Department of Computer Science and Engineering

FACULTY OF ENGINEERING AND TECHNOLOGY
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CS-501

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PROCESS

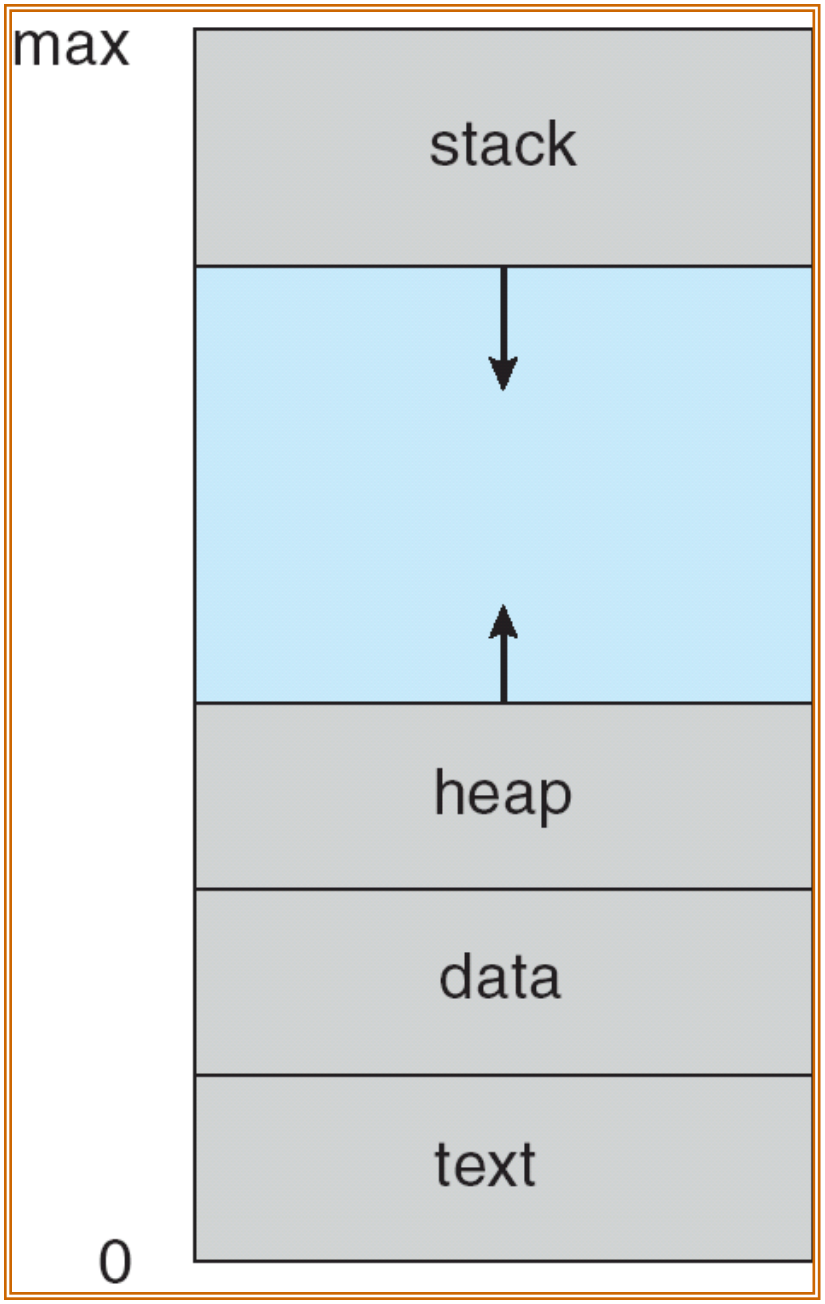
Process Concept

- A process is a program in *execution*. It is a unit of work within the system. *Program is a passive entity*, *process is an active entity*.

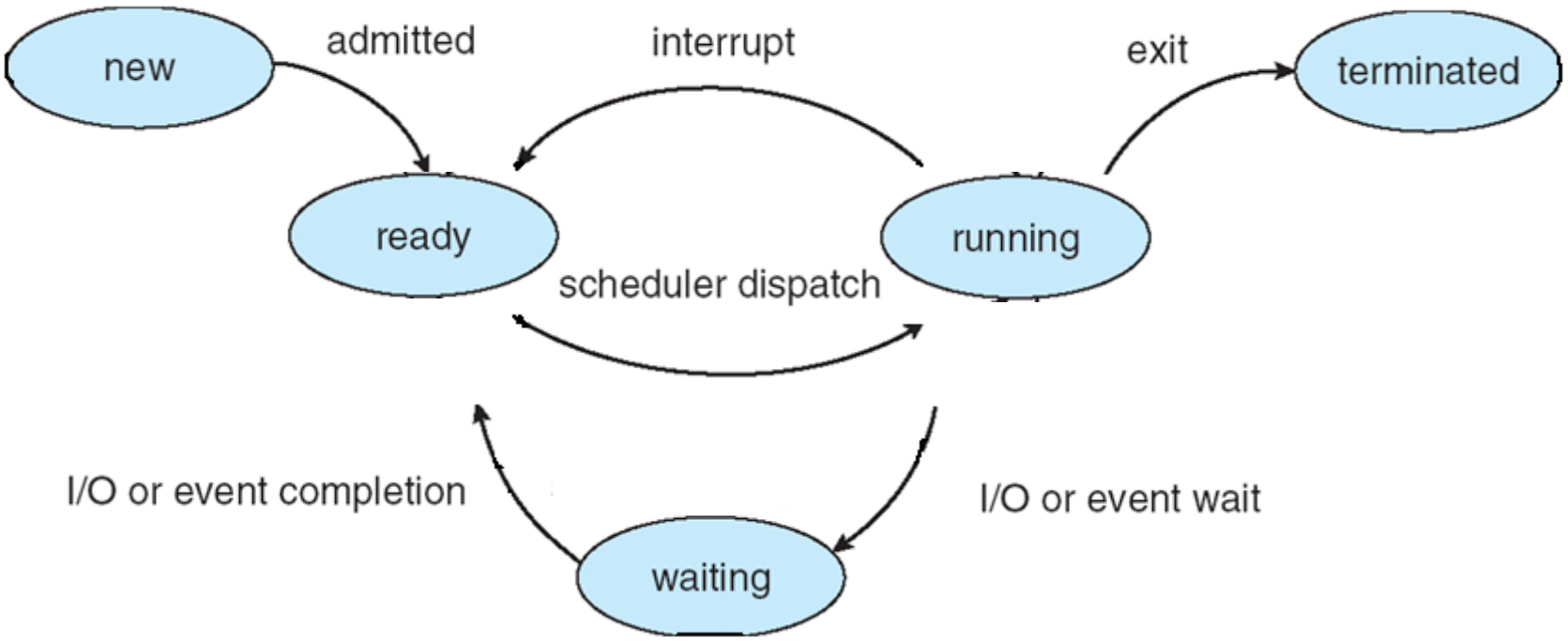
- Process needs *resources* to accomplish its task
  - CPU, memory, I/O, files
  - Initialization data

