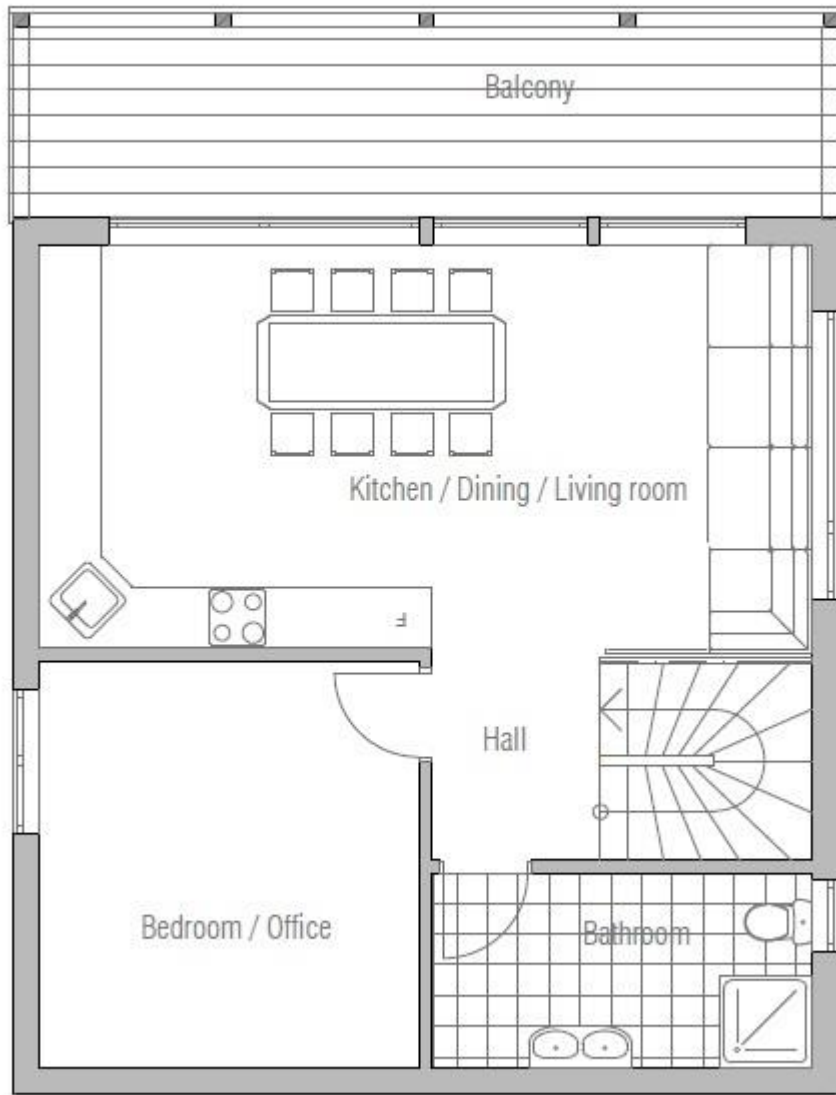
**EXERCISE 4: Drawing of plans of buildings using software**

