Computer Aided Manufacturing

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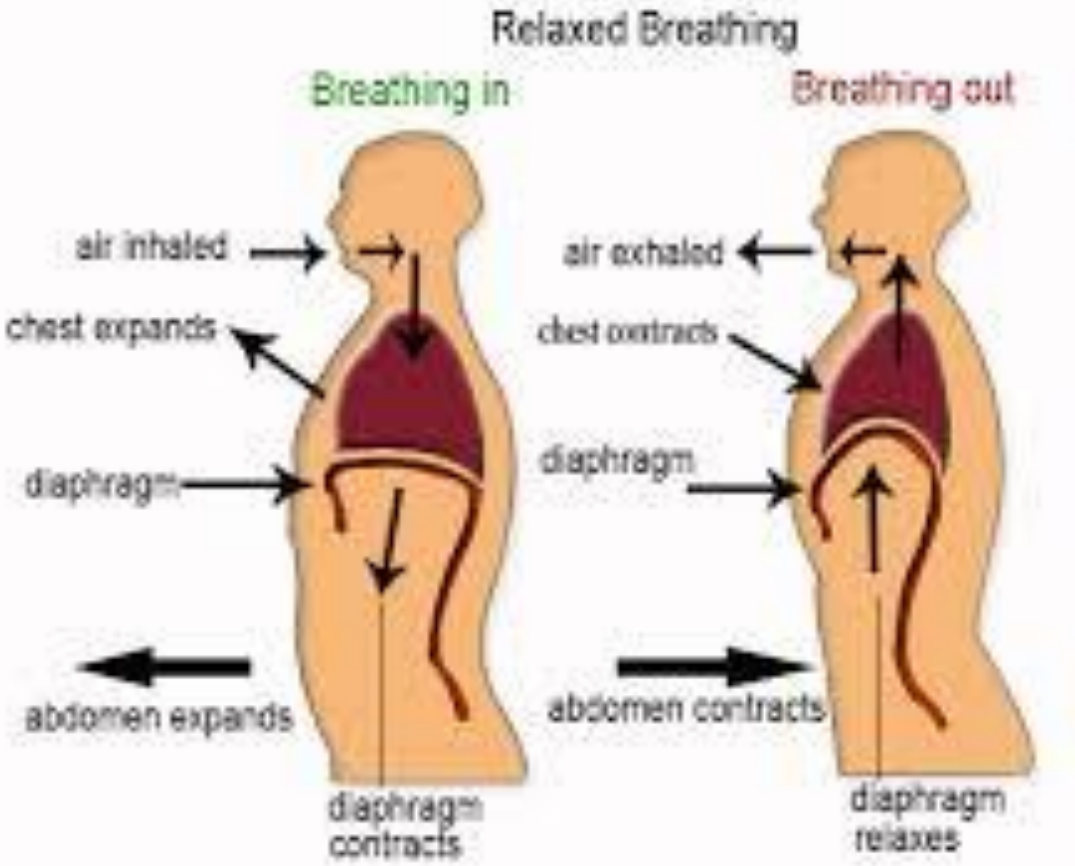
NAGAPATTINAM.

Relaxed Breathing

Belly breathing



Recap and review of previous class

5 mins

Topic :

CNC machine -Constructional features and applications

Prerequisites Knowledge

- Input and output devices
- Machine tool

Evocation

2 to 5 mins

General Objective (GO)

- Students will be able to understand the two types of control system and six major elements in CNC machine.

