Started on	Wednesday, 19 June 2024, 12:16 PM
State	Finished
Completed on	Wednesday, 19 June 2024, 1:57 PM
Time taken	1 hour 41 mins
Marks	37.58/75.00
Grade	**20.04** out of 40.00 (**50.11**%)

Question **1**

Correct

Mark 1.00 out of 1.00

The root directory of the disk should be located:

- a. in a place hard-coded in the structures of the operating system
- b. in a place designated by the data structure in a fixed location on the disk ✔
- c. at a fixed address in main memory
- d. in a permanent place on the disk

The correct answer is: in a place designated by the data structure in a fixed location on the disk

Question **2**

Partially correct

Mark 0.67 out of 1.00

Twins algorithm:

Select one or more:

- a. Causes external fragmentation ✔
- b. Causes less fragmentation than static division into equal blocks
- c. Causes internal fragmentation ✔

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 2.

The correct answers are: Causes internal fragmentation, Causes external fragmentation, Causes less fragmentation than static division into equal blocks

Question 3

Correct

Mark 1.00 out of 1.00

The kernel (microkernel) is responsible for:

Select one or more:

- a. task control ✔
- b. memory allocation and freeing
- c. interrupt handling (at the elementary level, then they are passed on to other layers). ✔
- d. synchronization of processes and devices with processes ✔

Twoja odpowiedź jest poprawna.

The correct answers are: task control, synchronization of processes and devices with processes, interrupt handling (at the elementary level, then they are passed on to other layers).

Question 4

Partially correct

Mark 0.67 out of 1.00

In UNIX, access rights are specified:

Select one or more:

- a. Separately for write, read and execute/search ✔
- b. Separately for the user, the group to which the user belongs and for all others ✔
- c. Individually for each file
- d. At the same time, for all files in a given directory owned by the user

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 2.

The correct answers are: Individually for each file, Separately for the user, the group to which the user belongs and for all others, Separately for write, read and execute/search

Question 5

Incorrect

Mark 0.00 out of 1.00

The logical address is also:

Select one or more:

- a. Relative address ✖
- b. Effective address ✔
- c. Physical address ✖
- d. Absolute address

Twoja odpowiedź jest niepoprawna.

The correct answer is: Effective address

Question 6

Incorrect

Mark 0.00 out of 1.00

Internal fragmentation consists in:

Select one or more:

- a. The program does not use all the memory allocated to it
- b. Dividing the memory allocated to the program into a data area and a code area
- c. Free memory blocks between allocated blocks ✖
- d. Discontiguous file allocation on disk

Twoja odpowiedź jest niepoprawna.

The correct answer is: The program does not use all the memory allocated to it

Question 7

Correct

Mark 1.00 out of 1.00

Which scheduling is used to organize concurrency?

Select one or more:

- a. medium-term
- b. short-term ✔
- c. preempting
- d. long-term

Twoja odpowiedź jest poprawna.

The correct answer is: short-term

Question 8

Incorrect

Mark 0.00 out of 1.00

Which of the following few common services can be partially provided by software other than the operating system?

- a. I/O operations ✖
- b. Manipulating the file system ✔
- c. Security and protection
- d. Running programs

The correct answers are: Security and protection, Manipulating the file system

Question 9

Correct

Mark 1.00 out of 1.00

The return from interrupt instruction:

Select one or more:

- a. restores general purpose registers
- b. restores the interrupt vector ✔
- c. always jumps to the process that was interrupted
- d. restores the stack pointer

Twoja odpowiedź jest poprawna.

The correct answer is: restores the interrupt vector

Question 10

Correct

Mark 1.00 out of 1.00

Operation V on a raised binary semaphore:

Select one or more:

- a. It is stored in order to be able to perform as many operations P as there were V
- b. It does not change the value of the semaphore ✔
- c. Increases semaphore value by 1

Twoja odpowiedź jest poprawna.

The correct answer is: It does not change the value of the semaphore

Question 11

Incorrect

Mark 0.00 out of 1.00

The effective address is at the same time:

Select one or more:

- a. relative address
- b. indirect address ✖
- c. logical address
- d. physical address

Twoja odpowiedź jest niepoprawna.

The correct answer is: logical address

Question 12

Correct

Mark 1.00 out of 1.00

The hardware resources of a computer system are:

Select one or more:

- a. Windows on the screen
- b. Peripheral devices ✔
- c. Processor time ✔
- d. Primary memory ✔

Twoja odpowiedź jest poprawna.

The correct answers are: Processor time, Primary memory, Peripheral devices

Question 13

Partially correct

Mark 0.50 out of 1.00

The following paging exceptions allow for returning to the program after they occur:

Select one or more:

- a. attempting to write to a write-protected frame
- b. attempt to read from the frame storing the code
- c. page fault ✔
- d. interrupt on write (IOW)

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 1.
The correct answers are: page fault, interrupt on write (IOW)

Question 14

Incorrect

Mark 0.00 out of 1.00

How does the operating system call the task completion subroutine?

4. sets the trace in the terminating subroutine to the current position ✖
2. builds the frame of the terminating subroutine on the task stack ✖
1. builds an interrupt vector on the system stack pointing to the terminating subroutine code ✖
3. recreates the context programmatically and executes the IRET instruction ✖

Twoja odpowiedź jest niepoprawna.

The correct answer is: 4. → recreates the context programmatically and executes the IRET instruction, 2. → sets the trace in the terminating subroutine to the current position, 1. → builds the frame of the terminating subroutine on the task stack, 3. → builds an interrupt vector on the system stack pointing to the terminating subroutine code

Question 15

Correct

Mark 1.00 out of 1.00

Dynamic relocation requires the use of:

Select one or more:

- a. limit register
- b. status register
- c. base register (DATUM) ✔
- d. program counter

Twoja odpowiedź jest poprawna.

The correct answer is: base register (DATUM)

Question 16

Incorrect

Mark 0.00 out of 1.00

What mechanism is used to desynchronize processes with different relative speeds?

Select one or more:

- a. buffer
- b. preempting
- c. interrupts ✖
- d. scheduling

Twoja odpowiedź jest niepoprawna.

The correct answer is: buffer

Question 17

Correct

Mark 1.00 out of 1.00

Which of the following information is stored on task switching?

- a. I/O status information ✔
- b. Contents of datum, limit and other registers inaccessible to the program ✔
- c. scheduler data ✔
- d. Contents of general purpose registers, program counter, and similar registers available to the program ✔

The correct answers are: I/O status information, scheduler data, Contents of datum, limit and other registers inaccessible to the program, Contents of general purpose registers, program counter, and similar registers available to the program

Question 18

Correct

Mark 1.00 out of 1.00

The direct resume rule means that:

Select one or more:

- a. The resuming process gets a critical region after the resumed process exits the critical region
- b. The resuming process applies for the critical region just like other processes waiting to enter the critical region ✔
- c. The resuming process loses the critical region ✔

Twoja odpowiedź jest poprawna.

The correct answers are: The resuming process loses the critical region, The resuming process applies for the critical region just like other processes waiting to enter the critical region

Question 19

Partially correct

Mark 0.50 out of 1.00

Static relocation is performed by:

- a. Special registers (DATUM)
- b. Loader ✔
- c. Compiler
- d. Segment descriptors

The correct answers are: Compiler, Loader

Question 20

Partially correct

Mark 0.50 out of 1.00

For address translation, the following is used:

Select one or more:

- a. reference and protection bits
- b. translation register
- c. associative translation buffer ✔
- d. index table

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 1.
The correct answers are: index table, associative translation buffer

Question 21

Correct

Mark 1.00 out of 1.00

The system stack must provide space for:

Select one or more:

- a. CPU registers
- b. Processor registers in as many copies as there are devices in the system +1
- c. Processor registers in as many copies as there are interrupt lines +1 ✔
- d. Processor registers in as many copies as there are interrupt lines and possible software interrupts

Twoja odpowiedź jest poprawna.

