B.Tech III Year I Semester (R13) Regular Examinations December 2015

OPERATING SYSTEMS

(Common to CSE and IT)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

*****

1   Answer the following: (10 X 02 = 20 Marks)

(a) In general one process is not allowed to access the memory of another process, then how shared memory is working?

(b) void main()
{
fork(); fork(); fork();
}
How many child processes are created by the above C code? Explain.

(c) Heap memory is shared across threads in multi threaded process but not stack memory. Why?

(d) Does Peterson's solution to the mutual exclusion works when process scheduling is preemptive? How about when it is non preemptive?

(e) A computer program has enough room to hold four programs in its main memory. These programs are idle waiting for I/O half time. What fraction of CPU time is wasted?

(f) A system has p processes and r resources, each process needs maximum of m resources. What condition must hold to make system deadlock free?

(g) It has been suggested that the first part of each UNIX file kept in the same disk block as its I-node. What good would this do?

(h) If 011011011110000 is bit map of a disk, then calculate the free space of the disk if disk employing each block of size 1 MB.

(i) List the forms of accidental and malicious security violations.

(j) Define Trojan Horse.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

$\boxed{\text{UNIT – I}}$

2 (a) Write the advantages of peer-to-peer systems over client-server systems? Give an example to peer-to-peer model.

(b) What are the set of operating system services that provides functions that are helpful to the user?

OR

3 (a) Define debugging. What are different failure analysis approaches in operating systems?

(b) Draw and explain process state diagram with two suspend states.

$\boxed{\text{UNIT – II}}$

4   Consider 3 processes P_1, P_2 and P_3, which require 5, 7 and 4 time units and arrive at time 0, 1 and 3. Draw the Gant chart, process completion sequence and average waiting time for.
(i) Round robin scheduling with CPU quantum of 2 time units.
(ii) FCFS.

OR

5   Assume that the pool consists of n buffers, each capable of holding one item. The mutex semaphore provides mutual exclusion for accesses to the buffer pool and is initialized to the value 1. The empty and full semaphores count the number of empty and full buffers. The semaphore empty is initialized to the value n; the semaphore full is initialized to the value 0.
Write a C like code for producer and consumer processes.

6   Consider a swapping system in which memory consists of the following hole sizes in memory order: 10 KB, 4 KB, 20 KB, 18 KB, 7 KB. 9 KB, 12 KB, and 15 KB. Which hole is taken for successive segment requests of 12 KB, 10 KB and 9 KB for:
   (a) First fit.
   (b) Best fit.
   (c) Next fit.

OR

7   Suppose there are 2 copies of resource A, 3 copies of resource B, and 3 copies of resource C. Suppose further that process 1 holds one unit of resources B and C and is waiting for a unit of A; that process 2 is holding a unit of A and waiting on a unit of B; and that process 3 is holding one unit of A, two units of B, and one unit of C.
   (a) Draw the resource allocation graph.
   (b) Is the system in a deadlocked state? Why or why not?

8   (a) Explain C-LOOK disk scheduling algorithms with example.
   (b) Discuss about swap-space management.

OR

9   Explain file allocation methods in detail.

10   How do we implement access matrix? Explain in detail.

OR

11   Give a brief note on I/O mode data transfers.

*****

B.Tech III Year I Semester (R13) Regular Examinations December 2015

OPERATING SYSTEMS

(Common to CSE and IT)

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PART – A
(Compulsory Question)

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        How many child processes are created by the above C code? Explain.
   (c) Heap memory is shared across threads in multi threaded process but not stack memory. Why?
   (d) Does Peterson's solution to the mutual exclusion works when process scheduling is preemptive? How about when it is non preemptive?
   (e) A computer program has enough room to hold four programs in its main memory. These programs are idle waiting for I/O half time. What fraction of CPU time is wasted?
   (f) A system has p processes and r resources, each process needs maximum of m resources. What condition must hold to make system deadlock free?
   (g) It has been suggested that the first part of each UNIX file kept in the same disk block as its I-node. What good would this do?
   (h) If 011011011110000 is bit map of a disk, then calculate the free space of the disk if disk employing each block of size 1 MB.
   (i) List the forms of accidental and malicious security violations.
   (j) Define Trojan Horse.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) Write the advantages of peer-to-peer systems over client-server systems? Give an example to peer-to-peer model.
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UNIT – II