2 mins

Specific Objectives

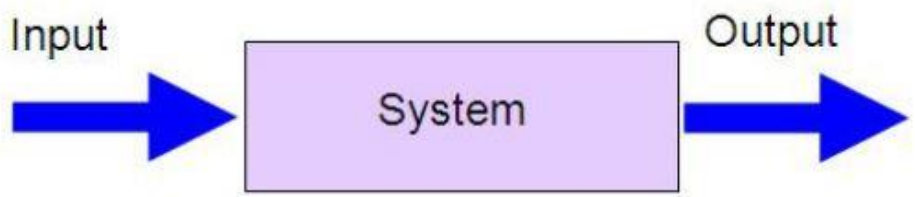
- *Students will be able to*

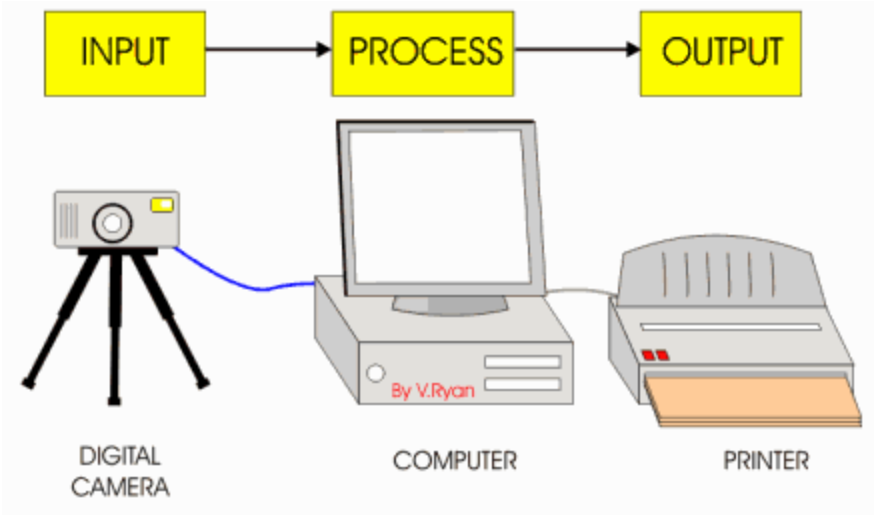
- Compare the open loop and closed loop control systems. (U / C) (E)
- Summarize the five input devices and Machine Control Unit (MCU) in CNC machine. (U / C) (E & T)
- Explain the machine tool and driving system in CNC machine. (U / C) (E & T)
- Interpret the two feedback devices and display device in CNC machine. (U / C) (E & T)