The correct answer is: Processor registers in as many copies as there are interrupt lines +1

Question 22

Correct

Mark 1.00 out of 1.00

Connection with segmentation consists in:

Select one or more:

- [x] a. The use of a segment table or pool of segment registers treated as an additional, superior level of paging ✔
- [ ] b. Dividing pages into segments
- [ ] c. Generating a "frame error" interrupt when the frame containing the page does not belong to the current segment
- [ ] d. Identifying segments with pages

Twoja odpowiedź jest poprawna.

The correct answer is: The use of a segment table or pool of segment registers treated as an additional, superior level of paging

Question 23

Incorrect

Mark 0.00 out of 1.00

What type of code can multiple processes execute simultaneously?

Select one or more:

- [x] a. reentrant ✔
- [ ] b. binary
- [ ] c. self-modifying
- [x] d. dynamically relocated ✖

Twoja odpowiedź jest niepoprawna.

The correct answer is: reentrant

Question 24

Incorrect

Mark 0.00 out of 1.00

a page fault interrupt is issued when:

Select one or more:

- a. the program is accessing a page that is not in the cache ✖
- b. the program accesses the page
- c. the program accesses a page that is not in the primary memory ✔
- d. an error has occurred on the current page

Twoja odpowiedź jest niepoprawna.

The correct answer is: the program accesses a page that is not in the primary memory

Question 25

Correct

Mark 1.00 out of 1.00

The scheduler decisions take the form:

Select one or more:

- a. change from ready to active state ✔
- b. change from waiting to active state
- c. change from active to ready state
- d. change from waiting to ready state

Twoja odpowiedź jest poprawna.

The correct answer is: change from ready to active state

Question 26

Correct

Mark 1.00 out of 1.00

Using the Test-And-Set instruction in synchronization:

Select one or more:

- a. Requires organizing inactive waiting in queues
- b. It requires processes to actively wait ✔
- c. Requires an explicit relinquishment of the processor to another process
- d. Stops the processor if 0 is read

Twoja odpowiedź jest poprawna.

The correct answer is: It requires processes to actively wait

Question 27

Correct

Mark 1.00 out of 1.00

Address translation aims to:

Select one or more:

- a. converting a physical address to a virtual one
- b. converting a virtual address to a physical one ✔
- c. detecting the phenomenon of locality of references
- d. Generating a "frame error" interrupt when the page is out of memory

Twoja odpowiedź jest poprawna.

The correct answer is: converting a virtual address to a physical one

Question 28

Incorrect

Mark 0.00 out of 1.00

System/user threads:

Select one or more:

- a. User-level threads share the same stack. ✖
- b. User-level threads share the same execution context.
- c. System level thread descriptors are stored in the operating system kernel. ✔

Twoja odpowiedź jest niepoprawna.

The correct answers are: System level thread descriptors are stored in the operating system kernel., User-level threads share the same execution context.

Question 29

Incorrect

Mark 0.00 out of 1.00

The program must be specially compiled to run in paged memory.

- True ✖
- False

The correct answer is 'False'.

Question 30

Incorrect

Mark 0.00 out of 1.00

The mechanism for moving programs between parimary memory and mass storage is called:

- a. sweeping
- b. swapping ✖
- c. leaching
- d. leading out

The correct answer is: sweeping

Question 31

Incorrect

Mark 0.00 out of 1.00

The internal state of the file system layer is available for:

- a. Applications ✖
- b. User programs ✖
- c. OS kernel ✔
- d. Program supervisor layer

The correct answers are: OS kernel, Program supervisor layer

Question 32

Correct

Mark 1.00 out of 1.00

Sequence of actions when starting a new task:

1. filling in the descriptor in the kernel ✔
2. memory allocation if this is the first task of the program ✔
3. initialize the stack, fill the first frame ✔
4. instruction to transfer control to the task ✔

Twoja odpowiedź jest poprawna.

The correct answer is: 1. → filling in the descriptor in the kernel, 2. → memory allocation if this is the first task of the program, 3. → initialize the stack, fill the first frame, 4. → instruction to transfer control to the task

Question 33

Correct

Mark 1.00 out of 1.00

The page index table address is stored in:

Select one or more:

- a. program counter
- b. page register
- c. stack pointer
- d. page table base register ✔

Twoja odpowiedź jest poprawna.

The correct answer is: page table base register

Question 34

Incorrect

Mark 0.00 out of 1.00

Is IOW bit:

Select one or more:

- a. protection bit
- b. reference bit ✖
- c. enable bit

Twoja odpowiedź jest niepoprawna.

The correct answer is: protection bit

Question 35

Correct

Mark 1.00 out of 1.00

When starting a program, how is control passed to it from the operating system?

Select one or more:

- a. extracode
- b. jump with trace
- c. jump
- d. return from interrupt handler IRET ✔

Twoja odpowiedź jest poprawna.

The correct answer is: return from interrupt handler IRET

Question 36

Incorrect

Mark 0.00 out of 1.00

The software resources of a computer system are:

Select one or more:

- a. Files ✔
- b. Buffers ✔
- c. Semaphores ✔
- d. Primary memory ✖

Twoja odpowiedź jest niepoprawna.

The correct answers are: Files, Buffers, Semaphores

Question 37

Correct

Mark 1.00 out of 1.00

The main function of shared memory is:

- [x] a. inter-process communication ✔
- [ ] b. use working memory efficiently
- [ ] c. inter-process synchronization
- [ ] d. inter-process scheduling

The correct answer is: inter-process communication

Question 38

Incorrect

Mark 0.00 out of 1.00

Which of the following facilities or abilities are required to provide mutual exclusion support?

Select one or more:

- [ ] a. The relative speeds of the tasks must be taken into account.
- [x] b. Task scheduling must be considered. ✖
- [ ] c. A task that is performed outside the critical section must not affect the behavior of a task in the critical section.
- [x] d. The task stays in its critical section only for a finite amount of time. ✔

Twoja odpowiedź jest niepoprawna.

The correct answers are: A task that is performed outside the critical section must not affect the behavior of a task in the critical section., The task stays in its critical section only for a finite amount of time.

Question 39

Incorrect

Mark 0.00 out of 1.00

Allocation unit for file storage:

- a. must be constant across the disk partition
- b. may vary between partitions ✔
- c. may differ between files in a partition
- d. is any integer multiple of a sector (>0) ✖

The correct answers are: must be constant across the disk partition, may vary between partitions

Question 40

Incorrect

Mark 0.00 out of 1.00

Frame protection bits:

Select one or more:

- a. must be available for group clear
- b. must be readable ✖
- c. must be group readable
- d. must be available for writing ✔

Twoja odpowiedź jest niepoprawna.

The correct answer is: must be available for writing

Question 41

Correct

Mark 1.00 out of 1.00

The following situations cause "error" exceptions (processor internal interrupts)

Select one or more:

- a. extracode
- b. illegal instruction ✔
- c. instruction legal but prohibited in user mode ✔

Twoja odpowiedź jest poprawna.

The correct answers are: illegal instruction, instruction legal but prohibited in user mode

Question 42

Correct

Mark 1.00 out of 1.00

Precise interrupts are:

Select one or more:

- a. unblocked only in a stable state between the execution of successive instructions
- b. only issued in a stable state between executions of subsequent instructions
- c. accepted only in a stable state between the execution of successive instructions ✔
- d. transferred only in a stable state between the execution of successive instructions instrukcji

Twoja odpowiedź jest poprawna.

The correct answer is: accepted only in a stable state between the execution of successive instructions

Question 43

Correct

Mark 1.00 out of 1.00

What mechanism is used to preserve the states of preempted tasks?

- a. time slice
- b. batch work
- c. task period
- d. context switch ✔

The correct answer is: context switch

Question 44

Partially correct

Mark 0.25 out of 1.00

In the sweeping mechanism, a program should be loaded into memory when:

Select one or more:

- a. The programmatical condition for the continuation of the program was met by another program
- b. The device the program was waiting for has freed up ✔
- c. The time the program was supposed to be "wake up" has occurred
- d. The data transmission to the printer, ordered by the program, has ended

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 1.

