Started on	Monday, 16 June 2025, 10:27 AM
State	Finished
Completed on	Monday, 16 June 2025, 11:24 AM
Time taken	56 mins 58 secs
Marks	34.00/40.00
Grade	**21.25** out of 25.00 (**85**%)

Question **1**

Correct

Mark 1.00 out of 1.00

In UNIX, access rights are attributes:

Select one or more:

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

Twoja odpowiedź jest poprawna.

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

Question **2**

Correct

Mark 1.00 out of 1.00

Semaphore function is to:

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

The correct answer is: synchronize critical resources to prevent deadlock

Question **3**

Correct

Mark 1.00 out of 1.00

What paging element is NOT used in real-time systems?

Select one or more:

- a. reference bits
- b. protection bits
- c. address translation
- d. page swapping ✔

Twoja odpowiedź jest poprawna.

The correct answer is: page swapping

Question 4

Correct

Mark 1.00 out of 1.00

In a multitasking environment, the operating system decides which task the CPU gets, when, and for how long. This feature is called:

- a. task management
- b. task timetable management
- c. task sheduling ✔
- d. traffic control

The correct answer is: task sheduling

Question 5

Correct

Mark 1.00 out of 1.00

Dynamic relocation is performed by:

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

The correct answer is: Special registers (DATUM)

Question 6

Correct

Mark 1.00 out of 1.00

The operating system plays the following role in a computer system:

Select one or more:

- a. relational database management
- b. computer system resource management ✔
- c. Create a concurrent environment ✔
- d. creating abstraction (virtualization) of hardware ✔

Twoja odpowiedź jest poprawna.

The correct answers are: Create a concurrent environment, computer system resource management, creating abstraction (virtualization) of hardware

Question 7

Correct

Mark 1.00 out of 1.00

For address translation, the following is used:

Select one or more:

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

Twoja odpowiedź jest poprawna.

The correct answers are: index table, associative translation buffer

Question 8

Correct

Mark 3.00 out of 3.00

For the disk operation scheduling SCAN method, the currently being executed operation is in 40 cylinder. The direction in the SCAN method is descending. The next scheduled operations (in the order of their queuing) are:

Operation number	1	2	3	4	5
Cylinder number	49	48	39	36	32

For the next disk operation, enter the head travel distance (in cylinders) between the current and next operation.

Answer: 1 ✔

The correct answer is: 1

Question 9

Correct

Mark 3.00 out of 3.00

When opening a file, we specify the opening mode and the sharing mode.

Let's encode the opening codes:

fmOpenRead	10
fmOpenWrite	01
fmOpenReadWrite	00
fmShareDenyWrite	10
fmShareExclusive	00
fmShareDenyRead	01
fmShareDenyNone	11

The first program opened the file in mode 01 and sharing mode 11

The second program wants to open the file in mode 00 and sharing mode 01

Will the second program be able to open the file (0-no, 1-yes, 2-it depends on other circumstances)?

Answer: 1 ✔

The correct answer is: 1

Question 10

Incorrect

Mark 0.00 out of 3.00

page	M	R	belongs to process
1	0	0	2
2	1	0	5
3	0	1	4
4	1	1	3
5	0	0	5
6	0	0	4
7	1	0	5
8	0	1	5

Using the above table of bits M and R for the pages in NRU swapping, with the priority frame allocation rule, which page will be sent to the disk first? The pages are scanned starting from the top. A process number is its priority (the smaller number, the higher priority). The process for which the frame is needed is 5. Provide a page number.

Answer: 1 ✖

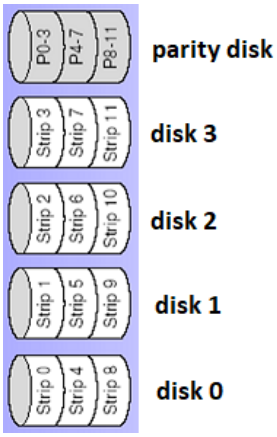
The correct answer is: 5

Question 11

Correct

Mark 3.00 out of 3.00

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
1	1	1	1	1	Disk 3
1	0	0	1	0	Disk 2
1	1	0	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 corrupted and always reads 1. After replacing the disk with a new one, what values should I put in the strip on disk 3?

Enter the values of the consecutive bits on disk 3, without any separators between them, for example 00000

