

Rozpoczęto	sobota, 14 czerwca 2025, 12:57
Stan	Ukończone
Ukończono	sobota, 14 czerwca 2025, 13:08
Wykorzystany czas	10 min. 53 sek.
Punkty	9,00/40,00
Ocena	6,08 pkt. na 27,00 pkt. możliwych do uzyskania (22,5%)

Pytanie 1

Poprawnie

Punkty: 1,00 z 1,00

W skład środowiska w którym jest realizowany proces wchodzą:

Wybierz wszystkie poprawne:

- a. Zbiór zmiennych środowiska ✓
- b. Przestrzeń adresowa procesu ✓
- c. Zawartość rejestru zgłoszeń przerwań
- d. Zawartość w jednostki zarządzania pamięcią
- e. Zawartość rejestrów ✓
- f. Otwarte pliki ✓

Twoja odpowiedź jest poprawna.

Prawidłowymi odpowiedziami są: Zbiór zmiennych środowiska, Przestrzeń adresowa procesu, Zawartość rejestrów, Otwarte pliki

Pytanie 2

Poprawnie

Punkty: 1,00 z 1,00

W skład środowiska w którym jest realizowany proces wchodzą:

Wybierz wszystkie poprawne:

- a. Przestrzeń adresowa procesu ✓
- b. Zawartość rejestru zgłoszeń przerwań
- c. Zbiór zmiennych środowiska ✓
- d. Zawartość rejestrów uniwersalnych ✓

Twoja odpowiedź jest poprawna.

Prawidłowymi odpowiedziami są: Zbiór zmiennych środowiska, Przestrzeń adresowa procesu, Zawartość rejestrów uniwersalnych

Pytanie 3

Niepoprawnie

Punkty: 0,00 z 1,00

Algorytm, w którym jest wyrzucana strona najdawniej załadowana, nazywa się (podaj skrót jeżeli jest dla tego algorytmu używany):

Odpowiedź: LRU



Poprawna odpowiedź to: FIFO

Pytanie 4

Niepoprawnie

Punkty: 0,00 z 1,00

System czasu rzeczywistego „twardy”:

Wybierz wszystkie poprawne:

- a. Gwarantuje czas obsługi przerwania ✗
- b. Gwarantuje średni czas reakcji
- c. Gwarantuje czas reakcji

Twoja odpowiedź jest niepoprawna.

Poprawna odpowiedź to: Gwarantuje czas reakcji

Pytanie 5

Niepoprawnie

Punkty: 0,00 z 1,00

Który z poniższych schematów alokacji pamięci może podlegać zewnętrznej fragmentacji?

- a. Wiele ciągłych stałych partycji o jednakowym rozmiarze
- b. Wiele ciągłych stałych partycji o różnej wielkości ✓
- c. Stronicowanie ✗
- d. Segmentacja

Prawidłowymi odpowiedziami są: Segmentacja, Wiele ciągłych stałych partycji o różnej wielkości

Pytanie 6

Niepoprawnie

Punkty: 0,00 z 1,00

W których algorytmach wymiany jest używana historia dostępów do strony?

Wybierz wszystkie poprawne:

- a. zegarowy zbioru roboczego
- b. LFU
- c. drugiej szansy ✗
- d. LRU
- e. NRU ✗
- f. zbioru roboczego
- g. FIFO

Twoja odpowiedź jest niepoprawna.

Prawidłowymi odpowiedziami są: LRU, LFU

Pytanie 7

Poprawnie

Punkty: 1,00 z 1,00

przerwanie „błąd strony” (page fault) jest zgłasiane gdy:

Wybierz wszystkie poprawne:

- a. na bieżącej stronie wystąpił błąd
- b. program wykonuje dostęp do strony której nie ma w pamięci operacyjnej ✓
- c. program wykonuje dostęp do strony której nie ma w kieszeni (pamięci podręcznej)
- d. program wykonuje dostęp do strony

Twoja odpowiedź jest poprawna.

Poprawna odpowiedź to: program wykonuje dostęp do strony której nie ma w pamięci operacyjnej

Pytanie 8

Nie udzielono odpowiedzi

Punkty maks.: 3,00

ramka	M	R	należy do procesu	1-używana, 0-nie
1	1	0	0	0
2	0	0	2	0
3	1	1	1	1
4	0	1	0	0
5	1	0	3	1
6	1	0	1	1
7	0	0	2	0
8	1	1	1	0

Używając powyższej tabeli, z lokalną regułą przydziału ramek, która ramka zostanie przydzielona do procesu? Strony są skanowane zaczynając od góry. Proces, dla którego ramka jest potrzebna to 2. Podaj numer ramki.

Odpowiedź: ✖

Poprawna odpowiedź to: 2

Pytanie 9

Nie udzielono odpowiedzi

Punkty maks.: 3,00

W przypadku metody SCAN szeregowania operacji dyskowych, aktualnie wykonywana operacja dotyczy cylindra 30. Bieżący kierunek w metodzie SCAN jest rosnący. Następne zaplanowane operacje (w kolejności ich kolejkowania) to:

Numer operacji	1	2	3	4	5
Numer cylindra	41	24	25	34	40

Dla następnej operacji dyskowej podaj odległość ruchu głowicy (w cylindrach) między bieżącą a następną operacją.

Odpowiedź: ✖

Poprawna odpowiedź to: 4

Pytanie 10

Nie udzielono odpowiedzi

Punkty maks.: 3,00

Przy otwarciu pliku podajemy tryb otwarcia i tryb współdzielenia.