The correct answers are: The data transmission to the printer, ordered by the program, has ended, The programmatical condition for the continuation of the program was met by another program, The device the program was waiting for has freed up, The time the program was supposed to be "wake up" has occurred

Question 45

Correct

Mark 1.00 out of 1.00

With indulgent scheduling, once a CPU is allocated to a task, the task keeps it until:

Select one or more:

- a. transition a task from the ready state to the active state
- b. releasing the processor by the task ✔
- c. task termination ✔
- d. transition a task from the active state to the ready state

Twoja odpowiedź jest poprawna.

The correct answers are: task termination, releasing the processor by the task

Question 46

Correct

Mark 1.00 out of 1.00

The thread is also called:

- a. heavy process
- b. lightweight process ✔
- c. data process
- d. overlay process

The correct answer is: lightweight process

Question 47

Incorrect

Mark 0.00 out of 1.00

In UNIX, access rights are attributes:

Select one or more:

- a. An entry in the I-node table
- b. User descriptor
- c. A directory entry for a file ✖
- d. A special table specifying access rights

Twoja odpowiedź jest niepoprawna.

The correct answer is: An entry in the I-node table

Question 48

Partially correct

Mark 0.50 out of 1.00

Discontinuous allocation is the result of:

Select one or more:

- a. compacting
- b. paging
- c. reloaction
- d. segmentation ✔

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 1.
The correct answers are: paging, segmentation

Question 49

Incorrect

Mark 0.00 out of 1.00

The behavior of the exchange algorithm opposite to that expected with the measures taken is called:

Answer: the exchange algorithm opposite to that expected with the measures taken is referred to as “sun ✖

The correct answer is: anomaly

Question 50

Partially correct

Mark 0.33 out of 1.00

Which of the following interrupts a running process?

- a. Hardaware interrupt
- b. Timer interrupts ✔
- c. Scheduler
- d. Power fail interrupt

The correct answers are: Hardaware interrupt, Timer interrupts, Power fail interrupt

Question 51

Correct

Mark 1.00 out of 1.00

Scheduling aims to optimize:

Select one or more:

- a. processor utilization ✔
- b. reaction time ✔
- c. wait time ✔
- d. system throughput ✔

Twoja odpowiedź jest poprawna.

The correct answers are: processor utilization, system throughput, wait time, reaction time

Question 52

Correct

Mark 1.00 out of 1.00

The multi-level interrupt controller includes:

Select one or more:

- a. The register of interrupt being serviced
- b. Priority encoder ✔
- c. Individual interrupt mask ✔
- d. Collective interrupt mask ✔

Twoja odpowiedź jest poprawna.

The correct answers are: Collective interrupt mask, Individual interrupt mask, Priority encoder

Question 53

Partially correct

Mark 0.50 out of 1.00

Using Test-And-Set or Compare-And-Swap in synchronization:

Select one or more:

- a. Stops the processor if 0 is read
- b. Requires organizing inactive waiting in queues
- c. It can only be applied in systems with shared memory
- d. It requires processes to actively wait ✔

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 1.
The correct answers are: It requires processes to actively wait,
It can only be applied in systems with shared memory

Question 54

Correct

Mark 1.00 out of 1.00

Scheduling algorithms can be:

- [x] a. indulgent ✔
- [x] b. preemptive ✔
- [ ] c. interrupting
- [ ] d. term changing

The correct answers are: indulgent, preemptive

Question 55

Incorrect

Mark 0.00 out of 1.00

The following situations trigger exceptions (processor internal interrupts) of the "error" type:

Select one or more:

- [x] a. an attempt to write to the page for which the "read only" bit was set ✔
- [x] b. memory reference beyond limit register value ✔
- [x] c. memory reference in the area of the page that is not in memory ✖
- [x] d. a reference to memory that is not in the address space ✔

Twoja odpowiedź jest niepoprawna.

The correct answers are: a reference to memory that is not in the address space, memory reference beyond limit register value, an attempt to write to the page for which the "read only" bit was set

Question 56

Partially correct

Mark 0.67 out of 1.00

What is included in the context that must be saved for a synchronous (inter-instruction) precision interrupt?

Select one or more:

- a. instruction register
- b. collective of individual interrupt mask
- c. program counter ✔
- d. general purpose registers ✔

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 2.
The correct answers are: general purpose registers, program counter, collective of individual interrupt mask

Question 57

Partially correct

Mark 0.50 out of 1.00

In a FAT-based disk system (without sharing allocation units by files), the number of files is directly limited by:

Select one or more:

- a. The size of the disk space
- b. Allocation unit size
- c. The number of bits of the field describing the size of the file
- d. The number of bits of the disk address
- e. FAT table size ✔

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 1.

The correct answers are: FAT table size, The size of the disk space

Question 58

Incorrect

Mark 0.00 out of 1.00

Which of the following memory allocation schemes cause external fragmentation?

- a. Sweeping
- b. Segmentation
- c. Paging
- d. Multiple contiguous fixed partitions of equal size ✖

The correct answers are: Segmentation, Sweeping

Question 59

Incorrect

Mark 0.00 out of 1.00

The sweeping mechanism consists in:

Select one or more:

- a. Loading pages into the primary memory and sending them to the disk
- b. Loading segments into primary memory and sending them to disk
- c. Merging adjacent free memory blocks
- d. Moving programs around in memory to eliminate fragmentation ✖

Twoja odpowiedź jest niepoprawna.

The correct answer is: Loading segments into primary memory and sending them to disk

Question 60

Correct

Mark 1.00 out of 1.00

Having two-level page index tables:

Select one or more:

- [ ] a. the content of a level I table element is added to the content of a level II table element
- [x] b. the content of a level I table element points to a level II table ✔
- [ ] c. the content of the level I table element is concatenated (combined) with the content of the level II table element
- [ ] d. the content of a level I table element is an index in a level II table

Twoja odpowiedź jest poprawna.

The correct answer is: the content of a level I table element points to a level II table

Question 61

Incorrect

Mark 0.00 out of 5.00

What is the average time in the system for tasks in the batch, using SJF algorithm?

task	1	2	3	4
processing time	3.3	6.8	2.4	1.2

Answer: 3.8 ✖

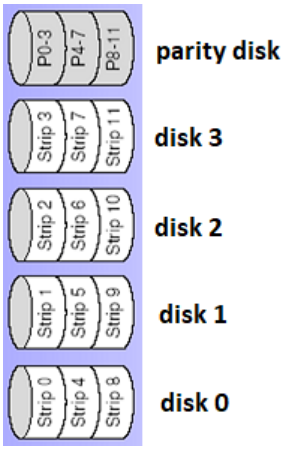
The correct answer is: 6.3

Question 62

Incorrect

Mark 0.00 out of 5.00

In RAID 4, data is placed in Strips that are "scattered" over the data disks, so that each subsequent strip is on the next data disk, modulo the number of disks. For this, there is a parity disk that holds the parity bits of zeroth bits, first bits, second bits, etc., equal-numbered strips divided by the number of data disks, for example, strips 0-3, 4-7, 8-11, etc.:



the start of strips 0,1,2,3 looks like this:

1	1	1	0	0	Parity disk
0	0	0	0	0	Disk 3
1	0	0	1	0	Disk 2
1	0	1	0	1	Disk 1
0	1	1	0	0	Disk 0

In the parity strip, the values are placed so that the parity bit keeps the corresponding strip bits 0-3 even.

Disk 3 has been damaged and reads only 0. After replacing the disk with a new one, what values should be put in the strip on disk 3?

Answer: 0000 ✖

The correct answer is: 10111

Question 63

Correct

Mark 5.00 out of 5.00

The virtual address consists of 8b page number and 8b offset. The page index table is shown below (index, content). For decimal address 384, binary 0000 0001 1000 0000, enter the physical address in the form: frame number.offset (as decimal numbers, offset in 3 digits). For example, for a physical address consisting of frame 0 and offset 18, specify 0.018. If there is no physical address for the given virtual address, then -1 should be specified.

