

School of Mechanical Engineering

Course Code : BTME 3060

Course Name: Computer Aided Design

BTME 3060 Computer Aided Design Lecture 3

2nd Year

III Semester

Galgotias University

2020-21

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Name of the Faculty: Pramod Kumar

Program Name: B.Tech

Unit I: Introduction to CAD

- Syllabus
 - Product Development Cycle
 - **Introduction to CAD, Hardware and software requirement of CAD;**
 - **Graphics input devices- cursor control devices,** Digitizers, Scanners, speech oriented devices and touch panels,
 - Graphics display devices- Refresh cathode ray tubes, Raster-scan displays, Random-scan displays, CRT Monitors;
 - Input devices- keyboard, joy-stick, mouse, scanner;
 - DVST, Flat- panel display, Hard copy devices - Printers and Plotters, dot matrix, inkjet, laser printers,
 - Graphics Standards – Neutral File formats –IGES, STEP,
 - Graphics software, Graphics functions,
 - output primitives- Bresenham's Algorithm and DDA.

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Objective of the lecture

- Software and hardware requirement for the CAD
- graphics input devices
- Descriptions of those devices



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Hardware and software requirement of CAD

- CPU: Intel or AMD dual-core processor, 2 GHz or greater
- CPU SPEED: Info
- RAM: 4 GB or higher
- OS: Windows 7 (64-bit) or Windows 8
- VIDEO CARD: Display adapter capable of 24-bit color for basic graphics, 256 MB DirectX 10-capable graphics card with Shader Model 3 for advanced graphics
- TOTAL VIDEO RAM: 256 MB
- 3D: Yes
- PIXEL SHADER: 3.0
- VERTEX SHADER: 3.0
- MONITOR MAXIMUM RESOLUTION: Monitor capable of displaying resolution of 1280x1024 or higher
- SOUND CARD: Yes
- FREE DISK SPACE: 60 GB Available space
- DVD-ROM: Yes

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Graphics input devices

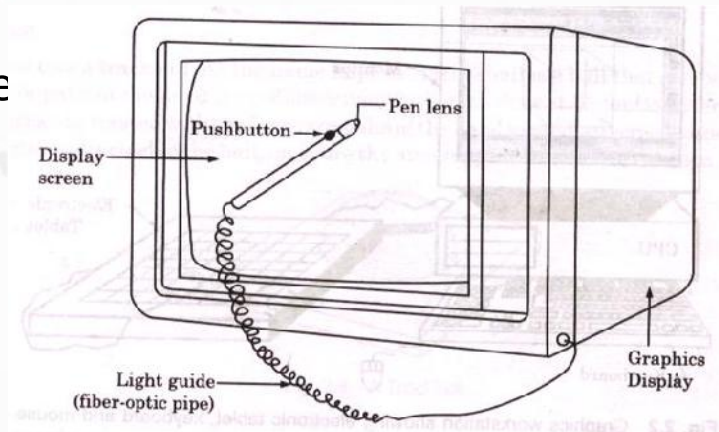
- Keyboard
- Mouse
- Trackball
- Spaceball
- Joystick
- Light Pen
- Digitizer
- Touch Panels
- Voice Recognition
- Image Scanner

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cursor control devices

- Light Pen

- It is a pointing or picking device that enables the user to select a displayed graphics items on a screen by directly touching its surface in the vicinity of the item
- it is a detector of light on the CRT screen and uses a photo diode, photo transistor or some other form of light sensor.
- The light pen is no longer popular as an input device late 1960s and early 1970s



Electronic Tablet/Pen

- The tablet and pen in computer graphics describes an electronically sensitive tablet used in conjunction with an electronic stylus.
- the pen like stylus to input instructions or to control the cursor.



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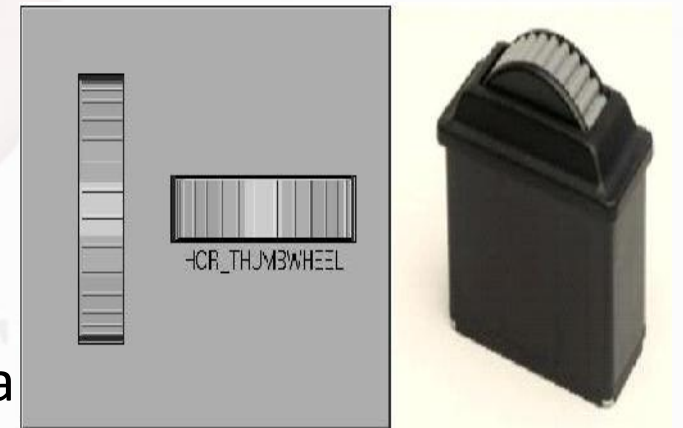
Mouse Systems

- There are two types of mice available: mechanical and optical.
- Movement over this surface are measured by a light beam modulation and optical encoding techniques.
- The light source is located at the bottom and the mouse must be in contact with the surface for the screen cursor to follow its movement.
- Push-buttons are mounted on the top of the mouse and programmed to various functions.