Zakodujmy kody otwarcia:

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

Pierwszy program otworzył plik w trybie 10 i trybie współdzielenia 01

Drugi program chce otworzyć plik w trybie 00 i trybie współdzielenia 10

Czy drugi program będzie mógł otworzyć plik (0-nie, 1-tak, 2-to zależy jeszcze od innych okoliczności)?

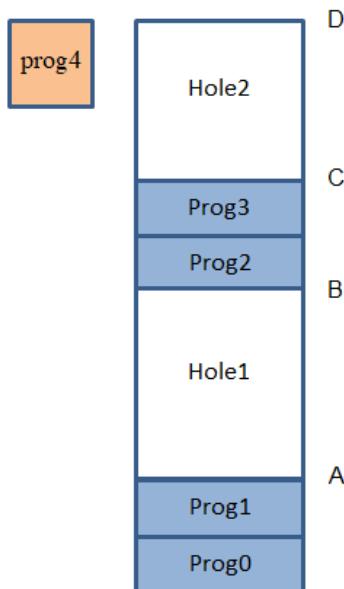
Odpowiedź: ×

Poprawna odpowiedź to: 0

Pytanie 11

Poprawnie

Punkty: 3,00 z 3,00



W powyższym stanie alokacji pamięci 4 programy są już w pamięci, a 5. program czeka na załadowanie do pamięci. Granice dziur to:

- A - 2K
- B - 3K
- C - 12K
- D - 19K

Pamięć jest przydzielana programom w zasadzie pierwszego dopasowania FIRST-FIT, bez tworzenia nowej dziury, jeśli przydzielony blok jest większy niż zapotrzebowanie. Pamięć jest skanowana w poszukiwaniu dziury, zaczynając od niższych adresów.

Jaka będzie wewnętrzna fragmentacja po załadowaniu programu E o rozmiarze 5K do pamięci?

Odpowiedź:

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

1 7

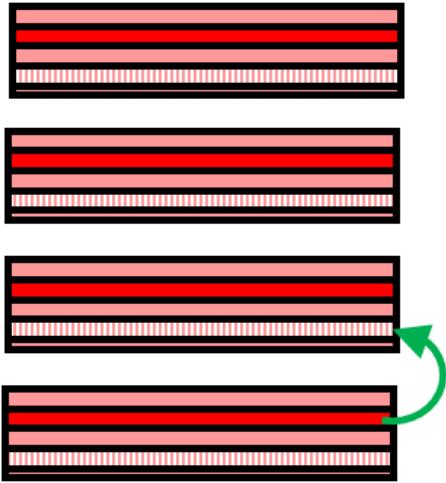
Poprawna odpowiedź to: 2

Pytanie 12

Niepoprawnie

Punkty: 0,00 z 3,00

Na pokazanym "zdjęciu migawkowym" stosu programu, pokazano łącznik statyczny. Stos rozwija się "w dół" Podprogram wskazywany przez strzałkę jest w hierarchii "rodzicem" podprogramu na szczytce stosu. Czy podprogram na szczytce stosu mógł zostać wywołany rekursywnie?

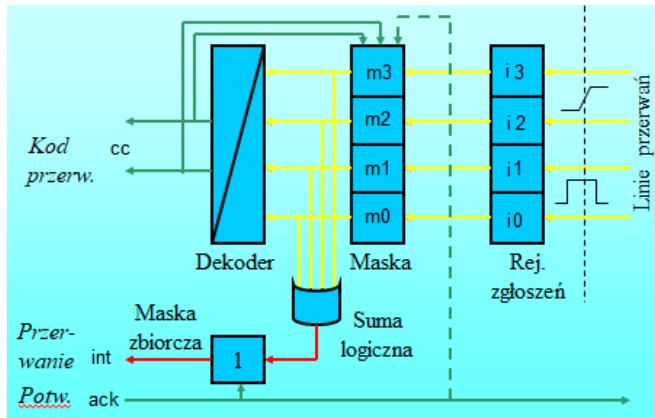
 Prawda ✗ Fałsz

Poprawną odpowiedzią jest "Fałsz".

Pytanie 13

Nie udzielono odpowiedzi

Punkty maks.: 3,00



W podanej strukturze układu przerwań maska przerwań ma postać 1110 (od m3 do m0), oraz są zgłoszone przerwania 0010 (od i3 do i0).

Przerwanie o indeksie 3 ma najwyższy priorytet.

Jaka będzie wartość kodu przerwania cc przesłany do procesora (podaj wartość dziesiętnie)?

Jeżeli żadne przerwanie nie zostanie zgłoszone, wpisz -1

Odpowiedź: ×

Poprawna odpowiedź to: 1

Pytanie 14

Nie udzielono odpowiedzi

Punkty maks.: 3,00

Organizacja pamięci i procesora jest słownowa (int też zajmuje 1 słowo)

zmienna a ma wartość #2494

szczyt stosu (pełny zstępujący) #c800

ramka stosu przed wywołaniem podprogramu B #c81d

adres podprogramu B #085b

Zasady wywoływania: konwencja języka C, bez połączenia statycznego, wynik funkcji przekazywany w rejestrach. Zawartość stosu pokazano po wywołaniu podprogramu B, oraz potem rekursywnie przez samego siebie, w punkcie etykiety C. Podprogram B jest wywołany po raz pierwszy B(a); gdzieś w programie spod adresu #9cff. Etykieta C (adres wywołania funkcji B) ma adres #0886

niezależnie od języka programowania, podprogram B ma postać

B(i);

{

C: B(i-2);

}

Podaj zawartość komórki pod adresem #c7fc jako liczbę heksadecymalną bez #.