- a) Single storeyed buildings   b) multi storeyed buildings

**Building plan:** a drawing that shows the shape, size, and arrangement of rooms in a building from above



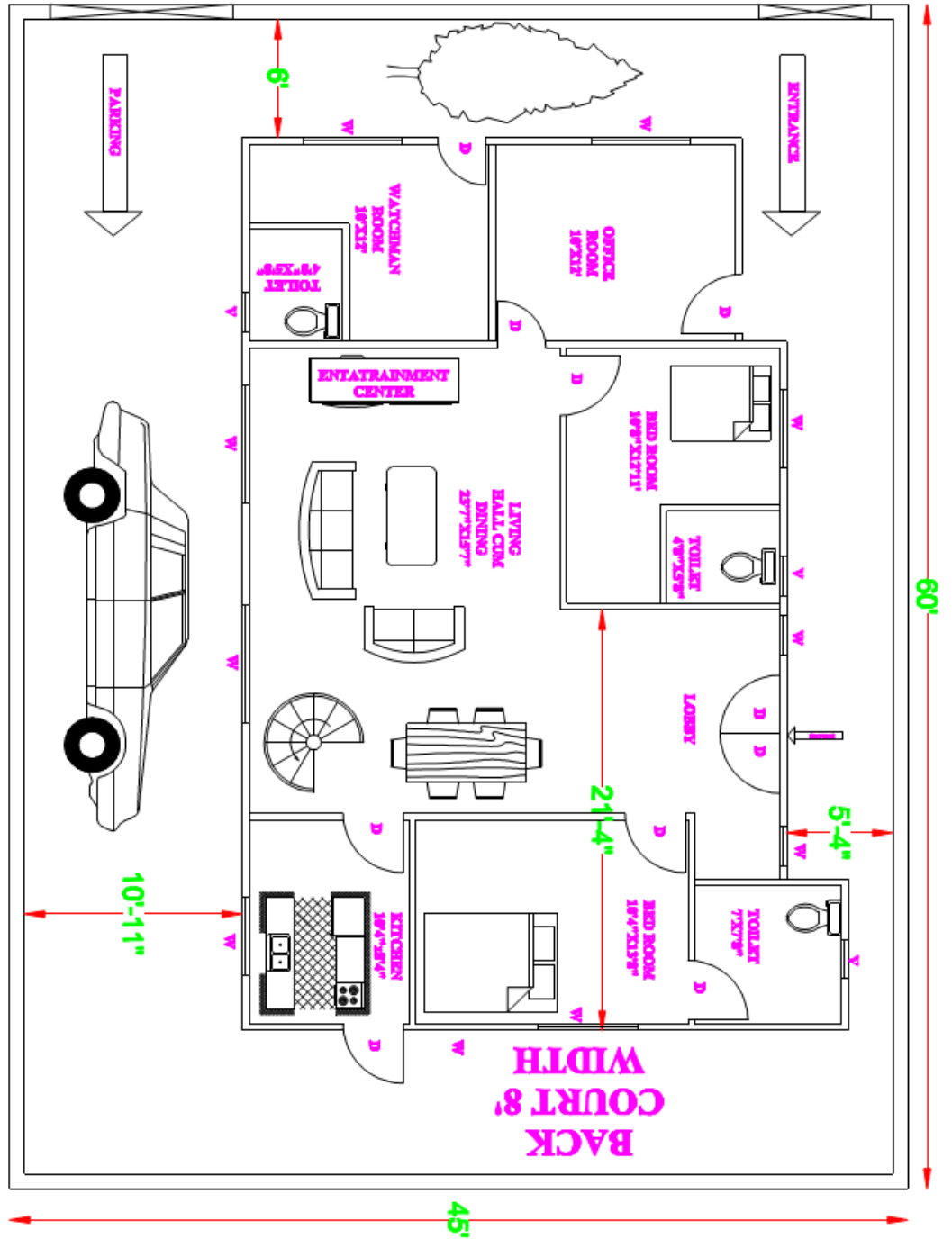
The above picture a 3D isometric view of a building plan

