**AutoCAD:**

AutoCAD stands for Computer Aided Design. This software used for designing and drafting. It allows a user to conceptualize ideas, product designs and drawings to the required level of technical accuracy, perform rapid design calculations and simulations in the field of manufacturing industries.

AutoCAD is a commercial computer-aided design (CAD) and drafting software application. Developed and marketed by Autodesk, AutoCAD was first released in December 1982 as a desktop app running on microcomputers with internal graphics controllers. Before AutoCAD was introduced, most commercial CAD programs ran on mainframe computers or minicomputers, with each CAD operator (user) working at a separate graphics terminal. AutoCAD is also available as mobile and web apps.

**Plan Designing:**

Generates a **plan** view of the World Coordinate System. The World Coordinate System (WCS) is a fixed coordinate system that defines the location of all objects in a drawing. By default, the UCS is coincident with the WCS.

**There are a few basic steps to creating a floor plan:**

* Choose an area. Determine the area to be drawn.
* Take measurements. If the building exists, measure the walls, doors, and pertinent furniture so that the floor **plan** will be accurate.
* Draw walls.
* Add architectural features.
* Add furniture.

**Some commands in AutoCAD:**

1. **Trim command:** The **Trim command in AutoCAD** is **used** to remove the objects, which meet the edges of other objects. It is **used** to remove extra lines or extra parts of an object.
2. **Extend command:** Boundary Object Selection. Uses the selected objects to define the boundary edges to which you want to **extend** an object. Object to **Extend**. Specifies the objects to **extend**.
3. Trim Command: Shift-Select to Trim. Trims the selected objects to the nearest boundary rather than **extending** them.
4. Multiple copy command: Type M after starting the **copy command** as Dean just said or **copy** with grips. Highlight, make one grip hot, type c (**copy**) and move your cursor in the direction you want, then hit enter and another and another and another. It's automatically **multiple** Press Ctrl + C twice in a row while Word, Excel, PowerPoint, or another Office app is open, and the Office Clipboard will keep the most recent 24 **items** you've **copied.**
5. **Hatch command:** Use the -**Hatch command** to fill enclosed areas or specified entities with a **hatch** pattern. **Hatching** a drawing adds meaning and helps to differentiate the materials and areas. Some drawing applications such as construction drawings require **hatch** patterns which can increase the clarity and legibility of a drawing.
6. **Purge command:** Removes unused items, such as block definitions and layers, from the drawing. ... Unused named objects can be removed from the current drawing. These include block definitions, dimension styles, groups, layers, linetypes, and text styles.
7. **Distance command**: **distances** in model space and 2D **distances** on a layout in paper space. In model space, changes in X, Y, and Z component **distances** and angles are measured in 3D relative to the current UCS. The **distance** is displayed in the current units format. **To measure distance:**

Click MEASURE. Then, Choose **Distance**. Then, Specify a first and a second point. **Use** object snaps for precision.

1. **array command:** Creates copies of objects arranged in a pattern. You can create copies of objects in a regularly spaced rectangular, polar, or path **array**. ... Distributes copies of the selected object into any combination of rows, columns, and levels (same as the ARRAYRECT **command**). There are three **types of arrays**: rectangular, circular, and path. The best thing about **arrays in AutoCAD** is that they are **associative**. So after you create your **array**, you can very easily make changes to it and — even cooler — you can copy and change the new configuration to something very **different** from the original.
2. **Revcloud command:** REVCLOUD stores the last used arc length in the system registry. This value is multiplied by DIMSCALE to provide consistency when the program is used with drawings with different scale factors. Select Object option from the command line and then click on the geometry from drawing area which you want to convert to a **Revision cloud**. If you want to reverse the direction of arcs select Yes from command line else directly press enter to accept the default arc direction.
3. OOPS: The **OOPS command** will restore the last deleted object. We can even use **OOPS** after a BLOCK or WBLOCK **command** as these have options that can erase selected objects after the creation of a BLOCK.OOPS restores objects erased by the last ERASE command.
4. Break command: Breaks the selected object between two points. We can create a gap between two specified points on an object, breaking it into two objects. If the points are off of an object, they are automatically projected on to the object. BREAK is often used to create space for a block or text.The prompts that are displayed depend on how you select the object. If we select the object by using your pointing device, the program both selects the object and treats the selection point as the first break point. At the next prompt, we can continue by specifying the second point or by overriding the first point.
5. Qselect command: The Quick Select dialog box is displayed.

QSELECT creates a selection set by filtering by object type and property. For example, you can select all of the multiline text objects in a drawing that use a specified text style. You can access the selection set at a Select Objects prompt with the Previous option.

copy based command: **Copy** and Paste with **Base** Point Press Ctrl+Shift+C or enter COPYBASE at the **command** prompt or . Select the **base** point. Select the objects to **copy** and press Enter. The objects are now available to be pasted into the same drawing or another drawing

1. Dim command: we can select objects or points on objects to **dimension**, and then click to place the **dimension** line. When you hover over an object, the **DIM command** automatically generates a preview of a suitable **dimension** type to use. Supported **dimension** types include the following: Vertical, horizontal, and aligned linear dimensions.

**Generator:** autocad has different types of generator

* Engineering or Building
* Electrical

Power generator for home. this file contains the electrical development of a basic single family residence; contains notes; electrical standards and symbologies that will help us better understand the project

Then slide....