Adres	zawartość
#c800	????
#c7ff	#2494
#c7fe	#9d00
#c7fd	#c81d
#c7fc	
#c7fb	#0887
#c7fa	#c7fd
#c7f9	????

Odpowiedź:



Poprawna odpowiedź to: 2492

Pytanie 15

Nie udzielono odpowiedzi

Punkty maks.: 3,00

Adres wirtualny składa się z 7b nr strony i 9b przemieszczenia. Tabela indeksowa stron jest ukazana poniżej (indeks, zawartość). Dla adresu równego dziesiętnie 3632, binarnie 0000 1110 0011 0000, podać adres fizyczny w postaci: nr ramki,przemieszczenie (jako liczby dziesiętne, przemieszczenie na 3 cyfrach). Na przykład dla adresu fizycznego składającego się z ramki 0 i przemieszczenia 18 należy podać 0,018. Jeżeli dla podanego adresu wirtualnego nie ma adresu fizycznego to należy podać -1.

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

Odpowiedź: ✗

Poprawna odpowiedź to: 4,048

Pytanie 16

Poprawnie

Punkty: 3,00 z 3,00

Jaki jest średni czas w systemie dla zadań wsadowych, przy użyciu algorytmu SJF?

W systemie są 3 procesory

zadanie	1	2	3	4
czas przetwarzania	3,5	4,5	2,9	1,8

Odpowiedź: ✓

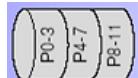
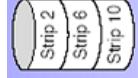
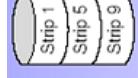
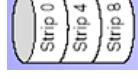
Poprawna odpowiedź to: 3,6

Pytanie 17

Nie udzielono odpowiedzi

Punkty maks.: 3,00

W macierzy RAID 4 dane są umieszczane w porcjach (Strips), które są "rozrzucone" po dyskach danych, tak że każda kolejna porcja znajduje się na kolejnym dysku danych, modulo liczba dysków. Do tego występuje dysk parzystości, który przechowuje bity parzystości zerowych bitów, pierwszych bitów, drugich bitów itd., porcji o równych numerach podzielonych przez liczbę dysków danych, na przykład porcji 0-3, 4-7, 8-11 itd.:

**dysk parz.****dysk 3****dysk 2****dysk 1****dysk 0**

początek porcji 0,1,2,3 wygląda następująco:

0	1	0	0	1	Dysk parz.
0	0	0	0	0	Dysk 3
1	0	1	1	0	Dysk 2
1	1	0	1	0	Dysk 1
0	1	1	0	0	Dysk 0

W porcji parzystości wartości są umieszczone tak, aby bit parzystości zachowywał nieparzystość odpowiednich bitów porcji 0-3. Dysk 3 został uszkodzony i odczytuje same 0. Po wymianie dysku na nowy, jakie wartości należy umieścić w porcji na dysku 3?

Podaj wartości kolejnych bitów na dysku 3, bez żadnych separatorów pomiędzy nimi, na przykład 00000

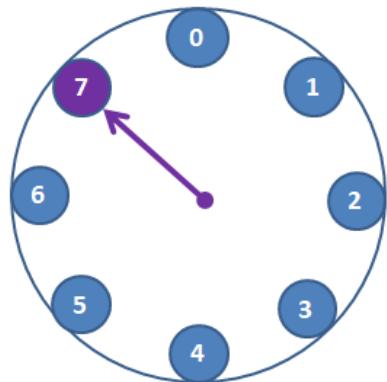
Odpowiedź: ×

Poprawna odpowiedź to: 10110

Pytanie 18

Niepoprawnie

Punkty: 0,00 z 3,00



strona	4	5	6	7	0	1	2	3
bit R	1	1	1	0	1	0	1	1

Używając powyższej listy dla zegarowego algorytmu wymiany, która strona zostanie wysłana na dysk jako pierwsza? Podaj numer strony.

Bieżąca pozycja „wskaźówki” to 4 (niezależnie od pozycji na obrazku).

Odpowiedź: ×

Poprawna odpowiedź to: 7

It has started	Monday, June 16, 2025, 10:39 AM
Condition	Completed
Completed	Monday, June 16, 2025, 11:52 AM
Time used	1 hour 13 minutes
Points	40.00/40.00
Rate	25.00 points out of 25.00 possible points (100 %)

Question 1

Correctly

Points: 1.00 out of 1.00

Discontinuous allocation is the result of:

Select all correct:

- a. relocation
- b. compaction
- c. segmentation ✓
- d. paging ✓

Your answer is correct.

The correct answers are: paging, segmantation

Question 2

Correctly

Points: 1.00 out of 1.00

Interrupt vector:

Select all correct:

- a. and. contains the ID of the process that should be restarted
- b. contains minimal information that cannot be saved programmatically ✓
- c. contains the instruction counter, condition bits, interrupt mask, and general purpose registers
- d. it is saved automatically when an interrupt is accepted ✓

Your answer is correct.

