13. What are the different types of files ? What are the tasks of the file management system ? List some file system related commands in UNIX. How does OS ensure security in file system ?

(20519) Roll No. .....

Total Questions : 13] [Printed Pages : 4

18017

B.C.A. IVth Semester Examination, May-2019

OPERATING SYSTEM

(BCA–402)

Time : 3 Hrs.] *[M.M. : 75*

Note :– Attempt questions from all Sections as per instructions.

Section–A

(Very Short Answer Type Questions)

Note :– Attempt all the *five* questions. Each question carries 3 marks.

1. Discuss virtual memory and their benefits.
2. Explain directory structure.
3. What is Process Control Block ? Design basic framework of process control block.

4. Differentiate multiprogramming and time sharing operating system.

5. Name the different file access methods and describe in brief.

Section–B

(Short Answer Type Questions)

Note :– Attempt any *two* questions out of the following three questions. Each question carries 7½ marks.

6. What is Fragmentation Problem ? Describe the external and internal fragmentation.

7. Write the name disk schedule algorithm. Write the method and explain the working of any *two* algorithm.

8. Consider the following reference string :

   1, 2, 3, 4, 2, 1, 6, 5, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

   How many page faults will occur for :

   (i) LRU replacement

   (ii) FIFO replacement ?

Note :– Initial all frames are empty. Best to assume 5 frames.

Section–C

(Long Answer Type Questions)

Note :– Attempt any *three* questions out of the following five questions. Each question carries 15 marks.

9. Write short notes on the following :

   (a) File allocation methods

   (b) Swapping

   (c) Disk structure

   (d) Contiguous memory allocation

   (e) Threads

10. What is Dead lock ? Explain four necessary conditions for dead lock to occur with suitable example. Describe the different methods for prevention and avoidance of dead lock.

11. (a) What the basic functions does an operating system perform as a resources manager ?

    (b) Show disk structure pictorially. Find the total capacity of the disk bared on the disk parameters.

12. (a) Under what circumstances does page fault occur ?

    (b) Describe the action taken by the operation system when page fault occur.

12. What is deadlock ? Explain four necessary conditions for deadlock to occur with suitable example. Describe the different methods for prevention and avoidance of deadlocks.

13. Explain the linked allocation method for file. List the merits and drawbacks of this method. How does an indexed allocation solve the problems of linked allocation scheme ?

(20518) Roll No. .....

BCA-IV Sem.

18017

B. C. A. Examination, May 2018

Operating System

(BCA-402)

(New)

Time : Three Hours] *[Maximum Marks : 75*

Note : Attempt questions from all Sections as per instructions.

Section-A

(Very Short Answer Questions)

Attempt all the *five* questions. Each question carries 3 marks. 3×5=15

1. What is an operating system ? Discuss the various services of the OS.

2. Difference between time sharing system and real time system.

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3. Difference between physical address and logical address.

4. Explain the demand paging and cache memory.

5. Explain the various attributes of a file.

Section-B

(Short Answer Questions)

Attempt any *two* questions out of the following three questions. Each question carries 7½ marks. 7½×2=15

6. Describe the critical section problem with suitable example.

7. Write the five UNIX and DOS commands with cross reference and function.

8. Explain, how memory can dynamically allocated using first fit, best fit and worst fit strategies.

Section-C

(Detailed Answer Questions)

Attempt any *three* questions out of the following five questions. Each question carries 15 marks. 15×3=45

9. (a) What is page frame and page fault?

   (b) Solve:

   7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1 using FIFO and LRU algorithm and calculate the page fault, page from = 3.

10. (a) Explain the performance criteria for scheduling algorithms.

    (b) Consider the following process:

Process	Arrival Time	Burst Time (ms)
P_1	0	8
P_2	1	4
P_3	2	9
P_4	3	5

Calculate the average Wt. time and TAT by SJF preemptive and SJF non-preemptive scheduling.

11. Define the following:

    (i) Fragmentation

    (ii) Paging

    (iii) Process state

    (iv) Segmentation

    (v) Memory management system.

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11. (a) Define Resource Allocation Graph. Give that, there is only one instance of each resource type, describe the resource allocation graph algorithm for deadlock avoidance using a suitable example.