7	12
6	-1
5	7
4	4
3	9
2	-1
1	3
0	2

Answer: 3.128 ✔

The correct answer is: 3.128

Started on	Thursday, 27 June 2024, 12:36 PM
State	Finished
Completed on	Thursday, 27 June 2024, 1:48 PM
Time taken	1 hour 11 mins
Marks	53.58/75.00
Grade	**22.86** out of 32.00 (**71.44**%)

Question **1**

Correct

Mark 1.00 out of 1.00

Which swapping algorithms can be implemented based on hardware support in the form of a collective reading of reference bits and collective clearing of these bits?

Select one or more:

- a. LFU ✔
- b. FIFO
- c. LRU ✔
- d. optimal
- e. second chance
- f. NRU
- g. working set clock
- h. no algorithm
- i. working set

Twoja odpowiedź jest poprawna.

The correct answers are: LRU, LFU

Question 2

Correct

Mark 1.00 out of 1.00

Consider the following sequence of address references:

123, 215, 600, 1234, 76, 96.

If the page size is 100, the order of page references is as follows:

- a. 1,2,6,12
- b. 0,2,6,12,0,0
- c. 1,2,6,12,0,0 ✔
- d. 12,21,60,123,7,9

The correct answer is: 1,2,6,12,0,0

Question 3

Correct

Mark 1.00 out of 1.00

Imprecise interrupts can be handled:

Select one or more:

- a. only when the program allows accepting interrupts
- b. after clearing the pipeline from the instructions ✔
- c. after saving the full state of the pipeline ✔
- d. when new instructions are suspended to be fetched into the pipeline

Twoja odpowiedź jest poprawna.

The correct answers are: after clearing the pipeline from the instructions, after saving the full state of the pipeline

Question 4

Correct

Mark 1.00 out of 1.00

Address translation mechanism:

Select one or more:

- a. concatenates the frame number and page number
- b. concatenates the page number and page offset
- c. concatenates the frame number and offset on the page ✔
- d. adds the frame number to the page number

Twoja odpowiedź jest poprawna.

The correct answer is: concatenates the frame number and offset on the page

Question 5

Correct

Mark 1.00 out of 1.00

FIRST-FIT algorithm:

Select one or more:

- a. Requires an ascending sorting of the list of free blocks
- b. Avoids external fragmentation
- c. Causes external fragmentation ✔
- d. It allows for fast determining whether there is a free block of the required size

Twoja odpowiedź jest poprawna.

The correct answer is: Causes external fragmentation

Question 6

Correct

Mark 1.00 out of 1.00

SJF selects the task:

- a. which was first placed in the queue
- b. with the least CPU requirement ✔
- c. which was last placed in the queue
- d. who waited the longest in the queue

The correct answer is: with the least CPU requirement

Question 7

Partially correct

Mark 0.67 out of 1.00

What is true for simultaneous execution in the same context?

- a. The use of threads ensures concurrency within the process.
- b. A multiprocessor kernel can be concurrent ✔
- c. Threads minimize context switch time. ✔
- d. The shared context forces threads to run on the same processor

The correct answers are: Threads minimize context switch time., The use of threads ensures concurrency within the process., A multiprocessor kernel can be concurrent

Question 8

Correct

Mark 1.00 out of 1.00

The file system layer plays the following role in the operating system:

Select one or more:

- a. Controls file access rights ✔
- b. Performs file opening and closing operations ✔
- c. It performs directory services in the hierarchy of disk files ✔
- d. It runs programs stored in files

Twoja odpowiedź jest poprawna.

The correct answers are: Performs file opening and closing operations, It performs directory services in the hierarchy of disk files, Controls file access rights

Question 9

Correct

Mark 1.00 out of 1.00

Processor access scheduling decisions may be made under which of the following circumstances?

Select one or more:

- a. When a task transitions from the active state to the ready state ✔
- b. When a task terminates ✔
- c. When a task goes from the waiting state to the ready state ✔
- d. When a task goes from the active state to the waiting state ✔

Twoja odpowiedź jest poprawna.

The correct answers are: When a task goes from the active state to the waiting state, When a task transitions from the active state to the ready state, When a task goes from the waiting state to the ready state, When a task terminates

Question 10

Correct

Mark 1.00 out of 1.00

In which swapping algorithms is it necessary to collectively clear the M-bits?

Select one or more:

- a. no algorithm ✔
- b. working set clock
- c. NRU
- d. working set
- e. LFU
- f. FIFO
- g. clock
- h. LRU
- i. second chance

Twoja odpowiedź jest poprawna.

The correct answer is:
no algorithm

Question 11

Correct

Mark 1.00 out of 1.00

Static relocation is performed by:

- a. Special registers (DATUM)
- b. Loader ✔
- c. Paging system
- d. Segment descriptors

The correct answer is: Loader

Question 12

Correct

Mark 1.00 out of 1.00

What mechanism is part of time-sharing systems?

- a. short-term scheduler ✔
- b. long-term scheduler
- c. swapping
- d. medium-term scheduler

The correct answer is: short-term scheduler

Question 13

Correct

Mark 1.00 out of 1.00

Context switch is:

Select one or more:

- a. switching to the system stack
- b. calling the kernel of the operating system
- c. writing registers to the task stack and retrieving them from another task stack ✔
- d. extracode execution

Twoja odpowiedź jest poprawna.

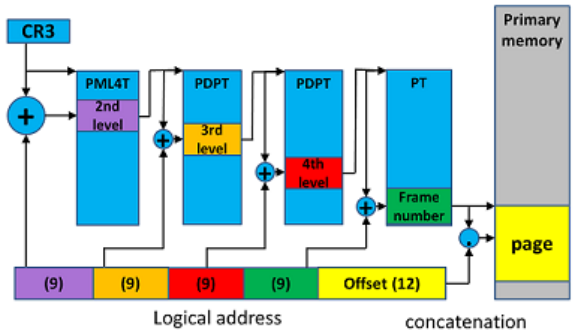
The correct answer is: writing registers to the task stack and retrieving them from another task stack

Question **14**

Correct

Mark 1.00 out of 1.00

In the four-level page index table, the frame number is:



Select one or more:

- a. in the first level table - the leftmost in the figure
- b. part in the table of each level
- c. in the table of the last level - the rightmost in the figure ✔
- d. none of the above answers

Twoja odpowiedź jest poprawna.

The correct answer is: in the table of the last level - the rightmost in the figure

Question **15**

Correct

Mark 1.00 out of 1.00

Virtual memory consists of:

Select one or more:

- a. primary memory and storage memory ✔
- b. primary memory and cloud storage
- c. main memory and cache
- d. cache and storage memory

Twoja odpowiedź jest poprawna.

The correct answer is: primary memory and storage memory

Question 16

Incorrect

Mark 0.00 out of 1.00

What type of code can execute on multiple datasets in parallel:

Select one or more:

- a. binary
- b. dynamically relocated ✖
- c. reentrant

Twoja odpowiedź jest niepoprawna.

The correct answer is: reentrant

Question 17

Correct

Mark 1.00 out of 1.00

What mechanism is used to desynchronize processes with different relative speeds?

Select one or more:

- a. scheduling
- b. preempting
- c. buffer ✔
- d. interrupts

Twoja odpowiedź jest poprawna.

The correct answer is: buffer

Question 18

Incorrect

Mark 0.00 out of 1.00

Address translation mechanism:

Select one or more:

- a. Concatenates the frame number and offset on the page
- b. Concatenates the frame number and page number
- c. Concatenates the page number and page offset ✖
- d. Adds the frame number to the page number

Twoja odpowiedź jest niepoprawna.

The correct answer is: Concatenates the frame number and offset on the page

Question 19

Correct

Mark 1.00 out of 1.00

When starting a program, how is control passed to it from the operating system?