35 mins

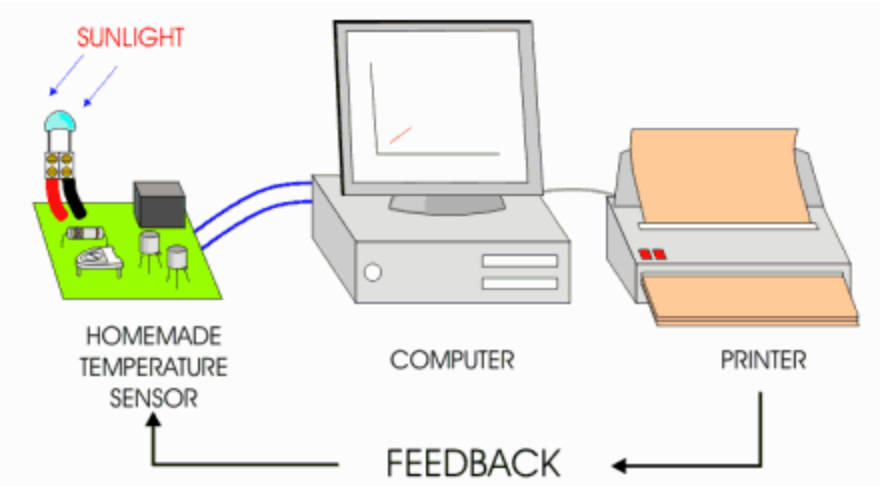
Construction Details of CNC machines

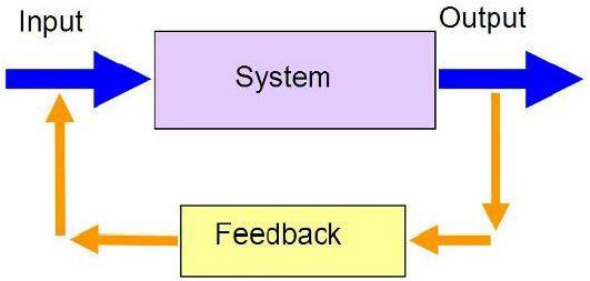
Control Systems- Open Loop Systems