The correct answers are: it is saved automatically when an interrupt is accepted, contains minimal information that cannot be saved programmatically

Pytanie 3

Poprawnie

Punkty: 1,00 z 1,00

WORST-FIT algorithm:

Wybierz wszystkie poprawne:

- a. It allows for fast determining whether there is a free block of the required size ✓
- b. It is designed to reduce external fragmentation ✓
- c. Requires a descending sort of the list of free blocks ✓
- d. Requires sorting the cut part into the list of free blocks ✓

Twoja odpowiedź jest poprawna.

Prawidłowymi odpowiedziami są: Requires a descending sort of the list of free blocks, It allows for fast determining whether there is a free block of the required size, It is designed to reduce external fragmentation, Requires sorting the cut part into the list of free blocks

Pytanie 4

Poprawnie

Punkty: 1,00 z 1,00

Which of the following memory allocation schemes causes external fragmentation?

- a. Multiple contiguous fixed partitions of various sizes ✓
- b. Multiple contiguous fixed partitions of equal size
- c. Paging
- d. Sweeping ✓

Prawidłowymi odpowiedziami są: Sweeping, Multiple contiguous fixed partitions of various sizes

Pytanie 5

Poprawnie

Punkty: 1,00 z 1,00

What is true about system level threads?

- a. Thread switching does not require interaction with the operating system.
- b. All threads of the process execute physically simultaneously.
- c. All process threads share the same address space. ✓
- d. All process threads can share the same set of open files. ✓

Prawidłowymi odpowiedziami są: All process threads can share the same set of open files., All process threads share the same address space.

Pytanie 6

Poprawnie

Punkty: 1,00 z 1,00

For concurrency in OS:

- a. cache memory is necessary
- b. timer interrupts are necessary
- c. special processor support is required
- d. interrupt handling is necessary ✓

Poprawna odpowiedź to: interrupt handling is necessary

Pytanie 7

Poprawnie

Punkty: 1,00 z 1,00

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

Wybierz wszystkie poprawne:

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

Twoja odpowiedź jest poprawna.

Poprawna odpowiedź to: identification of the interrupt level, saving the interrupt vector, performing a jump with a trace according to the interrupt table

Pytanie 8

Poprawnie

Punkty: 3,00 z 3,00

For the disk operation scheduling Cyclic SCAN method, the currently being executed operation is in 30 cylinder. The direction in the Cyclic SCAN method is ascending. The next scheduled operations (in the order of their queuing) are:

Operation number	1	2	3	4	5
Cylinder number	41	24	25	34	40

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

Odpowiedź: ✓

Poprawna odpowiedź to: 4

Pytanie 9

Poprawnie

Punkty: 3,00 z 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 00

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

Odpowiedź: ✓

Poprawna odpowiedź to: 0

Pytanie 10

Poprawnie

Punkty: 3,00 z 3,00

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

Using the above table of the history of R bit for the pages in NRU swapping, with global frame allocation rule, which page will be sent to the disk first? The pages are scanned starting from the top. The process for which the frame is needed is 2. Provide a page number.

Odpowiedź: 3 ✓

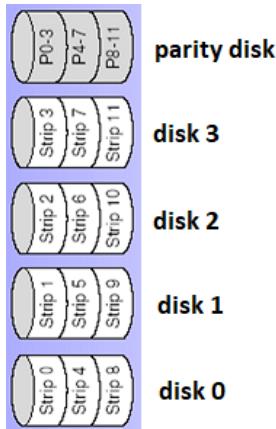
Poprawna odpowiedź to: 3

Pytanie 11

Poprawnie

Punkty: 3,00 z 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	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 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