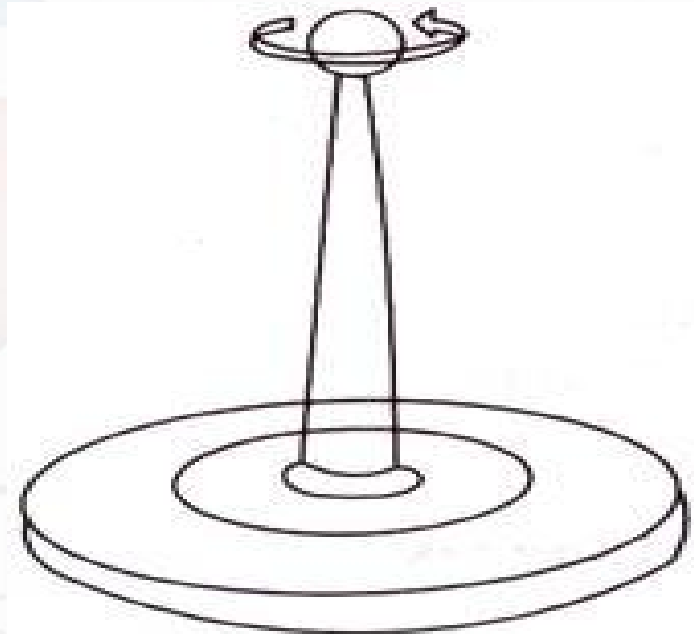
Thumb wheel

- Two thumb wheels are required to control the screen cursor, one to control the horizontal position and the other for its vertical position.
- This type of device is often mounted as an integral part of the CRT terminal.
- The cursor position is indicated by the intersection of a vertical line and a horizontal line on the CRT screen.
- The two lines are like cross-hair.



Joysticks

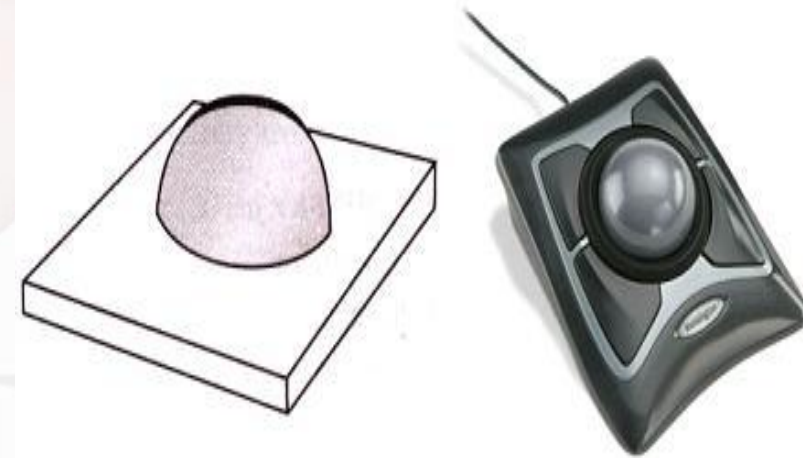
- It consists of a small, vertical lever (called the stick) mounted on a base that is used to steer the screen cursor around.
- The joystick gets its name from the control stick that was used in old airplanes



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Trackball

- A trackball is a ball that can be rotated with the fingers or palm of the hand to produce screen-cursor movement.
- Potentiometers, attached to the ball that can be rotated with the fingers or palm of the hand to produce screen-cursor movement.
- Potentiometers, attached to the ball, measure the amount and direction of rotation



Touch Panels

- Touch panels allow displayed objects or screen positions to be selected with the touch of a finger.
- A typical application of touch devices is for the selection of processing options that are represented with graphical icons.
- Touch entry systems incorporate various types of touch-sensing methods such as optical, electrical or acoustical sensing.



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Summery

- Hardware and software requirement of CAD are normally same but having some extra configuration.
- The general input devices are keyboard, mouse, joystick etc.

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Questions

- Describe the software requirement for CAD
- Describe the input devices



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Text books

- Mastering Cad/Cam by Dr. Ibrahim Zeid
- Mastering AutoCAD for Mac By George Omura, Richard (Rick) Graham 2010



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- Thank you



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