Code: 15A12401

R15

B.Tech II Year II Semester (R15) Regular Examinations May/June 2017
OPERATING SYSTEMS
(Information Technology)

Time: 3 hours   Max. Marks: 70

PART - A
(Compulsory Question)

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

(a)   What are the main differences between operating system for mainframe computers and personal computers?

(b)   List the operating system functions.

(c)   Why it is important for the scheduler to distinguish I/O bound programs from CPU bound programs?

(d)   Mention the purpose of mutex locks.

(e)   Is it possible to have a deadlock involving only a single process? Justify your answer.

(f)   Under what circumstances do page faults occurs.

(g)   In what situations would using memory as a RAM disk be more useful than using it as a disk cache.

(h)   Give an example of an application that could benefit from operating system support for random access to indexed files.

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

(j)   What is the need to know about the principle of protection?

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

UNIT - I

2   (a)   How network computers are differs from traditional personal computers? Describe some usages scenario in which it is advantageous to use network computers.

(b)   Make comparisons between the short term, medium term and long term scheduling.

OR

3   (a)   Why the system calls are to be provided by operating system? What system calls are provided by a typical OS? Explain in detail.

(b)   What is the main difficulty that a programmer must overcome in writing an operating system for a real time environment?

UNIT - II

4   Why do solaris, linux and windows XP use spinlocks as a synchronization mechanism only on multiprocessor system and not on single processor systems? Explain.

OR

5   (a)   Describe the actions taken by a thread library to context switch between user level threads.

(b)   Explain the differences in how much the following scheduling algorithms discriminates in favor of short processes.
(i) FCFS.
(ii) RR.

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UNIT - III

6   What are the optimistic assumptions made in the deadlock detection algorithm? How can this assumption be violated? Explain.

OR

7   (a)   Consider logical address space of 64 pages of 1024 words each, mapped onto a physical memory of 32 frames.
        (i) How many bits are there in the logical address?
        (ii) How many bits are there in the physical address?

    (b)   Discuss the hardware support required to support demand paging.

UNIT - IV

8   List and explain the different access methods to access information in files.

OR

9   (a)   What is mounting of a file system? How mounting takes place in different operating system? Explain with example.

    (b)   In a disk jukebox, what would be the effect of having more open files than the number of drives in the jukebox?

UNIT - V

10   (a)   Discuss the strengths and weakness of implementing an access matrix using capabilities that are associated with domains.

    (b)   What protection problems may arise if shared stack is used for parameter passing?

OR

11   Make a list of six security concerns for a bank computer system. For each item on your list, state whether this concern relates to physical, human or operating system security.

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