Odpowiedź: ✓

Poprawna odpowiedź to: 10111

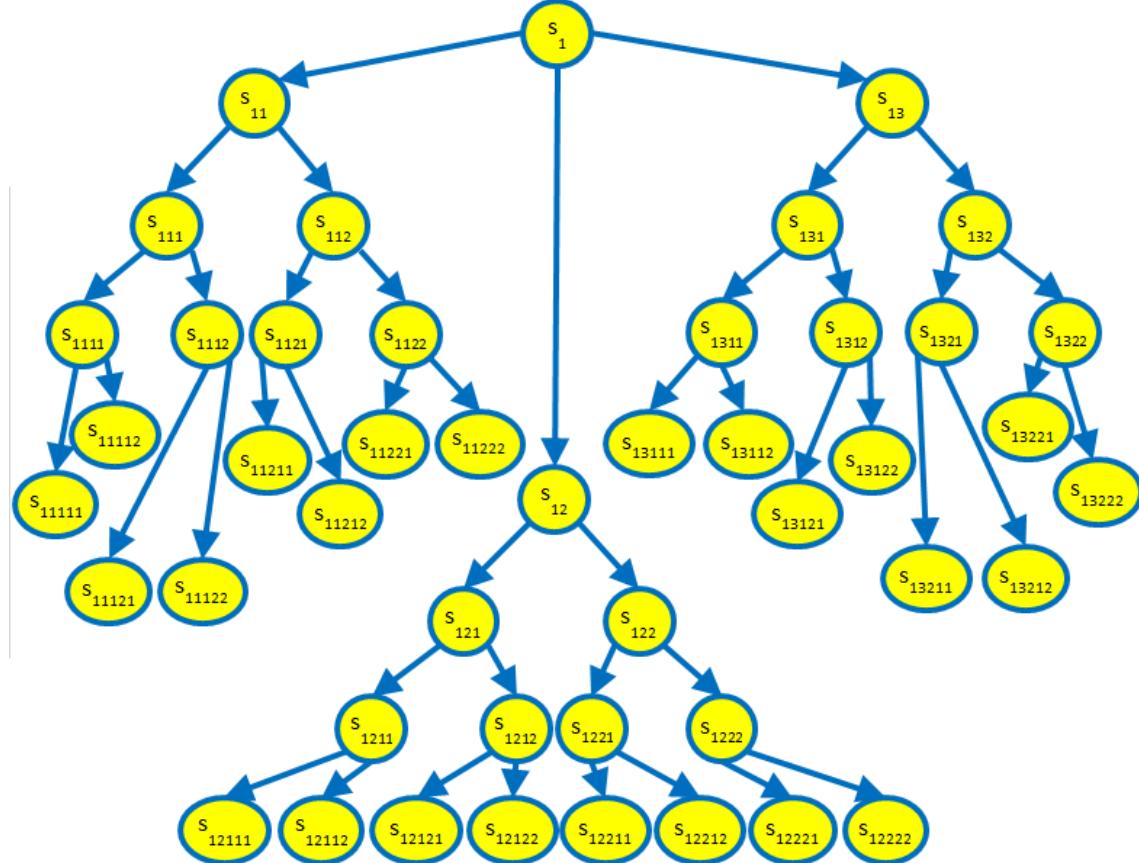
Pytanie 12

Poprawnie

Punkty: 3,00 z 3,00

The stack frame of which subroutine (specify the index) will be pointed by the static link in the frame of the subroutine S1222, that is called from the subroutine S12?

If the call is not possible, enter index -1.



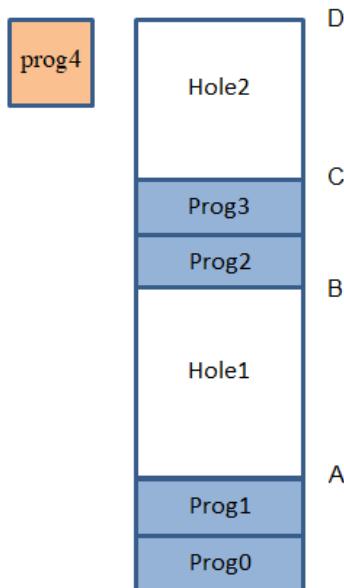
Odpowiedź: ✓

Poprawna odpowiedź: -1

Pytanie 13

Poprawnie

Punkty: 3,00 z 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 - 4K
- B - 6K
- C - 15K
- D - 17K

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?

Odpowiedź:

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

22

Poprawna odpowiedź to: 0

Pytanie 14

Poprawnie

Punkty: 3,00 z 3,00

Assuming that memory cells are 1-byte, the page number in the address field is 13 bits, the offset is 13 bits, the frame number is 11 bits, and all entries in the TIS page index table are on a 4-byte word boundary, please specify:

- the maximum size of the physical memory in MB

Odpowiedź:

Poprawna odpowiedź to: 16

Pytanie 15

Poprawnie

Punkty: 3,00 z 3,00

We have the tasks with the following priorities in the access to a resource (a larger number is a higher priority):

Process number	1	2	3	4	5	6
Priority	45	44	39	38	42	31

The scheduling policy is preemptive, with the decision time constraint based on time slicing.

The current process is number 4. What process will get the resource in the nearest decision? Provide its priority.

Odpowiedź:

45



Poprawna odpowiedź to: 45

Pytanie 16

Poprawnie

Punkty: 3,00 z 3,00

The organization of memory and processor is word-based. A word means 16 bits. (int also takes 1 word) Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

variable b has the value #a0a0

variable c has the value #a0a5

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses): #c100

address of subroutine A #1010

stack frame before calling subroutine A #c105

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static link, the result of the function is passed in registers. The contents of the stack at label point C. Subroutine A is called A(c,b,a); from address #10a0.

regardless of the programming language, the subroutine header A has the form

A(int x,y,z);

{

 int p = z-y;

 int q = x-y;

C: ...

}

The content of the cell at address #c0fb: dynamic link



Address	content
#c100	????
#c0ff	#a0a5
#c0fe	#a0a0
#c0fd	#a0c0
#c0fc	#10a1
#c0fb	#c105
#c0fa	#0005
#c0f9	#0020
#c0f8	????

Twoja odpowiedź jest poprawna.

Poprawna odpowiedź to:

The organization of memory and processor is word-based. A word means 16 bits. (int also takes 1 word) Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

variable b has the value #a0a0

variable c has the value #a0a5

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses): #c100

address of subroutine A #1010

stack frame before calling subroutine A #c105

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static link, the result of the function is passed in registers. The contents of the stack at label point C. Subroutine A is called A(c,b,a); from address #10a0.

regardless of the programming language, the subroutine header A has the form

A(int x,y,z);

{

 int p = z-y;

 int q = x-y;

C: ...

}

The content of the cell at address #c0fb:[dynamic link]

Address	content
#c100	????
#c0ff	#a0a5
#c0fe	#a0a0
#c0fd	#a0c0
#c0fc	#10a1
#c0fb	#c105
#c0fa	#0005
#c0f9	#0020
#c0f8	????

Pytanie 17

Poprawnie

Punkty: 3,00 z 3,00

page	history of R
0	011000
1	011100
2	010001
3	010110
4	001011
5	001100
6	000011
7	000100

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.