Select one or more:

- a. jump
- b. extracode
- c. return from interrupt handler IRET ✔
- d. jump with trace

Twoja odpowiedź jest poprawna.

The correct answer is: return from interrupt handler IRET

Question 20

Correct

Mark 1.00 out of 1.00

The sweeping criteria include:

Select one or more:

- a. Analysis of program execution history ✔
- b. Program state ✔
- c. Segment referencing frequency
- d. Priority ✔

Twoja odpowiedź jest poprawna.

The correct answers are: Priority, Program state, Analysis of program execution history

Question 21

Correct

Mark 1.00 out of 1.00

Is memory protection useless on a single-user system?

- True
- False ✔

The correct answer is 'False'.

Question 22

Correct

Mark 1.00 out of 1.00

Paging - the key in associative memory is:

Select one or more:

- a. frame number
- b. page number ✔
- c. the frame number concatenated with the page number
- d. the page number concatenated with the frame number

Twoja odpowiedź jest poprawna.

The correct answer is: page number

Question 23

Correct

Mark 1.00 out of 1.00

What is a scheduler?

Select one or more:

- a. a kernel routine that selects a task to execute ✔
- b. the system process that allocates the processor
- c. procedure that schedules frame release in the page replace algorithm
- d. memory allocation procedure

Twoja odpowiedź jest poprawna.

The correct answer is: a kernel routine that selects a task to execute

Question 24

Correct

Mark 1.00 out of 1.00

Using Test-And-Set or Compare-And-Swap in synchronization:

Select one or more:

- a. Stops the processor if 0 is read
- b. It can only be applied in systems with shared memory ✔
- c. Requires organizing inactive waiting in queues
- d. It requires processes to actively wait ✔

Twoja odpowiedź jest poprawna.

The correct answers are: It requires processes to actively wait,
It can only be applied in systems with shared memory

Question 25

Incorrect

Mark 0.00 out of 1.00

System/user threads:

Select one or more:

- a. User-level thread descriptors are stored in the operating system kernel. ✖
- b. User-level threads share the same stack.
- c. User-level threads share the same execution context. ✔

Twoja odpowiedź jest niepoprawna.

The correct answer is: User-level threads share the same execution context.

Question 26

Partially correct

Mark 0.75 out of 1.00

The environment in which the process is executed includes:

Select one or more:

- a. Open files
- b. Contents of the interrupt request register
- c. General purpose registers content ✔
- d. Process address space ✔
- e. A set of environment variables ✔
- f. The content in the memory management unit

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 3.

The correct answers are: A set of environment variables, Process address space, General purpose registers content, Open files

Question 27

Correct

Mark 1.00 out of 1.00

The sequence of actions in interrupt handling:

1. saving a copy of the interrupt vector (PC and SR) ✔
2. switching to system mode (modification of PC and status register) ✔
3. programmatic context saving ✔
4. switching to the system stack ✔

Twoja odpowiedź jest poprawna.

The correct answer is:
The sequence of actions in interrupt handling:

1.[saving a copy of the interrupt vector (PC and SR)]

2.[switching to system mode (modification of PC and status register)]

3.[programmatic context saving]

4.[switching to the system stack]

Question 28

Partially correct

Mark 0.50 out of 1.00

What does the file system layer do?

- a. Manages remote files
- b. Tracks the status of information
- c. Manages remote file systems
- d. Manages files ✔

The correct answers are: Tracks the status of information, Manages files

Question 29

Incorrect

Mark 0.00 out of 1.00

When is the scheduler called?

Select one or more:

- a. at the request of a user task
- b. when the scheduler decides itself
- c. at the start of execution of each kernel procedure ✖
- d. at the end of the execution of each kernel procedure

Twoja odpowiedź jest niepoprawna.

The correct answer is: at the end of the execution of each kernel procedure

Question 30

Correct

Mark 1.00 out of 1.00

Twins algorithm:

Select one or more:

- a. Causes external fragmentation ✔
- b. Causes less fragmentation than static division into equal blocks ✔
- c. Causes internal fragmentation ✔

Twoja odpowiedź jest poprawna.

The correct answers are: Causes internal fragmentation, Causes external fragmentation, Causes less fragmentation than static division into equal blocks

Question 31

Correct

Mark 1.00 out of 1.00

On UNIX, the number of files is directly limited by:

Select one or more:

- a. The size of the space allocated for files ✔
- b. Allocation unit size
- c. The number of bits of the field describing the size of the file
- d. The number of bits of the disk address
- e. FAT size

Twoja odpowiedź jest poprawna.

The correct answer is: The size of the space allocated for files

Question 32

Correct

Mark 1.00 out of 1.00

Between fork and exec operations, the following operations are performed:

Select one or more:

- a. Opening the appropriate input/output files ✔
- b. Allocating the appropriate amount of memory for the program being started
- c. Loading the program to be started into memory

Twoja odpowiedź jest poprawna.

The correct answer is: Opening the appropriate input/output files

Question 33

Correct

Mark 1.00 out of 1.00

Devices report their readiness by:

Select one or more:

- a. system call
- b. setting a status bit ✔
- c. issuing an interrupt ✔
- d. unblocking the interrupts

Twoja odpowiedź jest poprawna.

The correct answers are: issuing an interrupt, setting a status bit

Question 34

Correct

Mark 1.00 out of 1.00

The page fault exception is specific in that:

Select one or more:

- a. execution of the instruction may require decrementing the program counter ✔
- b. is reported in the "middle" of an instruction execution ✔
- c. continuation of the instruction execution may require the saving of internal processor registers storing intermediate values ✔
- d. there is no return to the program from it

Twoja odpowiedź jest poprawna.

The correct answers are: is reported in the "middle" of an instruction execution, execution of the instruction may require decrementing the program counter, continuation of the instruction execution may require the saving of internal processor registers storing intermediate values

Question 35

Correct

Mark 1.00 out of 1.00

Two successive executions of operation V in one process on a binary semaphore in down state:

Select one or more:

- a. If the semaphore guards a critical region, it can lets two processes enter the critical region ✔
- b. Raises the semaphore if there are no suspended processes ✔
- c. Increases semaphore value by 2
- d. It doesn't change anything

Twoja odpowiedź jest poprawna.

The correct answers are: If the semaphore guards a critical region, it can lets two processes enter the critical region, Raises the semaphore if there are no suspended processes

Question 36

Correct

Mark 1.00 out of 1.00

Multiprogram systems:

- a. They are only used on large mainframe computers
- b. It does any job faster
- c. It holds more than one program in primary memory at the same time ✔
- d. They are easier to develop than single-program systems

The correct answer is: It holds more than one program in primary memory at the same time

Question 37

Incorrect

Mark 0.00 out of 1.00

Multiprogramming is a technique in which, as a rule:

Select one or more:

- a. only addresses that can be generated by the processor when performing calculations are used
- b. is a memory allocation method by which a program is divided into equal parts
- c. is a method of allocating processor time ✖
- d. many programs can be stored in primary memory ✔

Twoja odpowiedź jest niepoprawna.

The correct answer is: many programs can be stored in primary memory

Question 38

Correct

Mark 1.00 out of 1.00

The effective address is also:

Select one or more:

- a. Physical address
- b. Absolute address
- c. Indirect address
- d. Logical address ✔

Twoja odpowiedź jest poprawna.

The correct answer is: Logical address

Question 39

Correct

Mark 1.00 out of 1.00

Page thrashing is a phenomenon involving:

Select one or more:

- a. frequent downloading of pages that have just been swapped out from memory ✔
- b. frequent context changes that require page index tables to be reloaded
- c. frequently changing the values of bits describing pages in frames
- d. loading the same page over and over again

Twoja odpowiedź jest poprawna.

The correct answer is: frequent downloading of pages that have just been swapped out from memory

Question 40

Correct

Mark 1.00 out of 1.00

What mechanism is part of batch systems?

