**Name: Muhammad Ali**

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***Lab Report***

***Engineering Drawing & CAD Lab***

**Department of Computer system Engineering**

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**Submitted to:**

**Engr. Asim Ahmad Riaz**

**Lab Report # 01**

**Introduction to AutoCAD**

* This lab report will contain introduction and definitions drawing and engineering drawing, history and versions of AutoCAD, Benefits and limitation of AutoCAD, CAD softwares, recommended books and software used for this Lab

**Introduction to AutoCAD:-**

**Drawing:-**

The art or technique of representing an object or outlining a figure, plan, or sketch by means of lines.

Dictionary meaning:-The definition of a drawing is a picture created with a pen, marker, crayons or other tools, or is the act of making such a picture, or is a contest in which a winner is randomly selected.

**Engineering drawing:-**

An engineering drawing, a type of technical drawing, is used to fully and clearly define requirements for engineered items. Engineering drawing produces engineering drawings. More than merely the drawing of pictures, it is also a language—a graphical language that communicates ideas and information from one mind to another. Most especially, it communicates all needed information from the engineer who designed a part to the workers who will make it.

**AutoCAD:-**

Autocad consist of two word, Auto is logo of the company and CAD means computer-aided design, AutoCAD is a computer-aided design (CAD) program used for 2-D and 3-D design and drafting. AutoCAD is developed and marketed by Autodesk Inc. and was one of the first CAD programs that could be executed on personal computers.

**History:-**

AutoCAD was first released in December 1982 as a desktop app running on [microcomputers](https://en.wikipedia.org/wiki/Microcomputer) with internal [graphics controllers](https://en.wikipedia.org/wiki/Graphics_controller). Before AutoCAD was introduced, most commercial CAD programs ran on [mainframe computers](https://en.wikipedia.org/wiki/Mainframe_computer) or [minicomputers](https://en.wikipedia.org/wiki/Minicomputer), with each CAD operator (user) working at a separate [graphics terminal](https://en.wikipedia.org/wiki/Graphics_terminal). Since 2010, AutoCAD was released as a [mobile-](https://en.wikipedia.org/wiki/Mobile_app) and [web app](https://en.wikipedia.org/wiki/Web_app) as well, marketed as AutoCAD 360.

**Version:-**

We will use 2007 version at the beginning and familiar with 2007 version for a while. At the end we also study and use autocad 2020.

**Benefit of autocad:-**

**AutoCad software is helpful, It has a large set of parts and features that you can choose for your designs, It offers powerful and quick dimensions, You can use the simplified tools, you can generate the dimensions to control and expand only the important variables for manufacturing easily.**

**AutoCad software is incorporation for International Drafting Standards, Compliance with the industry standards improves the internal communication and the results in reliable production outputs, It presents** **easy data swapping, It comes with in-built industry, standard STEP and IGES formats for the exchanging data between different CAD systems.**

**AutoCad software comes with specific drafting tools for generating standards Industry based geometric dimensions, surface texture symbols, the mechanical symbols and the weld symbols, and AutoCAD firm can increase their productivity manifold.**

**AutoCad software automatically redraws the geometry to illustrate the dashes and the hidden lines of parts which are blocked by the other parts in the mechanical design, It enables you to produce very accurate designs, and drawings can be created in 2D or 3D and rotated.**

**AutoCad software reduced the design timescales, Reuse of the designs, The drawing errors can be corrected easily, The drawings can be sent/received via email in seconds, and AutoCad software offers rapid prototyping.**

**Limitation of autocad:-**

**AutoCad software is not so much suited for 3D as it has fewer options, It can not be used in the complex designs, If you are into the heavy assembly work don’t rely on this software, It can not be used in Complex Programming, A large amount of memory and speed is required, Training and equipment are very costly.**

**AutoCad software has expansive start-up costs (the hardware, the software, and training), It can be very expensive, so, the initial costs are high, There are free software packages though, The people need to be trained on how to use the software that also adds to the costs, and it requires a PC.**

**AutoCad software needs the time & the cost of implementing the system, It needs time & cost of training the people to use it, so, It is very expensive in training, It needs the time & the cost of migrating legacy drawings into AutoCAD format.**

**CAD Softwars:-**

CAD, or computer-aided design and drafting (CADD), is technology for design and technical documentation, which replaces manual drafting with an automated process.

**Examples:-**

 1. TinkerCAD

2. FreeCAD

3. BlocksCAD

4. Creo

5. Fusion 360°

6. Solidworks

7. AutoCAD

**Recommended books:-**

1. “Engineering Drawing and Graphics” by K Venugopal

2. “Engineering Drawing” by N D Bhatt and V M Panchal

3. “Engineering Graphics” by B Bhattacharyya

4.“Machine Drawing” by N Sidheswar and P Kannaiah

5. “Technical Drawing with Engineering Graphics” by Frederick E Giesecke and Ivan L Hill

6. “Engineering Drawing” by N S Parthasarathy and Vela Murali

7.“Engineering Graphics” by T Jeyapoovan and S Gowri

8. “A Textbook of Engineering Drawing” by R K Dhawan