BITS, Pilani-Dubai,Campus, Knowledge Village,Dubai
III Year First Semester 2003-2004
Degree:B.S. Branch:C.S.E

COURSE NO. : CS UC372

COURSE TITLE : Operating systems

Time :50 mts Date :12-05-2003 Marks: 60 Test:1

Q1. In a user interface manager, explain which of the following design principles are *mechanism*, and which are *policy (each sub division carries 2 marks)*

a)Ability to draw a window on a different machine to that on which the requesting process is running.

b) Ability to change the language of text in the interface

c) cut, copy and paste are always done using the same menu items and keyboard commands

d)Anything which can be drawn in a window can be printed.

e) Although it is possible to move the mouse pointer under software control to an arbitrary location, its movement should always be under control of the user, through mouse movement

Q2. During multiprogramming, choosing the correct quantum size is important to the effective operation of an operating system. Consider a single processor timesharing system that supports a large number of interactive users. Each time a process gets the processor ,the interrupting clock is set to interrupt after the quantum expires. Assume a single quantum for all processes on the system.

a)What would be the effect of setting the quantum at a very large value, say ten minutes ? (2 marks)

b)What if the quantum were set to a very small value , say a few processor cycles ?(3 marks)

c)Obviously ,an appropriate quantum must be between the values in a) and b). Suppose you could turn a dial and vary the quantum. How would you know when you had chosen the "right" value.? What factors make this value right from the user's standpoint ? What factors make it right from the system's standpoint? (5 marks)

Q3. Management of waiting is an essential part of every operating system. We have seen several waiting states ,namely ready,blocked, suspended ready and suspended blocked. For each of these states discuss how the process got into the state, what the process is waiting for ,and the likelihood that the process could get "lost" waiting in the state definitely. (10 marks)

Q4. System A runs exactly one process per user system. System B can support many processes per user.
Discuss the organizational differences between operating systems A and B with regard to support of processes.(7 marks)
What is typically contained in the address space of a process?(3 marks)

Q5. a)The client-server model architecture is popular in distributed o.s. Can it also be used in a single computer system? (5 marks)
b).With the help of an example explain why the separation of mechanism and policy a desirable property in o.s ?(5 marks)

Q6. With relevant examples outline what is meant by the execution context of the process ? (3 marks)
When there is a need for storing the context of the process ? (2 marks)
Under what circumstances mode switch takes place ?(2 marks)
What is the difference between mode switch and process switch ?
(3 marks)

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Quiz:1 All questions carry equal marks Time:50 mts

Answers should be very short and upto the point

Q1.An operating system is hosting a number of processes each of which wants to access to I/O. Is it possible that at some point of time all the processes that want to access the I/O can be waiting for the I/O resources? Justify your answer using one or two lines

Q2.What is the difference between thread_yield and thread_sleep( ) API calls ?

Q3. When would you want to use two threads in the same process? When would you want two different processes ?

Q4. Identify three styles of switching from user mode to supervisor mode.

Q5. A typical hardware architecture provides an instruction called "return from interrupt", and abbreviated by something like "reti". This instruction switches the mode of operation from supervisor mode to user mode. This instruction is usually only available while the machine is running in supervisor mode.

1. Explain where in the operating system this instruction would be used.
2. What happens if an application program executes this instruction?

Q5.In a JVM running on a windows NT can we have more java threads than kernel threads ? justify with simple answer.

Q6.What is the main difference between pre-emptive and non-pre emptive thread scheduling ?

Q7.When and why the scheduler of the operating system is executed ?

Q8.What is the main difference between fork( ) system call and createprocess( ) system call ?

Q9.What is the main difference between multiprogramming and multiprocessing ?

Q10.List out two important advantages of microkernel approach for building OS ?

Q11. Which tasks would benefit from running on a real-time OS? Why?

- Playing MP3s
- Compiling
- Editing
- Video capture

- Portable

Q13. Which statement most correctly describes an **operating system** (OS)?

- a. The OS starts up the computer, then shuts down when an application (app) is opened, and the app communicates directly with the hardware.
- b. **Operating** systems are becoming obsolete as applications become more sophisticated.
- c. The OS runs continuously and is the link between applications and **system** hardware.
- d. **Operating** systems are generally free.

Q14. What is the main purpose of an operating system ?

a)Resource abstraction

b)resource sharing

c)time sharing

d)Resource abstraction and resource sharing

Q15. What are resources?
a) The CPU time assigned to a process
b) The hardware
c) The software
d) Memory, diskspace, CPU time and I/O facilities

Q16. What is the difference between multiprogramming and multiprocessing?