Odpowiedź:

6

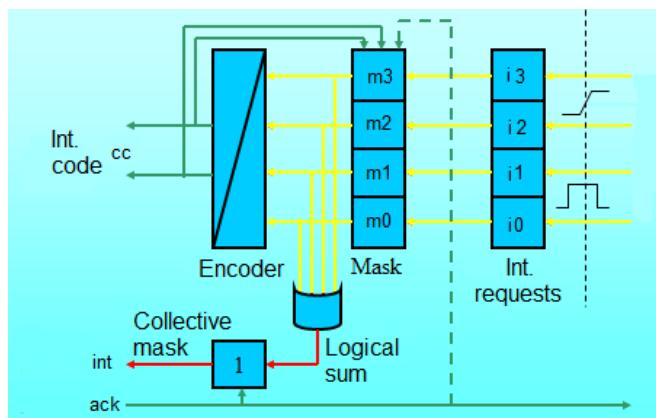


Poprawna odpowiedź to: 6

Pytanie 18

Poprawnie

Punkty: 3,00 z 3,00



In the given interrupt controller structure, the interrupt mask is 1110 (from m3 to m0), and interrupts 0011 (from i3 to i0) are reported.

The interrupt with index 3 has the highest priority.

What will be the value of the interrupt code cc sent to the processor (provide the code in decimal)?

If no interrupt is reported, enter -1

Odpowiedź: ✓

Poprawna odpowiedź to: 1

Started on	Monday, 16 June 2025, 10:22 AM
State	Finished
Completed on	Monday, 16 June 2025, 11:44 AM
Time taken	1 hour 21 mins
Marks	36.00/40.00
Grade	22.50 out of 25.00 (90%)

Question 1

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

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

Question 2

Correct

Mark 1.00 out of 1.00

The internal state of the program supervisor layer is available for:

- a. Applications
- b. File system layer
- c. User programs
- d. OS kernel

The correct answer is: OS kernel

Question 3

Correct

Mark 1.00 out of 1.00

What is true for simultaneous execution in the same context?

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

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 4

Correct

Mark 1.00 out of 1.00

The scheduler decisions take the form:

Select one or more:

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

Twoja odpowiedź jest poprawna.

The correct answer is: change from ready to active state

Question 5

Correct

Mark 1.00 out of 1.00

A memory management technique in which the system divides memory into equal-sized portions to easily manage relocation is called:

Select one or more:

- a. swapping
- b. mapping
- c. paging
- d. sweeping

Twoja odpowiedź jest poprawna.

The correct answer is: paging

Question 6

Incorrect

Mark 0.00 out of 1.00

The address translation function is:

Select one or more:

- a. multivalent
- b. reverse
- c. partial
- d. monotonic

Twoja odpowiedź jest niepoprawna.

The correct answers are: multivalent, partial

Question 7

Correct

Mark 1.00 out of 1.00

Multiprogramming is a technique in which,as a rule:

Select one or more:

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

Twoja odpowiedź jest poprawna.

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

Question 8

Correct

Mark 3.00 out of 3.00

For the disk operation scheduling Cyclic SCAN method, the currently being executed operation is in 33 cylinder. The direction in the Cyclic SCAN method is descending. The next scheduled operations (in the order of their queuing) are:

Operation number	1	2	3	4	5
Cylinder number	40	41	28	29	25

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

Answer:

The correct answer is: 4

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 01

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

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

Answer:

The correct answer is: 0

Question 10

Correct

Mark 3.00 out of 3.00

page	Last used	Bit R	belongs to process
1	93	1	2
2	92	0	5
3	95	0	6
4	94	0	3
5	89	1	4
6	88	1	3
7	91	0	3
8	90	1	3

Using the above table of the history of R bit for the pages in Workset swapping algorithm, with priority frame allocation method, which page will be sent to the disk first? The current time slice number is 96, and the time range τ for the workset is 3 (the threshold $96-\tau=93$). Page scan starts from the top. The current process that needs a page to be loaded is 4. A process number is its priority (the greater number, the higher priority). Provide a page number to be sent to the disk.

Answer:

7

The correct answer is: 7

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
0	0	0	0	0	Disk 3
1	0	0	1	0	Disk 2
1	1	0	1	0	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?

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

Answer:

The correct answer is: 11000

Question 12

Correct

Mark 3.00 out of 3.00

The figure shows the static nesting structure of subroutines. Subroutine s1212 makes a recursive call. To what stack frame (of which subroutine) will be the static link in the recursively called subroutine frame?

Enter the name of the subroutine with the index, without the letter "s", e.g. for s11122, enter 11122

Answer:

The correct answer is: 121

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 - 4K
- B - 6K
- C - 13K
- D - 17K

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 1K into memory?

Answer:

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

2 4

The correct answer is: 3

Question 14

Correct

Mark 3.00 out of 3.00

Assuming that memory cells are 1-byte, the page number in the address field is 13 bits, the offset is 13 bits, the frame number is 11 bits, and all entries in the TIS page index table are on a 4-byte word boundary, specify:

- TIS maximum size of the program in kB

Answer:

The correct answer is: 32

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	3.8	4.5	2.6	1.2

Answer: 6.175

The correct answer is: 6.2

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 8 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: 4, occupying 1 memory cell each, the trace will be at the address relative to the SP (decimal number should be entered):

Answer: 32

The correct answer is: 40

Question 17

Correct

Mark 3.00 out of 3.00

page	6	7	0	1	2	3	4	5
R bit	1	1	1	0	1	0	1	0

Using the above list for the Clock swapping algorithm, which page will be sent to the disk first? Provide a page number.