- a. high-level scheduler ✔
- b. low-level scheduler
- c. no scheduler is needed
- d. medium-tevel scheduler ✔

The correct answers are: high-level scheduler, medium-tevel scheduler

Question 41

Correct

Mark 1.00 out of 1.00

The sweeping mechanism consists in:

Select one or more:

- a. Loading segments into primary memory and sending them to disk ✔
- b. Loading pages into the primary memory and sending them to the disk
- c. Merging adjacent free memory blocks
- d. Moving programs around in memory to eliminate fragmentation

Twoja odpowiedź jest poprawna.

The correct answer is: Loading segments into primary memory and sending them to disk

Question 42

Correct

Mark 1.00 out of 1.00

A memory management technique in which the system divides memory into equal-sized chunks with virtual base addresses divisible by a chunk size, to easily manage relocation, is called:

Select one or more:

- a. swapping
- b. mapping
- c. fragmentation
- d. paging ✔

Twoja odpowiedź jest poprawna.

The correct answer is: paging

Question 43

Correct

Mark 1.00 out of 1.00

In indulgent scheduling, the process keeps the CPU until:

Select one or more:

- a. next interrupt from the timer
- b. next interrupt from the device
- c. waiving ✔
- d. termination ✔

Twoja odpowiedź jest poprawna.

The correct answers are: waiving, termination

Question 44

Correct

Mark 1.00 out of 1.00

Allocation unit for file storage:

- a. must be constant across the disk partition ✔
- b. may vary between partitions ✔
- c. may differ between files in a partition
- d. is any integer multiple of a sector (>0)

The correct answers are: must be constant across the disk partition, may vary between partitions

Question 45

Incorrect

Mark 0.00 out of 1.00

Allocation unit for file storage:

- a. may be a variable in a partition
- b. may differ between files on a partition ✖
- c. It should be selected to match the characteristics of the data
- d. must be constant across the disk partition ✔

The correct answer is: must be constant across the disk partition

Question 46

Correct

Mark 1.00 out of 1.00

When an exception is raised in user mode, the operating system switches to the kernel system stack, and what happens when an exception is raised in system mode?

Select one or more:

- a. nothing special, it builds the context on the kernel system stack ✔
- b. initializes the kernel system stack from the scratch
- c. switches to the next kernel system stack
- d. switches back to the application program stack

Twoja odpowiedź jest poprawna.

The correct answer is: nothing special, it builds the context on the kernel system stack

Question 47

Correct

Mark 1.00 out of 1.00

Conditional variables in a monitor

Select one or more:

- a. They are used to suspend processes that cannot run because the conditions for their continuation are not met ✔
- b. They guard access to the critical region of the monitor
- c. They are used to check whether the conditions for process continuation are met

Twoja odpowiedź jest poprawna.

The correct answer is: They are used to suspend processes that cannot run because the conditions for their continuation are not met

Question 48

Correct

Mark 1.00 out of 1.00

By definition, a deadlock is a situation where:

Select one or more:

- a. any greater than zero number of processes are waiting for conditions that cannot be met ✔
- b. any greater than one number of processes are waiting for conditions that cannot be met
- c. at least two processes are waiting for conditions that cannot be met
- d. exactly one process is waiting for a condition that cannot be met

Twoja odpowiedź jest poprawna.

The correct answer is: any greater than zero number of processes are waiting for conditions that cannot be met

Question 49

Incorrect

Mark 0.00 out of 1.00

How is exception identification performed?

Select one or more:

- a. all exceptions are specified using the data bus
- b. the specification of hardware interrupts is given over the data bus
- c. the specification of hardware interrupts and traps is given over the data bus ✖
- d. the specification of hardware interrupts and errors is given over the data bus

Twoja odpowiedź jest niepoprawna.

The correct answer is: the specification of hardware interrupts is given over the data bus

Question 50

Correct

Mark 1.00 out of 1.00

In a multiprocessor operating system, interrupt blocking is sufficient to prevent the microkernel from executing its routines simultaneously

- True
- False ✔

nie

The correct answer is 'False'.

Question 51

Correct

Mark 1.00 out of 1.00

After performing the mount(/dev/hd5,/usr/x/bin/hd5) operation, the file /usr/z/a on the mounted disk should be referenced by:

Select one or more:

- a. /dev/hd5/usr/z/a
- b. /usr/x/bin/hd5/usr/z/a ✔
- c. /usr/x/bin/dev/hd5/usr/z/a

Twoja odpowiedź jest poprawna.

The correct answer is: /usr/x/bin/hd5/usr/z/a

Question 52

Correct

Mark 1.00 out of 1.00

The scheduling goal, which is to occupy processors as efficiently as possible, is:

Select one or more:

- a. response time
- b. productivity
- c. utilization ✔

Twoja odpowiedź jest poprawna.

The correct answer is: utilization

Question 53

Correct

Mark 1.00 out of 1.00

When a suspended program is moved to auxiliary memory, its process state is called:

- a. moved out
- b. rinsed out
- c. swept away ✔
- d. exchanged

The correct answer is: swept away

Question 54

Correct

Mark 1.00 out of 1.00

Address translation aims to:

Select one or more:

- a. detecting the phenomenon of locality of references
- b. converting a virtual address to a physical one ✔
- c. Generating a "frame error" interrupt when the page is out of memory
- d. converting a physical address to a virtual one

Twoja odpowiedź jest poprawna.

The correct answer is: converting a virtual address to a physical one

Question 55

Partially correct

Mark 0.67 out of 1.00

The hardware resources of a computer system are:

Select one or more:

- a. Primary memory ✔
- b. Peripheral devices ✔
- c. Windows on the screen
- d. Processor time

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 2.

The correct answers are: Processor time, Primary memory, Peripheral devices

Question 56

Incorrect

Mark 0.00 out of 1.00

The return from interrupt instruction:

Select one or more:

- a. always jumps to the process that was interrupted
- b. restores the interrupt vector
- c. restores general purpose registers ✖
- d. restores the stack pointer ✖

Twoja odpowiedź jest niepoprawna.

The correct answer is: restores the interrupt vector

Question 57

Correct

Mark 1.00 out of 1.00

Dynamic relocation is performed by:

- a. Loader
- b. Linker
- c. Compiler
- d. Special registers (DATUM) ✔

The correct answer is: Special registers (DATUM)

Question 58

Incorrect

Mark 0.00 out of 1.00

Cloning a process with a *fork* operation results in (not taking to account the numerical result of *fork*):

Select one or more:

- a. Duplication of code segment, initialization of new data segment and stack segment
- b. Duplication of data segment and stack segment
- c. Duplication of code, data and stack segments ✖

Twoja odpowiedź jest niepoprawna.

The correct answer is: Duplication of data segment and stack segment

Question 59

Incorrect

Mark 0.00 out of 1.00

Paging - two-level index tables mode of operation

Select one or more:

- [x] a. The content of a level 1 table element points to a level 2 table ✖
- [ ] b. The content of the level 1 table element is concatenated (combined) with the content of the level 2 table element
- [ ] c. The content of a level 1 table element points to a level 2 table
- [x] d. The content of a level 1 table element is an index in a level 2 table ✖

Twoja odpowiedź jest niepoprawna.

