نظم التشغيل
12:2
الخميس 24/6/2021
أ.د. خالد فتحي

Faculty of Computers & Information, Assiut University
3rd Level
Final Exam
Duration: 2 hours

* Required

* This form will record your name, please fill your name.

1

* الإسم الرباعي (بالعربي فقط)

2

* رقم الجلوس

3

المستوي *

◯ الاول

◯ الثاني

◯ الثالث

◯ رابعة 2013

◯ رابعة 2014

◯ رابعة 2015

◯ رابعة 2016

◯ رابعة 2017

4

البرنامج *

◯ عام

◯ بايو

◯ هندسة

رقم المعمل *

○ ٠ج

○ ٠د

○ اب

○ اد

○ اهـ

○ ٢أ

○ ٢ب

○ ٢ج

○ ٢د

○ ٢هـ

○ ٣أ

○ ٣ب

○ ٣ج

○ ٣د

○ ٣هـ

○ ٤أ

○ ٤ب

6

رقم الكمبيوتر *

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7

الكود (قد تمت مراجعة بيانات الطالب ورقم الجلوس) *

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8

In Operating Systems, which of the following is/are CPU scheduling algorithms?
(2 Points)

◯ Round Robin

◯ Shortest Job First

◯ Priority

◯ All of the mentioned

9

In operating system, each process has its own _____
(2 Points)

○ address space and global variables

○ open files

○ pending alarms, signals, and signal handlers

○ all of the mentioned

10

What is interprocess communication?
(2 Points)

○ communication within the process

○ communication between two processes

○ communication between two threads of same process

○ none of the mentioned

11

A set of processes is deadlock if _____
(2 Points)

○ each process is blocked and will remain so forever

○ each process is terminated

○ all processes are trying to kill each other

○ none of the mentioned

12

The number of processes completed per unit time is known as _____
(2 Points)

○ Capacity

○ Throughput

○ Output

○ Efficiency

13

What is the degree of multiprogramming?
(2 Points)

○ the number of processes in the ready queue

○ the number of processes in the I/O queue

○ the number of processes executed per unit time

○ the number of processes in memory

14

When the process issues an I/O request _____
(2 Points)

○ It is placed in an I/O queue

○ It is placed in a waiting queue

○ It is placed in the Job queue

○ It is placed in the ready queue

15

What is a long-term scheduler?
(2 Points)

○ It selects processes which must be brought into the ready queue

○ It selects processes which must be executed next and allocates CPU

○ It selects processes which must be removed from memory by swapping

○ None of the mentioned

16

What is a short-term scheduler?
(2 Points)

○ It selects which process must be brought into the ready queue

○ It selects which process must be executed next and allocates CPU

○ It selects which process must be removed from memory by swapping

○ None of the mentioned

17

Suppose that a process is in "Blocked" state waiting for some I/O service. When the
service is completed, it goes to the _____
(2 Points)

○ Suspended state

○ Terminated state

○ Running state

○ Ready state

18

When several processes access the same data concurrently and the outcome of the execution depends on the order in which the access takes place is called _____
(2 Points)

○ essential condition

○ dynamic condition

○ race condition

○ critical condition

19

If a process is executing in its critical section, then no other processes can be executing in their critical section. What is this condition called?
(2 Points)

○ mutual exclusion

○ asynchronous exclusion

○ synchronous exclusion

○ critical exclusion

20

Which one of the following is a synchronization tool?
(2 Points)

○ semaphore

○ thread

○ pipe

○ socket

21

DMA is used for _____
(2 Points)

○ High speed devices

○ Low speed devices

○ Utilizing CPU cycles

○ All of the mentioned

22

The interval from the time of submission of a process to the time of completion is
termed as _____
(2 Points)

○ waiting time

○ turnaround time

○ response time

○ throughput

23

Which algorithm is defined in Time quantum?
(2 Points)

○ round robin scheduling algorithm

○ priority scheduling algorithm

○ multilevel queue scheduling algorithm

○ shortest job scheduling algorithm

24

A process is selected from the _____ queue by the _____ scheduler, to be executed
(2 Points)

○ ready, long term

○ ready, short term

○ blocked, short term

○ wait, long term

25

What is Response time?
(2 Points)

○ the total time taken from the submission time till the completion time

○ the total time taken from the submission time till the first response is produced

○ the total time taken from submission time till the response is output

○ none of the mentioned

26

Round robin scheduling falls under the category of _____
(2 Points)

○ Non-preemptive scheduling

○ Preemptive scheduling

○ All of the mentioned

○ None of the mentioned

27

The real difficulty with SJF in short term scheduling is _____
(2 Points)

○ it is too good an algorithm

○ knowing the length of the next CPU request

○ it is too complex to understand

○ none of the mentioned

28

What is 'Aging'?
(2 Points)

○ keeping track of what pages are currently residing in memory

○ increasing the priority of jobs to ensure termination in a finite time

○ keeping track of cache contents

○ keeping track of how many times a given page is referenced

29

Which of the following scheduling algorithms gives minimum average waiting time?
(2 Points)

○ SJF

○ FCFS

○ Round – robin

○ Priority

30

Which of the following conditions must be satisfied to solve the critical section problem?
(2 Points)

○ Mutual Exclusion

○ Progress

○ Bounded Waiting

○ All of the mentioned

31

A binary semaphore is a semaphore with integer values _____
(2 Points)

○ -2

○ 2

○ -1

○ 1

32

A system is in a safe state only if there exists a _____
(2 Points)