The current position of the "arrow" is 6 (regardless of the position in the picture), and the algorithm works clockwise.

Answer: 1

The correct answer is: 1

Question 18

Correct

Mark 3.00 out of 3.00

In the given interrupt controller structure, the interrupt mask is 1110 (from m3 to m0), and interrupts 0010 (from i3 to i0) are reported.

The interrupt with index 3 has the highest priority.

What will be the new value of the interrupt mask? Provide the bits .m3m2m1m0 (mask preceded by a point), for example .0101

Answer:

The correct answer is: 0.1100

Started on	Monday, 16 June 2025, 10:06 AM
State	Finished
Completed on	Monday, 16 June 2025, 11:51 AM
Time taken	1 hour 44 mins
Marks	31.00/40.00
Grade	19.38 out of 25.00 (77.5%)

Question 1

Correct

Mark 1.00 out of 1.00

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

Select one or more:

- a. running
- b. ready ✓
- c. suspended
- d. waiting

Twoja odpowiedź jest poprawna.

The correct answer is: ready

Question 2

Correct

Mark 1.00 out of 1.00

The thread is also called:

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

The correct answer is: lightweight process

Question 3

Correct

Mark 1.00 out of 1.00

Which swapping algorithms use the history of page references (when was it last used or in which time slices was it used)?

Select one or more:

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

Twoja odpowiedź jest poprawna.

The correct answers are: second chance, LRU, LFU, working set

Question 4

Correct

Mark 1.00 out of 1.00

The hardware resources of a computer system are:

Select one or more:

- a. Virtual memory
- b. Processor time ✓
- c. Peripheral devices ✓
- d. Windows on the screen

Twoja odpowiedź jest poprawna.

The correct answers are: Processor time, Peripheral devices

Question 5

Correct

Mark 1.00 out of 1.00

Collective interrupt mask is:

Select one or more:

- a. a register that blocks or unlocks a non-maskable interrupt
- b. a register that blocks or unblocks all interrupts ✓
- c. register in which the address of the interrupt controller is stored
- d. a combinational circuit that calculates the number of the interrupt received

Twoja odpowiedź jest poprawna.

The correct answer is: a register that blocks or unblocks all interrupts

Question 6

Correct

Mark 1.00 out of 1.00

Page Index Table address is kept in:

Select one or more:

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

Twoja odpowiedź jest poprawna.

The correct answer is: page table base register

Question 7

Correct

Mark 1.00 out of 1.00

A concurrent system is one that, in principle:

Select one or more:

- a. It runs on a multiprocessor computer
- b. It allows multiple programs/processes/threads to run physically simultaneously
- c. Requires the use of timer interrupts
- d. Allows multiple programs/processes/threads to run simultaneously or seemingly simultaneously ✓

Twoja odpowiedź jest poprawna.

The correct answer is: Allows multiple programs/processes/threads to run simultaneously or seemingly simultaneously

Question 8

Correct

Mark 3.00 out of 3.00

For the disk operation scheduling Cyclic SCAN method, the currently being executed operation is in 49 cylinder. The direction in the Cyclic SCAN method is ascending. The next scheduled operations (in the order of their queuing) are:

Operation number	1	2	3	4	5
Cylinder number	60	43	46	53	59

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

Answer: ✓

The correct answer is: 4

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 00 and sharing mode 01

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

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

Answer: 

The correct answer is: 0

Question 10

Correct

Mark 3.00 out of 3.00

page	Last used	Bit R	belongs to process
1	93	1	2
2	92	0	5
3	95	0	6
4	94	0	3
5	89	1	4
6	88	1	3
7	91	0	3
8	90	1	3

Using the above table of the history of R bit for the pages in Workset swapping algorithm, with priority frame allocation method, which page will be sent to the disk first? The current time slice number is 96, and the time range τ for the workset is 3 (the threshold $96-\tau=93$). Page scan starts from the top. The current process that needs a page to be loaded is 4. A process number is its priority (the greater number, the higher priority). Provide a page number to be sent to the disk.

Answer: ✓

The correct answer is: 7

Question 11

Incorrect

Mark 0.00 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:

0	1	0	0	1	Parity disk
0	0	0	0	0	Disk 3
1	0	1	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 odd.

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?