The correct answer is: The content of a level 1 table element points to a level 2 table

Question 60

Correct

Mark 1.00 out of 1.00

Address translation is handled by a unit called (give the abbreviation):

Answer: MMU ✔

The correct answer is: MMU

Question 61

Incorrect

Mark 0.00 out of 5.00

What is the average time in the system for tasks in the batch, using SJF algorithm?

task	1	2	3	4
processing time	3.4	5.3	2.3	1.1

Answer: 4.3 ✖

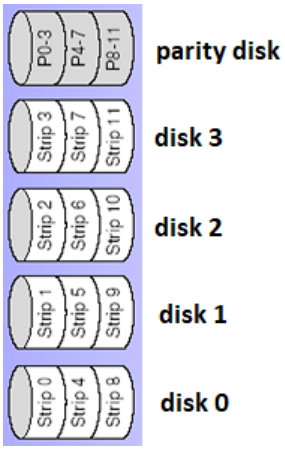
The correct answer is: 5.8

Question 62

Correct

Mark 5.00 out of 5.00

In RAID 4, data is placed in Strips that are "scattered" over the data disks, so that each subsequent strip is on the next data disk, modulo the number of disks. For this, there is a parity disk that holds the parity bits of zeroth bits, first bits, second bits, etc., equal-numbered strips divided by the number of data disks, for example, strips 0-3, 4-7, 8-11, etc.:



the start of strips 0,1,2,3 looks like this:

1	1	1	0	0	Parity disk
0	0	0	0	0	Disk 3
1	0	0	1	0	Disk 2
1	0	1	0	1	Disk 1
0	1	1	0	0	Disk 0

In the parity strip, the values are placed so that the parity bit keeps the corresponding strip bits 0-3 even.

Disk 3 has been damaged and reads only 0. After replacing the disk with a new one, what values should be put in the strip on disk 3?

Answer: 10111 ✔

The correct answer is: 10111

Question 63

Incorrect

Mark 0.00 out of 5.00

The virtual address consists of 7b page number and 9b offset. The page index table is shown below (index, content). For decimal address 2690, binary 0000 1010 1000 0010, specify the physical address in the form: frame number.offset (as decimal numbers, offset in 3 digits). For example, for a physical address consisting of frame 0 and offset 18, specify 0.018. If there is no physical address for the given virtual address, then -1 should be specified.

7	12
6	0
5	-1
4	4
3	9
2	5
1	-1
0	2

Answer: 2.130 ✖

The correct answer is: -1.000

Started on	Tuesday, 14 May 2024, 3:15 PM
State	Finished
Completed on	Tuesday, 14 May 2024, 4:00 PM
Time taken	44 mins 52 secs
Marks	12.25/60.00
Grade	**4.08** out of 20.00 (**20.42**%)

Question **1**

Correct

Mark 1.00 out of 1.00

Semaphores are used to solve the problem:

- a. process scheduling
- b. races
- c. mutual exclusion ✔
- d. Belady problem

The correct answer is: mutual exclusion

Question **2**

Incorrect

Mark 0.00 out of 1.00

When the processor is released, the scheduler selects one of the queued processes:

Select one or more:

- a. suspended
- b. waiting
- c. ready ✔
- d. running ✖

Twoja odpowiedź jest niepoprawna.

The correct answer is: ready

Question 3

Incorrect

Mark 0.00 out of 1.00

There are three processes in the system:

- C - calculation process (batch process performing complex calculations lasting several hours),
- T - text editor (user edits text document)
- K - compiler (the user compiles the program, e.g. in C++).

Assign processes to priorities in the operating system from the highest to the lowest priority.

highest C ✖

intermediate T ✖

lowest K ✖

Twoja odpowiedź jest niepoprawna.

The correct answer is:

There are three processes in the system:

- C - calculation process (batch process performing complex calculations lasting several hours),
- T - text editor (user edits text document)
- K - compiler (the user compiles the program, e.g. in C++).

Assign processes to priorities in the operating system from the highest to the lowest priority.

highest [T]

intermediate [K]

lowest [C]

Question 4

Correct

Mark 1.00 out of 1.00

Semaphore function is to:

- a. synchronize processes for better CPU utilization
- b. synchronize critical resources to prevent deadlock ✔
- c. memory management
- d. process scheduling

The correct answer is: synchronize critical resources to prevent deadlock

Question 5

Correct

Mark 1.00 out of 1.00

At the blocked state is a process that:

Select one or more:

- a. occupies a processor
- b. waits for a processor
- c. waits for an I/O operation to complete ✔
- d. fills the processor idle time

Twoja odpowiedź jest poprawna.

The correct answer is: waits for an I/O operation to complete

Question 6

Correct

Mark 1.00 out of 1.00

In the running state, there is a process that:

Select one or more:

- a. waits for an I/O operation to complete
- b. fills the CPU idle time
- c. waits for a processor
- d. occupies a processor ✔

Twoja odpowiedź jest poprawna.

The correct answer is: occupies a processor

Question 7

Incorrect

Mark 0.00 out of 1.00

What are the functions of the kernel?

- a. Program management ✖
- b. Memory management ✖
- c. Interrupt handling ✔
- d. File management ✖

The correct answer is: Interrupt handling

Question 8

Incorrect

Mark 0.00 out of 1.00

The system stack must provide space for:

Select one or more:

- a. Processor registers in as many copies as there are interrupt lines and possible software interrupts ✖
- b. Processor registers in as many copies as there are interrupt lines +1 ✔
- c. Processor registers in as many copies as there are devices in the system +1
- d. CPU registers

Twoja odpowiedź jest niepoprawna.

The correct answer is: Processor registers in as many copies as there are interrupt lines +1

Question 9

Partially correct

Mark 0.33 out of 1.00

Interrupt vector is saved in a case of:

Select one or more:

- a. subroutine call
- b. accepting a non-maskable interrupt
- c. accepting a hardware interrupt ✔
- d. jump with trace

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 1.
The correct answers are: accepting a hardware interrupt, accepting a non-maskable interrupt, jump with trace

Question 10

Incorrect

Mark 0.00 out of 1.00

The environment in which the process is executed includes:

Select one or more:

- a. Open files ✔
- b. Contents of the interrupt request register
- c. General purpose registers content ✔
- d. The content in the memory management unit ✖

Twoja odpowiedź jest niepoprawna.

The correct answers are: General purpose registers content, Open files

Question 11

Partially correct

Mark 0.50 out of 1.00

The return from interrupt instruction:

Select one or more:

- [x] a. restores the program counter ✔
- [ ] b. restores the conditions register
- [ ] c. restores the process stack
- [ ] d. causes the processor to switch to a process other than the interrupted one

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 1.

The correct answers are: restores the program counter, restores the conditions register

Question 12

Partially correct

Mark 0.50 out of 1.00

What mechanism is part of batch systems?

- [ ] a. low-level scheduler
- [ ] b. no scheduler is needed
- [ ] c. medium-tevel scheduler
- [x] d. high-level scheduler ✔

The correct answers are: high-level scheduler, medium-tevel scheduler

Question 13

Incorrect

Mark 0.00 out of 1.00

Operation V on a raised binary semaphore:

Select one or more:

- a. It is stored in order to be able to perform as many operations P as there were V
- b. Increases semaphore value by 1 ✖
- c. It does not change the value of the semaphore

Twoja odpowiedź jest niepoprawna.

The correct answer is: It does not change the value of the semaphore

Question 14

Incorrect

Mark 0.00 out of 1.00

The scheduler decisions take the form:

Select one or more:

- a. change from waiting to active state
- b. change from active to ready state
- c. change from ready to active state ✔
- d. change from waiting to ready state ✖

Twoja odpowiedź jest niepoprawna.

The correct answer is: change from ready to active state

Question 15

Incorrect

Mark 0.00 out of 1.00

The multi-level interrupt controller includes:

Select one or more:

- a. Priority encoder ✔
- b. Individual interrupt mask ✔
- c. The register of interrupt being serviced ✖
- d. Collective interrupt mask

Twoja odpowiedź jest niepoprawna.

The correct answers are: Collective interrupt mask, Individual interrupt mask, Priority encoder

Question 16

Partially correct

Mark 0.50 out of 1.00

Scheduling aims to optimize:

Select one or more:

- a. reaction time
- b. wait time ✔
- c. processor utilization
- d. system throughput ✔

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 2.

The correct answers are: processor utilization, system throughput, wait time, reaction time

Question 17

Incorrect

Mark 0.00 out of 1.00

Which mechanism is a part of Time-sharing systems?

Select one or more:

- a. no scheduler is needed
- b. Long-Term Scheduler ✖
- c. Medium-Term Scheduler
- d. Short-Term Scheduler ✔

Twoja odpowiedź jest niepoprawna.