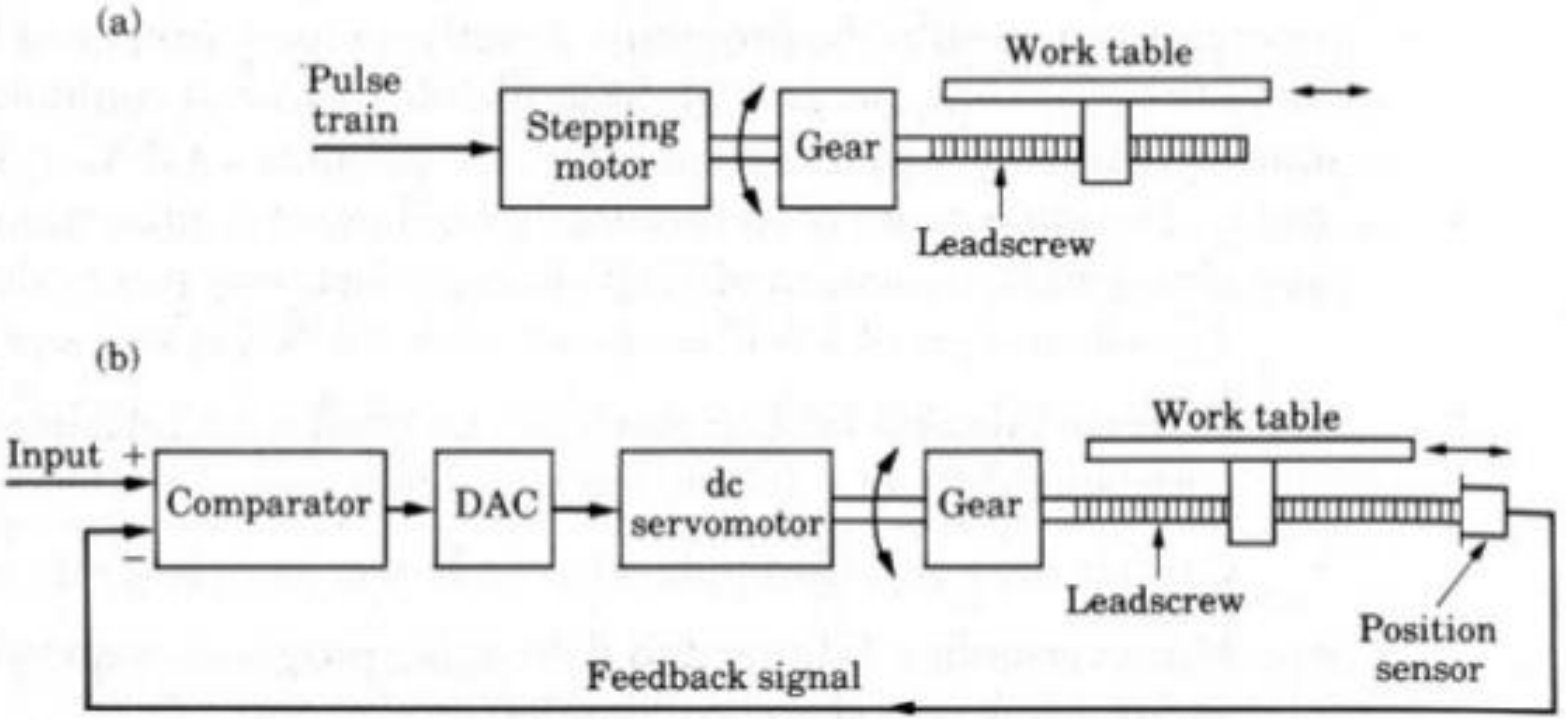


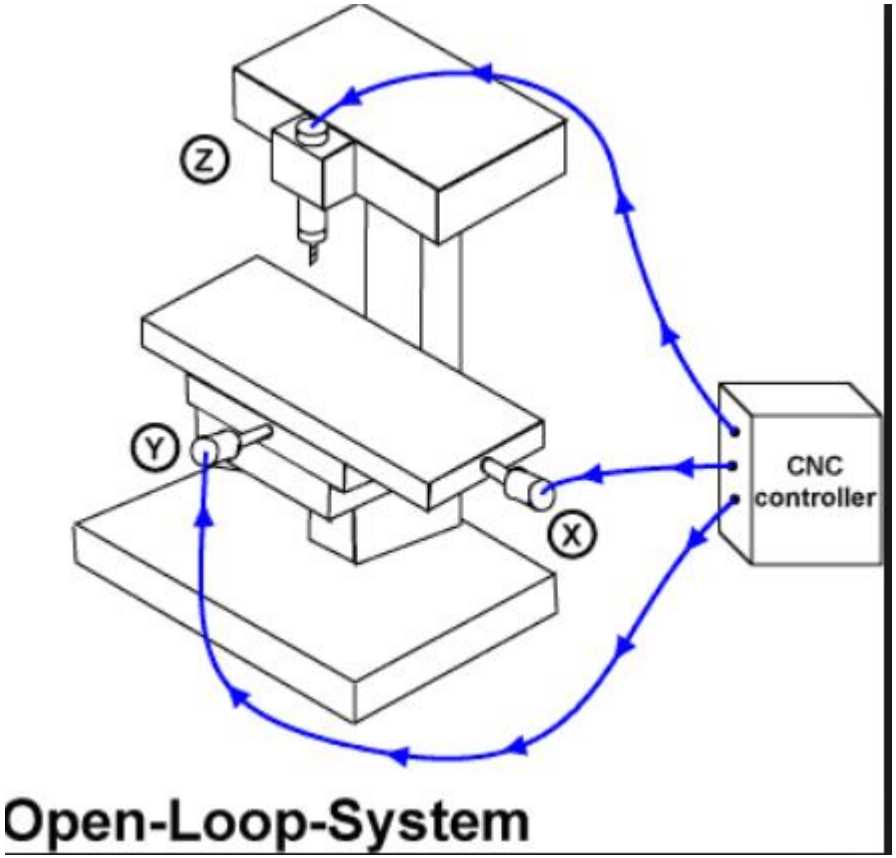
Closed Loop Systems



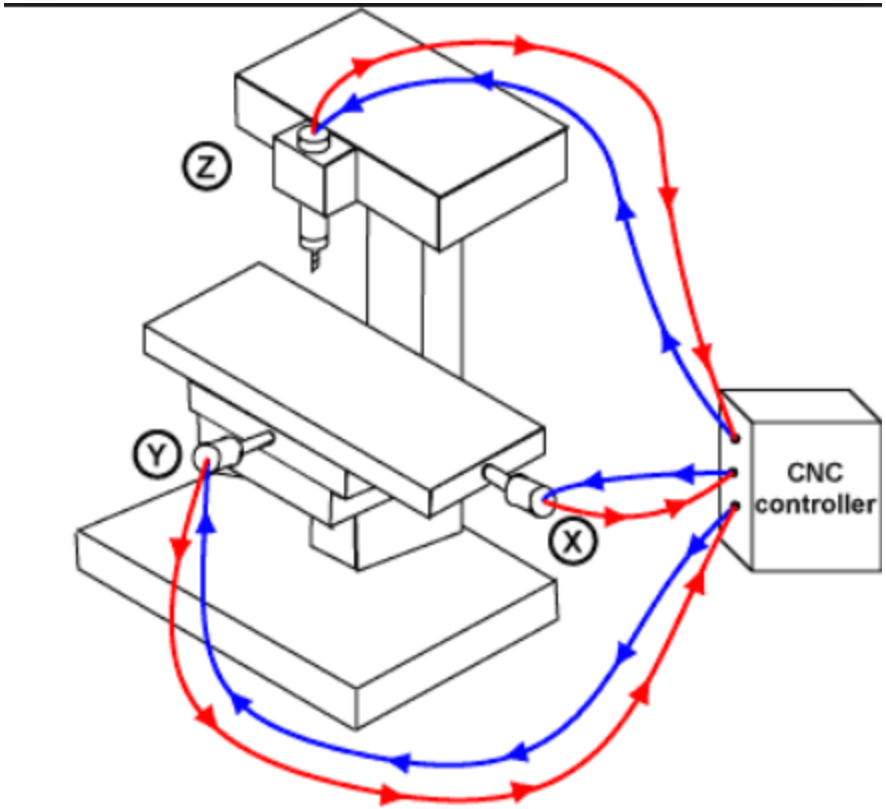


Open Loop vs. Closed Loop controls





Open-Loop-System