○ safe allocation

○ safe resource

○ safe sequence

○ all of the mentioned

33

If no cycle exists in the resource allocation graph _____
(2 Points)

○ then the system will not be in a safe state

○ then the system will be in a safe state

○ all of the mentioned

○ none of the mentioned

34

The wait-for graph is a deadlock detection algorithm that is applicable when _____
(2 Points)

○ all resources have a single instance

○ all resources have multiple instances

○ all resources have a single 7 multiple instances

○ all of the mentioned

35

The address generated by the CPU is referred to as _____
(2 Points)

○ Physical address

○ Logical address

○ Neither physical nor logical

○ None of the mentioned

36

The run time mapping from virtual to physical addresses is done by a hardware device called the _____
(2 Points)

○ Virtual to physical mapper

○ Memory management unit

○ Memory mapping unit

○ None of the mentioned

37

Program always deals with _____
(2 Points)

○ absolute address

○ physical address

○ logical address

○ relative address

38

What is compaction?
(2 Points)

○ a paging technique

○ a technique for overcoming fatal error

○ a technique for overcoming internal fragmentation

○ a technique for overcoming external fragmentation

39

In contiguous memory allocation _____
(2 Points)

○ each process is contained in a single contiguous section of memory

○ all processes are contained in a single contiguous section of memory

○ the memory space is contiguous

○ none of the mentioned

40

The first fit, best fit and worst fit are strategies to select a _____
(2 Points)

○ process from a queue to put in memory

○ processor to run the next process

○ free hole from a set of available holes

○ all of the mentioned

41

In internal fragmentation, memory is internal to a partition and _____
(2 Points)

○ is being used

○ is not being used

○ is always used

○ none of the mentioned

42

_____ is generally faster than _____ and _____
(2 Points)

○ first fit, best fit, worst fit

○ best fit, first fit, worst fit

○ worst fit, best fit, first fit

○ none of the mentioned

43

Every address generated by the CPU is divided into two parts. They are _____
(2 Points)

○ frame bit & page number

○ page number & page offset

○ page offset & frame bit

○ frame offset & page offset

44

The offset 'd' of the logical address must be _____
(2 Points)

○ between 0 and segment limit

○ greater than the segment number

○ greater than segment limit

○ between 0 and the segment number

45

When high priority task is indirectly preempted by medium priority task effectively inverting the relative priority of the two tasks, the scenario is called _____
(2 Points)

○ priority exchange

○ priority inversion

○ priority removal

○ priority modification

Which of the following scheduling policy is well suited for a time-shared operating system?
(2 Points)

◯ Round robin

◯ Elevator

◯ Shortest job first

◯ FCFS

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Assuming the above process being scheduled with the SJF scheduling algorithm (non-preemptive). The waiting time for process C is:
(2 Points)

Process	Arrival Time	Processing Time
A	0	4
B	1	5
C	2	4
D	3	2

○ 2

○ 4

○ 6

○ 8

○ None of the mentioned

48

Assume Quantum value two, given a RR scheduler, what is the response time of job B?

(2 Points)

Process	Arrival Time	Processing Time
A	0	4
B	1	5
C	2	4
D	3	2

○ 0

○ 1

○ 2

○ 3

○ None of the mentioned

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Given a FIFO scheduler, what is the average response time of the four jobs?
(2 Points)

Process	Arrival Time	Processing Time
A	0	4
B	1	5
C	2	4
D	3	2

○ 4.5

○ 5

○ 6.5

○ 8

○ None of the mentioned

50

Virtual memory is
(2 Points)

○ a type of memory used in super computers

○ an extremely large main memory

○ an illusion of an extremely large memory

○ an extremely large secondary memory

51

Necessary conditions for deadlock are
(2 Points)

○ non-preemption and circular wait

○ Mutual exclusion

○ both (a) and (b)

○ none of the above

52

The following system of four processes with two resources:
If the availability vector is [2 3], is the system above deadlocked?
(2 Points)

Current allocation matrix:	Current request matrix:
P_1 1 3	P_1 1 2
P_2 4 1	P_2 4 3
P_3 1 2	P_3 1 7
P_4 2 0	P_4 5 1

○ Yes

○ No

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The following system of four processes with two resources:
If the availability vector is [2 5], is the system above deadlocked?
(2 Points)

Current allocation matrix:	Current request matrix:
P_1 1 3	P_1 1 2
P_2 4 1	P_2 4 3
P_3 1 2	P_3 1 7
P_4 2 0	P_4 5 1

○ Yes

○ No

54

A small computer has 3 page frames. A process makes the following list of page references: 1,2,3,4,2,1,5,6,7,6,3,2,1,2,3,6. How many page faults using FIFO algorithm? (2 Points)

○ 8

○ 10

○ 12

○ 14

○ None of the mentioned

55

A small computer has 3 page frames. A process makes the following list of page references: 1,2,3,4,2,1,5,6,7,6,3,2,1,2,3,6. How many page faults using least-recently-used (LRU) algorithm?
(2 Points)

○ 8

○ 10

○ 12

○ 14

○ None of the mentioned

A small computer has 3 page frames. A process makes the following list of page references: 1,2,3,4,2,1,5,6,7,6,3,2,1,2,3,6. How many page faults using optimal page replacement algorithm?
(2 Points)

○ 8

○ 10

○ 12

○ 14

○ None of the mentioned

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If a physical address is 32 bits and each page is 32KB, the top .... bits exactly designate the physical page number
(2 Points)

○ 10

○ 17

○ 19

○ 32

Microsoft Forms