The correct answer is:
Short-Term Scheduler

Question 18

Correct

Mark 1.00 out of 1.00

When an exception is raised in user mode, the operating system switches to the kernel system stack, and what happens when an exception is raised in system mode?

Select one or more:

- a. initializes the kernel system stack from the scratch
- b. switches back to the application program stack
- c. switches to the next kernel system stack
- d. nothing special, it builds the context on the kernel system stack ✔

Twoja odpowiedź jest poprawna.

The correct answer is: nothing special, it builds the context on the kernel system stack

Question 19

Incorrect

Mark 0.00 out of 1.00

The interrupt acceptance sequence consists of (in the sequence):

Select one or more:

- a. identification of the interrupt level, performing a jump with the trace according to the interrupt table, saving the interrupt vector
- b. identification of the interrupt level, performing a jump according to the interrupt table, saving the interrupt vector
- c. identification of the interrupt level, saving the interrupt vector, performing a jump with a trace according to the interrupt table
- d. identification of the interrupt level, saving the interrupt vector, performing a jump according to the interrupt table ✖

Twoja odpowiedź jest niepoprawna.

The correct answer is: identification of the interrupt level, saving the interrupt vector, performing a jump with a trace according to the interrupt table

Question 20

Correct

Mark 1.00 out of 1.00

Round-robin scheduling is the best mechanism for:

Select one or more:

- a. every system
- b. system with different classes of tasks
- c. time-sharing system ✔
- d. real-time system

Twoja odpowiedź jest poprawna.

The correct answer is: time-sharing system

Question 21

Incorrect

Mark 0.00 out of 1.00

Which scheduler is also called a job planner?

- a. long-term
- b. medium-term
- c. short-term ✖
- d. auxiliary

The correct answer is: long-term

Question 22

Incorrect

Mark 0.00 out of 1.00

Which of the following statements applies to the process?

- a. A process is a running program.
- b. A process is defined as a set of resources needed to run a program. ✔
- c. A process is code and data loaded into main memory. ✖
- d. The execution of the process must proceed in a sequential manner.

The correct answers are: A process is a running program., The execution of the process must proceed in a sequential manner., A process is defined as a set of resources needed to run a program.

Question 23

Incorrect

Mark 0.00 out of 1.00

Which scheduling is used to organize concurrency?

Select one or more:

- a. preempting ✖
- b. short-term
- c. long-term
- d. medium-term

Twoja odpowiedź jest niepoprawna.

The correct answer is: short-term

Question 24

Incorrect

Mark 0.00 out of 1.00

What can happen when a job leaves the critical section and more than 1 task is waiting for the critical section?

Select one or more:

- a. letting both tasks into the critical section ✖
- b. active waiting for a critical section ✖
- c. deadlock waiting for critical section
- d. starvation awaiting a critical section ✔

Twoja odpowiedź jest niepoprawna.

The correct answer is: starvation awaiting a critical section

Question 25

Correct

Mark 1.00 out of 1.00

Context switch is:

Select one or more:

- a. calling the kernel of the operating system
- b. switching to the system stack
- c. writing registers to the task stack and retrieving them from another task stack ✔
- d. extracode execution

Twoja odpowiedź jest poprawna.

The correct answer is: writing registers to the task stack and retrieving them from another task stack

Question 26

Incorrect

Mark 0.00 out of 1.00

Using the Test-And-Set instruction in synchronization:

Select one or more:

- a. Stops the processor if 0 is read
- b. Requires organizing inactive waiting in queues
- c. Requires the use of semaphores ✖
- d. It requires processes to actively wait

Twoja odpowiedź jest niepoprawna.

The correct answer is: It requires processes to actively wait

Question 27

Partially correct

Mark 0.75 out of 1.00

How does the operating system call the task completion subroutine?

4. recreates the context programmatically and executes the IRET instruction ✔
2. sets the trace in the terminating subroutine to the current position ✔
3. recreates the context programmatically and executes the IRET instruction ✖
1. builds the frame of the terminating subroutine on the task stack ✔

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 3.

The correct answer is: 4. → recreates the context programmatically and executes the IRET instruction, 2. → sets the trace in the terminating subroutine to the current position, 3. → builds an interrupt vector on the system stack pointing to the terminating subroutine code, 1. → builds the frame of the terminating subroutine on the task stack

Question 28

Correct

Mark 1.00 out of 1.00

Interrupt request register is:

Select one or more:

- [ ] a. a register that blocks or unblocks all interrupts
- [x] b. a register where interrupt line states are stored ✔
- [ ] c. a register that blocks or unblocks individual interrupts
- [ ] d. a combinational circuit that calculates the number of the interrupt received

Twoja odpowiedź jest poprawna.

The correct answer is: a register where interrupt line states are stored

Question 29

Correct

Mark 1.00 out of 1.00

What mechanism is part of time-sharing systems?

- a. medium-term scheduler
- b. swapping
- c. short-term scheduler ✔
- d. long-term scheduler

The correct answer is: short-term scheduler

Question 30

Partially correct

Mark 0.67 out of 1.00

The environment in which the process is executed includes:

Select one or more:

- a. General purpose registers content
- b. Process address space ✔
- c. Contents of the interrupt request register
- d. A set of environment variables ✔

Twoja odpowiedź jest częściowo poprawna.

You have correctly selected 2.
The correct answers are: A set of environment variables, Process address space, General purpose registers content

Question 31

Incorrect

Mark 0.00 out of 5.00

What is the average time in the system for tasks in the batch, using SJF algorithm?

The system is equipped with 4 processors

task	1	2	3	4
processing time	3.6	4.6	2.4	1.2

Answer: 4.35 ✖

The correct answer is: 2.9

Question 32

Complete

Mark 0.00 out of 25.00

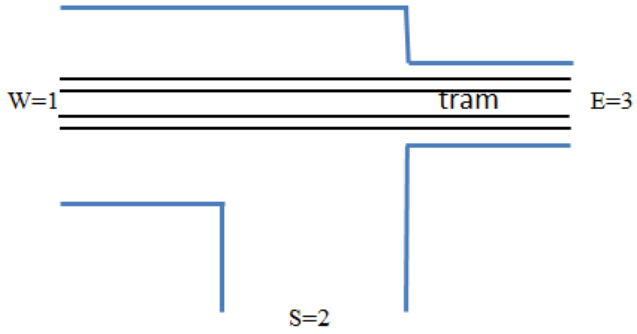
Design a priority semaphore and use it to control traffic at the intersection.

Trams have priority over cars.

Note: tram tracks close to the edge mean that a car cannot fit parallel to a tram, far from the edge means a car can fit.

WSE - direction numbering.

Topography of the intersection:




```
class IntersectionSemaphore:
  def __init__(self):
    self.tram_priority = False  # Flag indicating if trams have priority
    self.tram_queue = []  # Queue for trams waiting at the intersection
    self.car_queue = []  # Queue for cars waiting at the intersection

  def tram_arrival(self, direction):
    if not self.tram_priority and not self.car_queue:
      self.tram_priority = True
    self.tram_queue.append(direction)

  def car_arrival(self, direction):
    if self.tram_priority or self.tram_queue:
      self.car_queue.append(direction)

  def tram_departure(self):
    if self.tram_queue:
      self.tram_queue.pop(0)
    if not self.tram_queue:
      self.tram_priority = False

  def car_departure(self):
    if self.car_queue:
      self.car_queue.pop(0)
```

```
    def print_intersection_status(self):
        print("Tram Priority:", self.tram_priority)
        print("Tram Queue:", self.tram_queue)
        print("Car Queue:", self.car_queue)


# Example usage:
intersection = IntersectionSemaphore()

# Tram arrives
intersection.tram_arrival("WSE")

# Car arrives
intersection.car_arrival("WSE")

# Tram departs
intersection.tram_departure()

# Car departs
intersection.car_departure()

# Print intersection status
intersection.print_intersection_status()
```

Comment:
A vehicle should not reserve the entire crossing