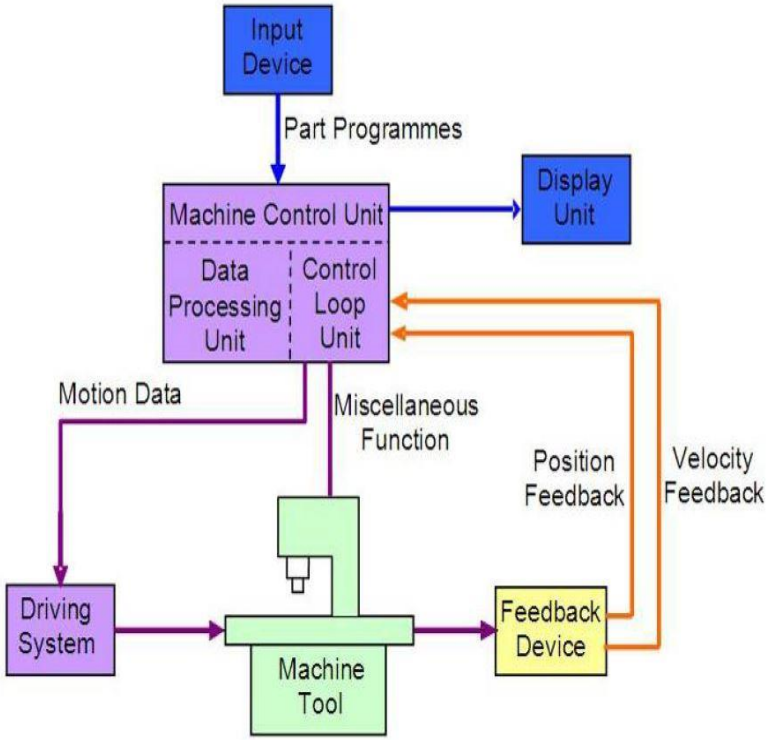


Closed-Loop-System

Elements of a CNC System

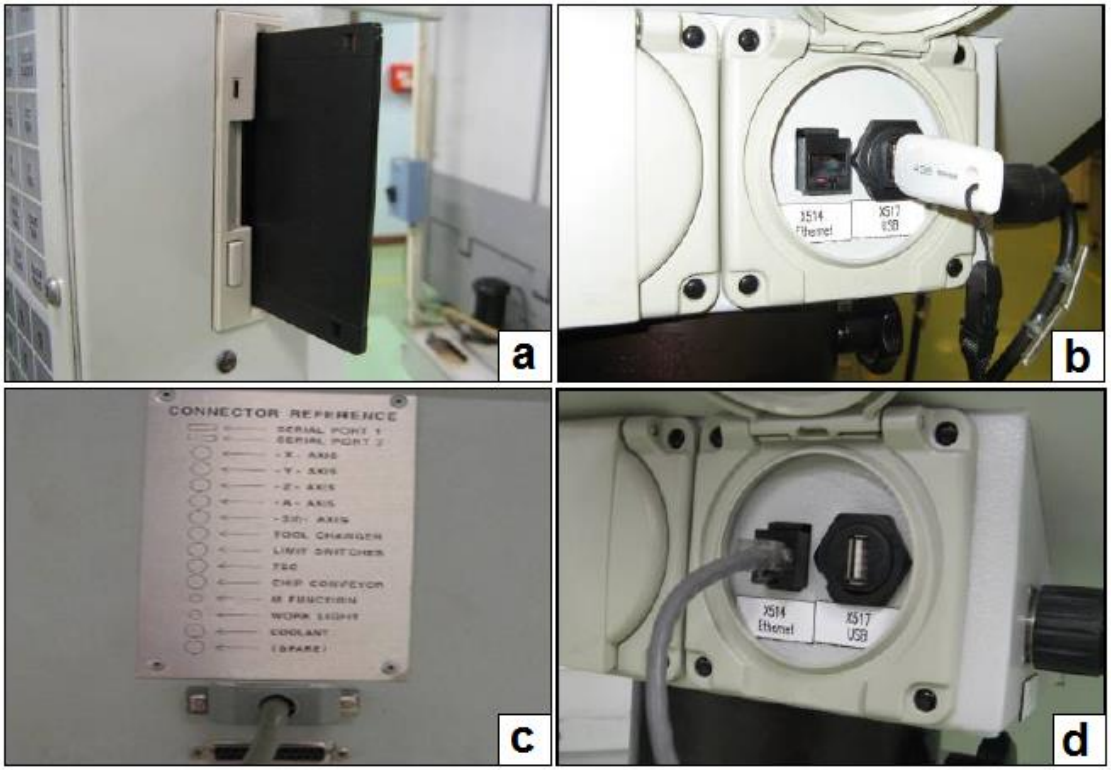
A CNC system consists of the following 6 major elements:

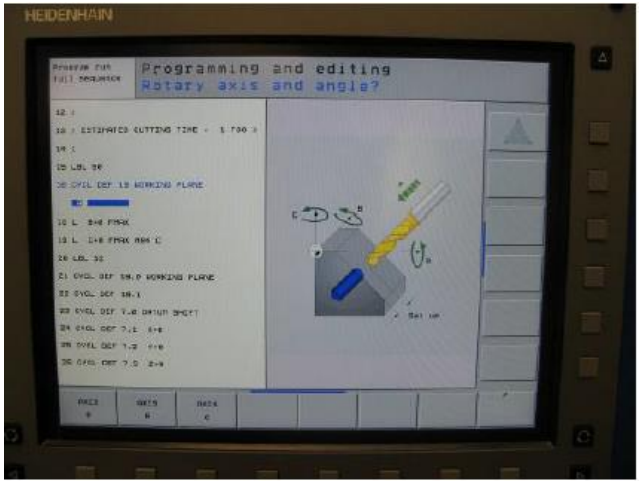
- a. Input Device
- b. Machine Control Unit
- c. Machine Tool
- d. Driving System
- e. Feedback Devices
- f. Display Unit

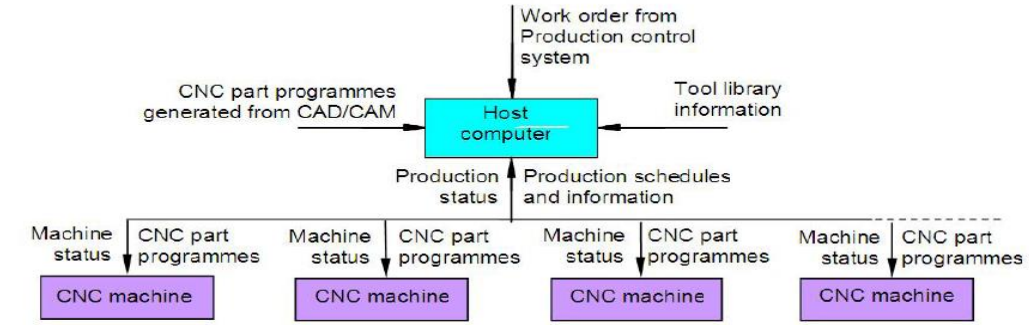


Input Devices

- Floppy Disk Drive
- USB Flash Drive
- Serial communication
- Ethernet communication
- Conversational Programming