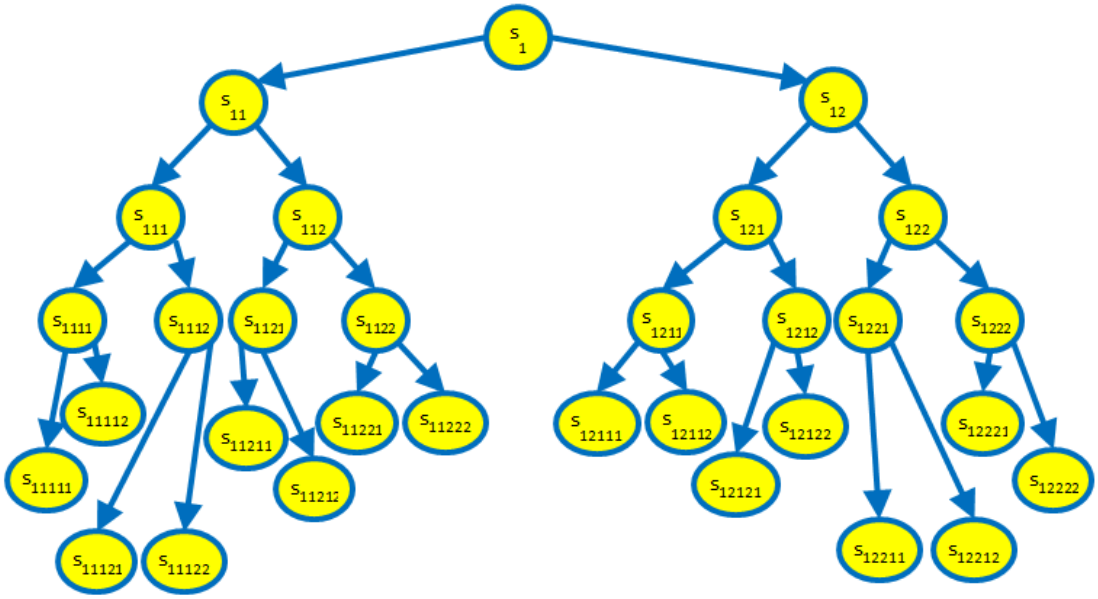
Answer: 11011 ✔

The correct answer is: 11011

Question 12

Correct

Mark 3.00 out of 3.00



Above is the nesting structure of subroutines in some program.

Can there be a static link in subroutine s1111 stack frame to subroutine s1111 frame ?

answer: 0-no, 1-yes

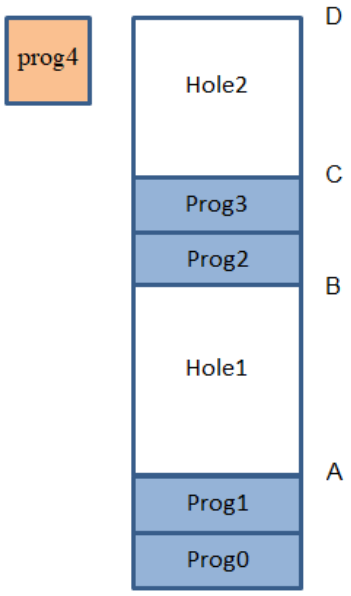
Answer: 0

The correct answer is: 0

Question 13

Correct

Mark 3.00 out of 3.00



In the above memory allocation state, 4 programs are already in memory, and 5th program is waiting to be loaded into the memory. The borders of the holes are:

A - 2K
B - 7K
C - 12K
D - 19K

The memory is allocated to the programs in the worst-fit rule, without making a new hole if the allocated block is larger than the demand.

What will be the internal fragmentation after loading the program Prog4 of size 2K into memory?

Answer: 5 ✔

===== for teacher ======

5 7

The correct answer is: 5

Question 14

Correct

Mark 3.00 out of 3.00

The virtual address consists of 7b page number and 9b offset. The page index table is shown below (index, content). For decimal address 672, binary 0000 0010 1010 0000, enter the physical address in the form: frame number.offset (as decimal numbers, offset to 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	4
6	5
5	-1
4	11
3	6
2	9
1	-1
0	1

Answer: -1 ✔

The correct answer is: -1.000

Question 15

Correct

Mark 3.00 out of 3.00

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: 5.85 ✔

The correct answer is: 5.8

Question 16

Incorrect

Mark 0.00 out of 3.00

The stack is full descending, that is, the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses. Memory is byte-organized (individual bytes are addressed). Every piece of data occupies 2 bytes (also, memory cells and general-purpose registers). Parameters are pushed on the stack by C convention, starting with the last one. The static link is pushed on the stack after the parameters. The subroutine has local variables: 4, which occupy 1 memory cell each. After calling the subroutine with parameters: 2, occupying 1 memory cell each, the static link will be at the address relative to the SP (decimal number should be entered):

Answer: 4 ✖

The correct answer is: 12

Question 17

Correct

Mark 3.00 out of 3.00

page	history of R
0	001001
1	001110
2	000011
3	000111
4	011011
5	011100
6	010011
7	010111

Using the above table of the history of R bit for the pages in LRU swapping, which page will be sent to the disk first? The oldest bit R is on the left. Provide a page number.

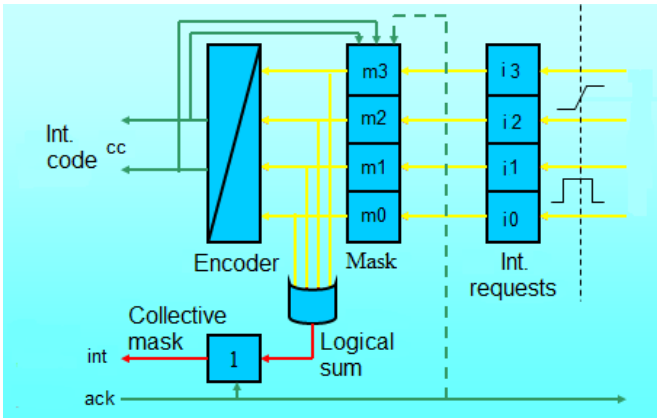
Answer: 2

The correct answer is: 2

Question 18

Correct

Mark 3.00 out of 3.00



In the given interrupt controller structure, the interrupt mask is 1100 (from m3 to m0), Enter the interrupt number from 0 to 3, without the prefix "i", that caused this mask form.

The interrupt with index 3 has the highest priority.

If no interrupt could cause this mask form, enter -1.

Answer: 1

The correct answer is: 1