**Waring:**

When we are in a 3D Visual Style or even when we are in “2D Wireframe” and our view is something other than in plan, we may notice that our UCS Icon and/or our cursor have 3 colors. One color for each axis. This tip also applies to 3DS Max… AutoCAD and Microstation drawings are always displayed with a white background (for better printing), so some colors may not show up as well in Hyperview as they do on our workstations. When we build our project, we may wish to change how these colors are displayed.

If we wish to map one color to another in BuildPlus, you will need to be able to specify the new color using its Red-Green-Blue (RGB) values. One way to obtain the RGB values for a particular color is to use an external application like Microsoft Paint.

For example, using Microsoft Paint, or another drawing program, you may choose a darker yellow that you would like DBDOC to use in place of this light yellow. In Paint, this functionality is accessed through the **Colors** | **Edit Colors** menu item. Click on the **Define Custom Colors** button to access the advanced color features. Enter the RGB values of the color we wish to change into the **Red**, **Green** and **Blue** boxes on the lower right.

**Power distribution:**

SB: This is nothing but a detailed description of load-connectivity under a particular SB. The input for this step is both the fittings and fixture layout as well as the conduit layout. Name of loads are collected from fittings and fixture layout. The wire sizes are collected from conduit layout. Demonstrate each group separately.

**Sub Distribution Board (SDB) Connection Diagram**:

This is the interface between a flat’s connected loads with the external power. This panel holds all the required protective devices for a flat. We can call it as a collection of circuit breaker for a flat. Connect each group of switch board through matched circuit breaker (CB) to the SDB busbar. The 15A loads as well as 20A loads (ACs) should be connected as well through matched CBs. The SDB busbar contains either single phase or 3-phase 4-wire lines depending on the total connected load for the apartment.

**MDB:** Main Distribution Board (MDB) Connection Diagram:

This is the interface between the MDB to different SDB of an apartment. It also holds all the metering equipment’s for the apartment. The main incoming line is carried through a 3-phase check meter and the connected to the central busbar. The busbar consists 3-phase 4-wire lines. Then each supply for each SDB is carried from the busbar through meter for the designated flat and matched TP CB which is placed at the flat SDB. This means that two similar CBs are placed at both MDB and SDB to protect the interconnecting line as well. The main CB for the apartment is a TP MCCB (Molded-Case-Circuit-Breaker). 2 pin socket: **2**-pole means that the device **plug** is not earthed and it normally has **two pins** that transmit electricity. ... In most countries in the world, **2**-pole mains **sockets** have been replaced with earthed **sockets** which can accept both **2**-pole and 3-pole plugs. 3 pin socket: For a **3**-**pin plug**, there are typically **3** different **wires** which need to be connected to the back of the **plug**. The **three wires** are the earth **wire**, live **wire**, and the neutral **wire**. These **3 wires** come in a cable with different colors, which is done to distinguish between the **three wires.**

**Some uses of autocad:**

**Architectural planning tool: AutoCAD** is often **used** to create blueprints and floor plans for houses and commercial buildings.

**Interior Designers:** Similarly, **AutoCAD** can be **used** to imagine the interior of a building, whether it's an eating space for a restaurant or a living space in a home.

**3d modeling:** 3D modeling is a technique in computer graphics for producing a 3D digital representation of any object or surface. An engineer or designer uses special software to manipulate points in virtual space (called vertices) to form a mesh: a collection of vertices that form an object.

**3d printing:** 3D printing, also called additive manufacturing, is a family of processes that produces objects by adding material in layers that correspond to successive cross-sections of a 3D model. Plastics and metal alloys are the most commonly used materials for 3D printing, but it can work on nearly anything—from concrete to living tissue.

3d basics: **3D** objects we can create by giving objects thickness and adding **3D** Faces, **AutoCAD** provides a number of ready made **3D** objects. These objects can be chosen from the **3D** Objects dialogue box.

**Drafting:** Drafting is a term that refers to creating technical drawings that communicate how something is constructed or functions. Drafting is different than a visual drawing such as art because drafting is intended to have one particular meaning, which is made clear with symbols and measurements. In contrast, visual drawing is open to interpretation.

Fashion design: **fashion designer** can create new sketches, patterns, prints more quickly and precisely. With the increasing use of **CAD**, **fashion designers** can create multiple variations of a single **design** and style and adapt it to varying material and pattern.

**Mechanical industry:** **AutoCAD** is a computer-aided design software application that **mechanical engineers** can **use** in their jobs to create preliminary, simulated models and isolate any inadequacies or flaws before going to production, thereby saving time, money, and resources. AutoCAD allows mechanical engineers to produce useful specifications and give clients exactly what they need in an efficient time frame.

**Conclusion:**

CAD stands for "Computer Aided Design." AutoCAD is a line of two-dimensional and three-dimensional design software produced by the Autodesk company. It includes a powerful suite of features to improve workflow and create true-to-life maps, diagrams, structures and schematics. CAD software is equal part design and analysis. The design is needed to produce models and prepare component production, and the analysis helps calculate stress levels, the influence of forces and the influences of finite elements in a design. According to a General Electric survey, 60 percent of manufactured parts errors were related to incomplete, ambiguous or impossible drafts -- problems easily corrected with the support of software like AutoCAD. Learning AutoCAD is beneficial for our career. All companies are using it to create engineering drawings. This is also the part of syllabus in many universities. It is very user friendly software and you can earn through it a lot.