(b) Discuss the procedure for avoiding a deadlock situation. Also describe the procedure to achieve safe state.

12. (a) Explain the different techniques to improve disk reliability.

(b) Explain the different activities performed by disk management.

13. (a) Consider the following page reference string :
1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 2, 1, 2, 3, 6
How many page fault would occur for the following replacement algorithms, assuming four frames ?
(i) LRU replacement
(ii) FIFO replacement
(iii) Optimal replacement.

(b) Describe the following with suitable example :
(i) Directory structure
(ii) Free space management.

V

(20516) Roll No. .....

BCA-IV Sem.

18017

B. C. A. Examination, May 2016

Operating System

(BCA-402)

(New)

Time : Three Hours] *[Maximum Marks : 75*

Note : Attempt questions from all Sections as per instructions.

Section-A

(Very Short Answer Questions)

Attempt all the *five* questions. Each question carries 3 marks. Very short answer is required not exceeding 75 words. 3×5=15

1. Name two differences between logical and physical addresses.

2. What is preemptive and non-preemptive scheduling? Explain.

3. Which are the four conditions that causes the occurrence of a deadlock? Explain.

4. What are the functions of device management?

5. Explain the concept of system, protection and security.

Section-B

(Short Answer Questions)

Attempt any *two* questions out of the following three questions. Each question carries 7½ marks. Short answer is required not exceeding 200 words. 7½×2=15

6. Describe the following allocation algorithms in the context of contiguous allocation :
   (i) First fit
   (ii) Best fit
   (iii) Worst fit.

7. What is deadlock ? Discuss the method for handling deadlocks.

8. What is disk scheduling ? Define various types of disk scheduling.

Section-C

(Detailed Answer Questions)

Attempt any *three* questions out of the following five questions. Each question carries 15 marks. Answer is required in detail. 15×3=45

9. (a) What is an operating system ? Discuss the role of an operating system.
   (b) What is memory segmentation ? How is it different from paging ?

10. (a) Explain Semaphore.
    (b) Explain with examples of your own, the following any two process scheduling algorithm :
       (i) First Come First Serve
       (ii) Shortest Job First
       (iii) Priority Scheduling
       (iv) Round Robin.

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11. Define deadlock. What are the four necessary conditions for deadlock. Discuss different strategies for denying various necessary conditions. 15

12. (a) Explain the structure of a disk with the help of a diagram. 7.5

    (b) Explain - the concept of swap-space management. 7.5

13. Write short notes on any **three** of the following : 5×3=15

    (a) Directory Structure

    (b) Multi threading Concept

    (c) File Protection and Security

    (d) Free Space Management

    (e) Thrashing

N (Printed Pages 4)

(20517) Roll No. .....

BCA - IV Sem.

18017

BCA Examination, May 2017

Operating System

(BCA-402)

(New)

Time : Three Hours] *[Maximum Marks :75*

Note : Attempt **all** the sections as per instructions.

Section-A

(Very Short Answer Questions)

Note : Attempt all **five** questions. Each question carries 3 marks. 3×5=15

1. Define the following terms : 3

    (a) Batch processing

    (b) Time sharing

    (c) Real Time

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2. What are the classical problems of Synchronisation? 3

3. List three examples of deadlocks that are not related to a Computer system environment. 3

4. What do you understand by virtual devices? and what are the advantages of virtual devices? 3

5. Give the various allocation methods of file system. 3

Section-B

Note : Attempt any **two** questions. Each question is of 7.5 marks. 7.5×2=15

6. Define the contiguous linked allocation and non-contiguous allocation with suitable examples. 7.5

7. Describe the Paging and Segmentation techniques of memory management in detail. 7.5

8. What are Process Control Blocks (PCBs)? Why these are used by Operating system? Also explain the structure of PCB. 7.5

Section-C

Note : Attempt any **three** questions. Each question is of 15 marks. Answer is required in detail. 15×3=45

9. Consider the following page reference string

   1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5

   How many page fault would occur for the following replacement algorithms, assuming four frames : 15

   (a) LRU replacement

   (b) FIFO replacement

   (c) Optimal replacement

10. (a) Discuss various scheduling algorithm with examples. 10

    (b) Explain the difference between thread and process. 05

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