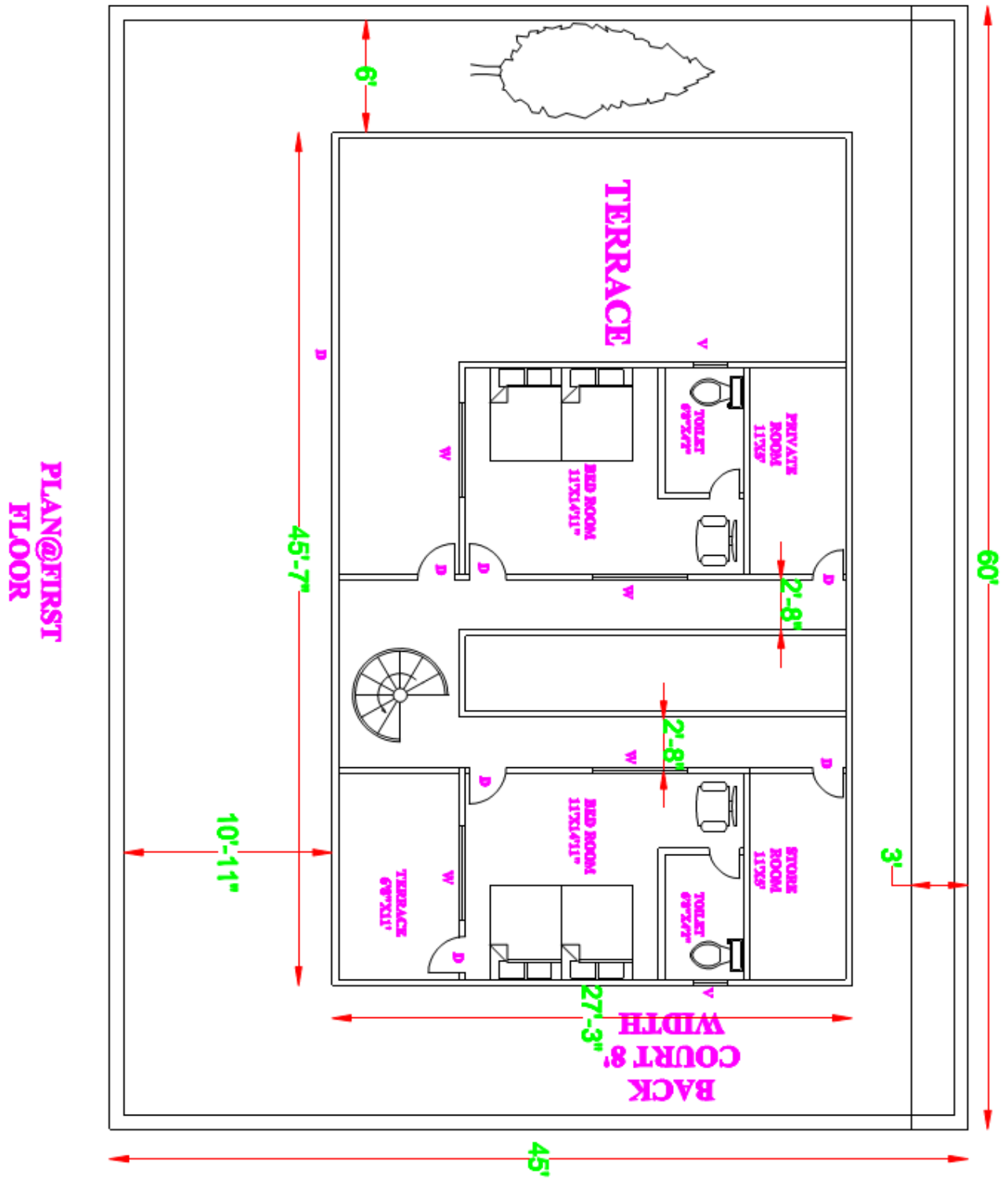


The above picture shows 2d Plan drawn in AutoCAD



PLAN@GROUND  
FLOOR





**Exercise 6:** Detailing of building components like Doors, Windows, Roof Trusses etc. using CAD software

### **Types of Doors:**

- Battened and ledge door
- Battened and braced door
- Battened and framed door
- Battened, ledge, and framed door
- Framed and paneled door
- Glazed door
- Flush door
- Louvered door
- Wire gauged door
- Revolving door
- Sliding door
- Swing door
- Collapsible steel door
- Rolling shutter door
- Mild steel sheet door
- Hollow metal door
- PVC door

### **Types of Windows :**

- Fixed
- Pivoted
- Double hung
- Sliding
- Casement

- Sash
- Louvered
- Metal
- Bay
- Corner window
- Dormer window
- Gable window
- Lantern

GCET