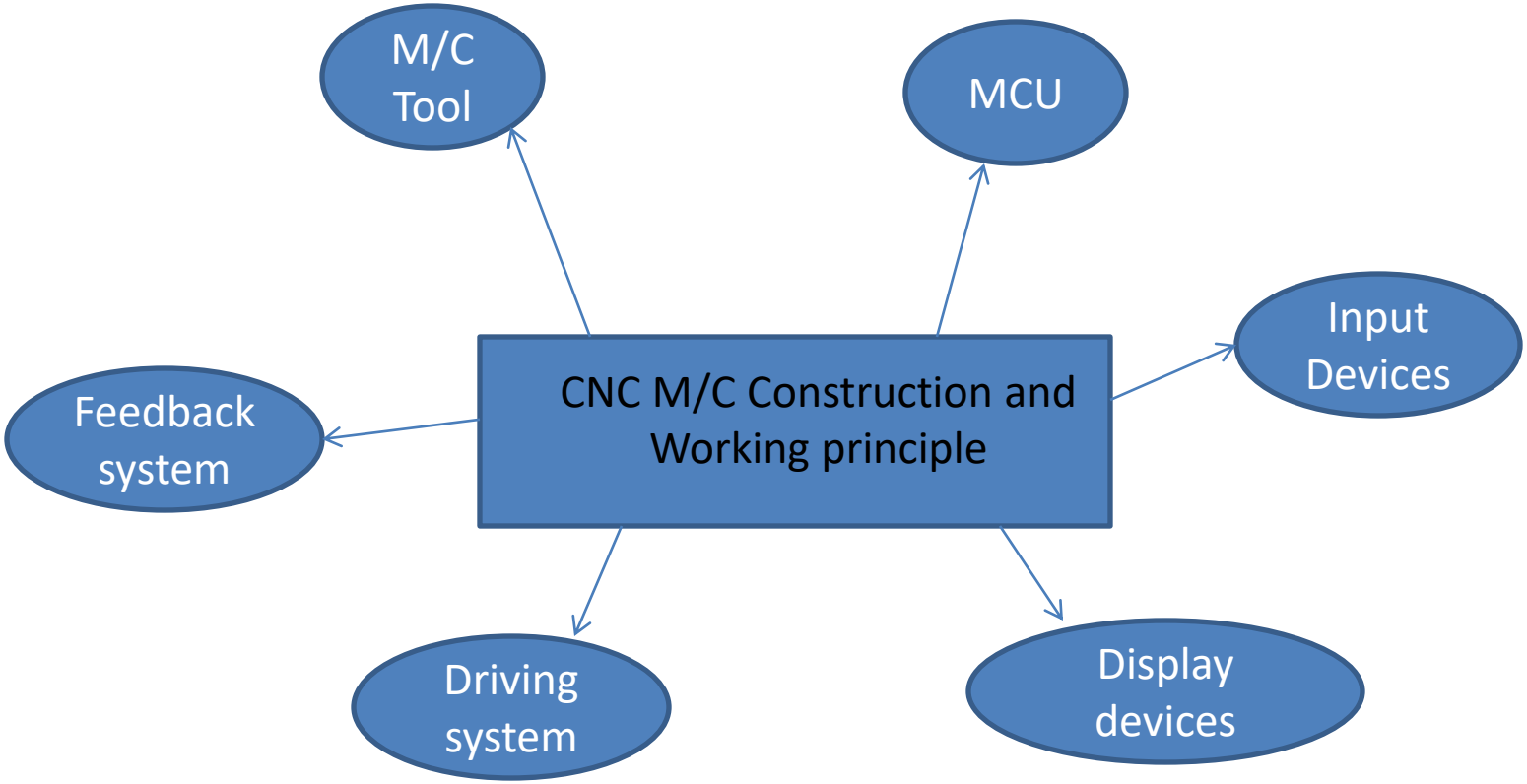




Machine Control Unit (MCU)

- Data Processing Unit
- Control Loop Unit
- Machine Tool
- Driving System
    - A. DC Servo Motor
    - B. AC Servo Motor
    - C. Stepping Motor
    - D. Linear Motor
- Feedback Device
    - A. Positional Feed Back Devices
    - B. Velocity Feedback Device

Concept Map


M/C Tool
MCU
Input Devices
Feedback system
CNC M/C Construction and Working principle
Driving system
Display devices

Discussion

10 mins