4 Consider 3 processes P_1, P_2 and P_3, which require 5, 7 and 4 time units and arrive at time 0, 1 and 3. Draw the Gant chart, process completion sequence and average waiting time for.
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OR

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   (a) Draw the resource allocation graph.
   (b) Is the system in a deadlocked state? Why or why not?

UNIT – IV

8 (a) Explain C-LOOK disk scheduling algorithms with example.
   (b) Discuss about swap-space management.

OR

9   Explain file allocation methods in detail.

UNIT – V

10   How do we implement access matrix? Explain in detail.

OR

11   Give a brief note on I/O mode data transfers.

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R09

Code: 9A05505

B.Tech III Year I Semester (R09) Supplementary Examinations June 2016
OPERATING SYSTEMS
(Common to IT, ECC and CSE)

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 (a) Explain with an example how system calls are used.
   (b) With a neat diagram, explain the structure of traditional UNIX operating system.

2 (a) Give the queueing diagram representation of process scheduling and explain.
   (b) Explain in detail about multilevel feedback-queue scheduling.

3 (a) What is race condition? Explain with an example.
   (b) Explain Log-based recovery in detail.

4 (a) What is relocation? Explain dynamic relocation using a relocation register.
   (b) Explain the concept of virtual memory.

5 (a) How deadlock is detected?
   (b) Discuss the deadlock recovery techniques in detail.

6 (a) What is distributed file system? How file sharing is achieved in distributed file system?
   (b) What are the problems associated with file sharing?

7 (a) Explain with a neat diagram the typical life cycle of a blocking read request.
   (b) Explain about network-attached storage device. What is its drawback?

8   What is encryption? What are the components of an encryption? How do you classify encryption
        algorithms?

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Code: 13A05501

R13

B.Tech III Year I Semester (R13) Supplementary Examinations June 2016
OPERATING SYSTEMS
(Common to CSE and IT)

Time: 3 hours   Max. Marks: 70

PART – A
(Compulsory Question)
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1   Answer the following: (10 X 02 = 20 Marks)
  (a)   Define an Operating system? List its main functions.
  (b)   Explain the term 'System call'.
  (c)   Define a process. How it differs from a program?
  (d)   Compare Pre-emptive and non-preemptive Scheduling.
  (e)   List advantages and disadvantages of contiguous memory allocation.
  (f)   Explain the term 'Thrashing'.
  (g)   Explain in brief sequential access method of file.
  (h)   What are the attributes of the file?
  (i)   What is cryptography?
  (j)   List and explain important parameters regarding disk operations.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

[UNIT – I]

2   Explain in detail Inter-process Communication.

OR

3   Explain the term process context. Explain the process of context switching.

[UNIT – II]

4   List and explain various scheduling Criteria. Discuss the performance of RR algorithm based on those
    criteria.

OR

5   Discuss Peterson's algorithm with its Merits and Demerits.

[UNIT – III]

6   Describe Banker's algorithm to avoid a deadlock .What are the problems in its implementation.

OR

7   Explain the address translation mechanism in paging. Why is the page size informally some power of
    two? Also discuss the impact of page size on the overall system performance.

[UNIT – IV]

8   Describe in detail RAID levels in detail and the problems associated with RAID.

OR

9   Explain the use of directory organization of files. And Discuss in detail the implementation of 'Tree
    structured directory.

[UNIT – V]

10   Explain the Shortest Seek Time First algorithm with an example.

OR

11   Describe the structure of Device Control block and explain.

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