DE-101

December-2021

B.C.A., Sem.-III

CC-204 : Fundamentals of Operating System

Time : 2 Hours]   **[Max. Marks : 50**

Instructions :   (1)   **All** Questions in **Section – I** carry equal marks.

               (2)   Attempt any **TWO** questions in **Section – I**.

               (3)   Question – **5** in **Section – II** is **Compulsory**.

Section – I

1. (A) What is an operating system ? List out and explain functions of an operating system. **10**

   (B) Consider the Reference string : 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

   Find the page faults for 3 frames using FIFO and LRU page replacement Algorithms. **10**

2. (A) Explain the different states of process. Also explain state transition in detail with diagram. **10**

   (B) Draw a time line for each of the following scheduling algorithm. Also calculate the average turnaround time. Compare which algorithm is efficient.

   (1) FCFS   (2) SJN   (3) Round Robin (time quantum = 4ms)

Process	Arrival Time	Service Time
A	0	3
B	2	6
C	4	4
D	6	5
E	8	2

3. (A) What is Deadlock ? Explain conditions for Deadlock. **10**

   (B) What is Starvation ? Explain Dining philosophers problem in detail. **10**

4. (A) Consider the following disk request sequence for a disk with 200 cylinders (0-199). **10**

98, 183, 37, 122, 14, 124, 65, 67

Assume the current head pointer is 53. Find the number of head movements in cylinders using FCFS and SSTF disk scheduling algorithms.

(B) What is Data compression ? Write the Difference between Lossy and Lossless compression. **10**

Section – II

5. MCQs : **10**

(1) The operating system manages _____.

(a) Memory (b) Processor

(c) Disk and I/O devices (d) All of these

(2) Virtual memory can be implemented with _____.

(a) Segmentation (b) Paging

(c) None of these (d) Both (a) and (b)

(3) The mechanism that brings a page into memory only when it is needed is called

(a) Segmentation (b) Fragmentation

(c) Demand paging (d) Page Replacement

(4) A _____ is a program in execution.

(a) Program (b) Process

(c) Thread (d) None of these

(5) A _____ is a data structure maintained by the operating system for every process.

(a) Thread Control Block (b) Process Control Block

(c) Both (a) and (b) (d) None of these

(6) _____ is the amount of time taken to execute a particular process.

(a) Throughput (b) Waiting Time

(c) Turnaround Time (d) Response Time

(7) A situation where two or more processes get into a state whereby each is holding a resource while the other is requesting.

(a) Page Fault (b) Debugging

(c) Deadlock (d) I/O management

(8) A _____ is a non-negative integer variable that is used as a binary signal, a flag

    (a) WAIT – SIGNAL   (b) GO – AHEAD

    (c) TEST – SET   (d) Semaphore

(9) The time taken for the desired sector to rotate to the disk head is called _____

    (a) Positioning Time   (b) Random Access Time

    (c) Rotational Latency   (d) None of these

(10) _____ is a technique used to save space in files.

    (a) Data Compression   (b) Free Data

    (c) Store Data   (d) None of these

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