- A process includes:
  - program counter
  - stack
  - data section

Process in Memory



Process State



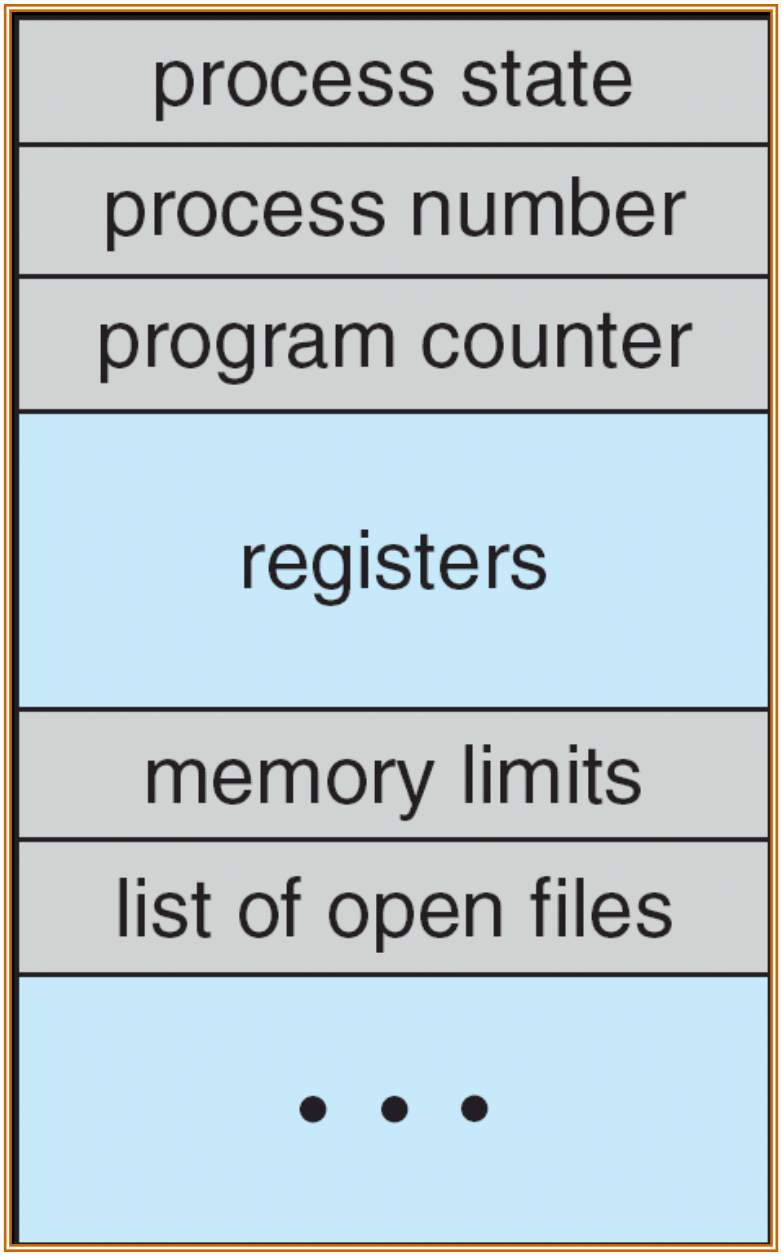
Process State

- As a process executes, it changes state
  - new: The process is being created
  - running: Instructions are being executed
  - waiting: The process is waiting for some event to occur
  - ready: The process is waiting to be assigned to CPU
  - terminated: The process has finished execution

Process Control Block (PCB)1/2

- Information associated with each process
  - Process state
  - Program counter
  - CPU registers
  - CPU scheduling information
  - Memory-management information
  - Accounting information
  - I/O status information

Process Control Block (PCB) 2/2



Exercise

1. What do you understand by process?
2. Explain various steps of process with suitable diagram.
3. Explain process control block.
4. What is the need for Process Control Block (PCB)?
5. Draw process state transition diagram.
6. Describe the typical elements of the process control block.
7. Differentiate between Process and Program.
8. Define process. Explain various steps involved in change of a process state with neat transition diagram.

References

1. Silberschatz, Galvin and Gagne, “Operating Systems Concepts”, Wiley.

2. William Stallings, “Operating Systems: Internals and Design Principles”, 6th Edition, Pearson Education.

3. D M Dhamdhere, “Operating Systems: A Concept based Approach”, 2nd Edition, TMH.

Thank You.