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

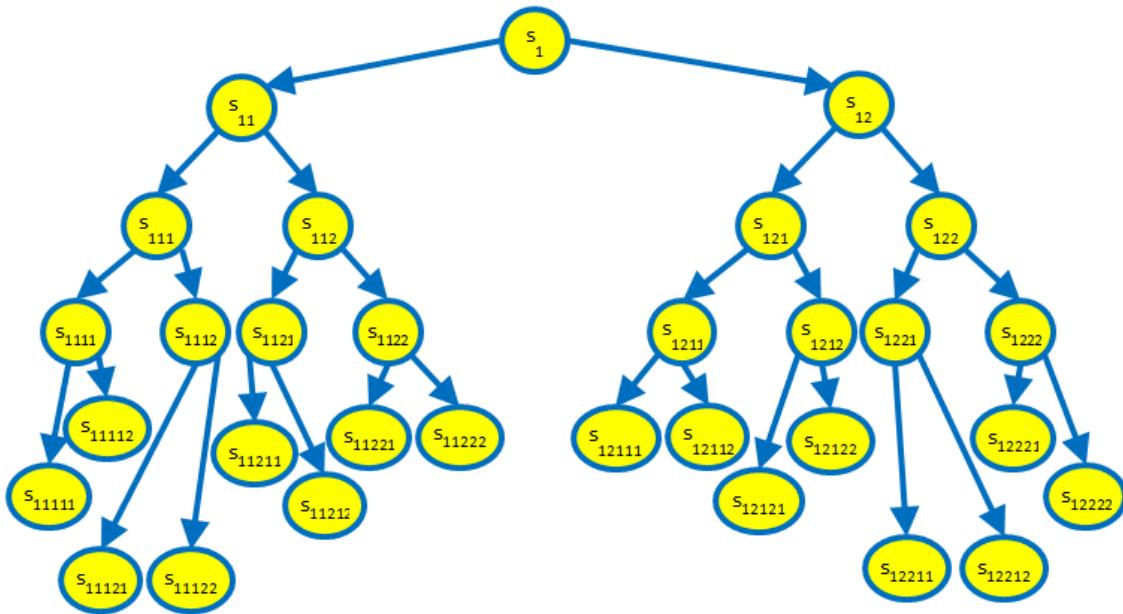
Answer: ×

The correct answer is: 11001

Question 12

Correct

Mark 3.00 out of 3.00



Above is the nesting structure of subroutines in some program. Subroutine s121 calls its "parent" in the hierarchy. To what stack frame (which subroutine) will the dynamic link be made in the called subroutine frame?

Enter the name of the subroutine with the index, without the letter "s", e.g. for s1112 enter 11122

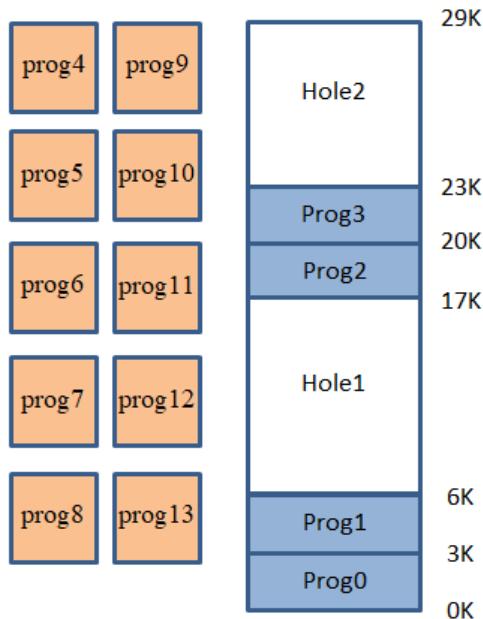
Answer: 121 ✓

The correct answer is: 121

Question 13

Correct

Mark 3.00 out of 3.00



In the above memory allocation state, 4 programs are already in memory, and 9 programs are waiting to be loaded into the memory, in the reverse order of their numbers. The programs waiting to be loaded into memory have the following sizes:

prog4 - 5K
 prog5 - 7K
 prog6 - 4K
 prog7 - 6K
 prog8 - 4K
 prog9 - 4K
 prog10 - 2K
 prog11 - 4K
 prog12 - 5K

The memory is allocated to the programs in the best-fit rule, with making a new hole if the allocated block is larger than the demand.

The programs are loaded into the memory in reverse order of their numbers (from 12 to 4).

Specify, which program will cause the memory compaction. Provide only the program number. If the compaction will not be needed, provide 0.

Answer:

The correct answer is: 8

Question 14

Incorrect

Mark 0.00 out of 3.00

Assuming that the instruction is 32 bits, the data accessed in the instructions is 2 or 4 bytes, the memory access addressing is on a double word (4 bytes) boundary, and the page size is 4kB, one instruction can cause the following number of "page fault" exceptions:

Answer:

6



The correct answer is: 2

Question 15

Correct

Mark 3.00 out of 3.00

We have the tasks with the following priorities in the access to a resource (a larger number is a higher priority):

Process number	1	2	3	4	5	6
Priority	40	41	32	33	33	28

The scheduling policy is preemptive, with the decision time constraint based on time slicing.

The current process is number 4. What process will get the resource in the nearest decision? Provide its priority.

Answer:

41



The correct answer is: 41

Question 16

Correct

Mark 3.00 out of 3.00

The organization of memory and processor is word. A word means 16 bits (int also takes one 16-bit word). Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses) is #c100

stack frame before calling subroutine A: #c105

address of subroutine A #1001

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static link, the result of the function is passed in registers. The stack is shown after subroutine A is called, at label point C. Subroutine A is called A(a,a,a); from address #1050.

Regardless of the programming language, subroutine A has the form

A(int x,y,z);

{

 int q = x+0x20;

C: ...

}

Specify what cell #c0fb contains: ✓

Address	content	
#c100	????	
#c0ff	#a0c0	
#c0fe	#a0c0	
#c0fd	#a0c0	
#c0fc	#1051	
#c0fb	#c105	
#c0fa	#a0e0	
#c0f9	????	
#c0f8	????	

Twoja odpowiedź jest poprawna.

The correct answer is:

The organization of memory and processor is word. A word means 16 bits (int also takes one 16-bit word). Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses) is #c100

stack frame before calling subroutine A: #c105

address of subroutine A #1001

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static link, the result of the function is passed in registers. The stack is shown after subroutine A is called, at label point C. Subroutine A is called A(a,a,a); from address #1050.

Regardless of the programming language, subroutine A has the form

A(int x,y,z);

{

 int q = x+0x20;

C: ...

}

Specify what cell #c0fb contains:[dynamic link]

Address	content	
#c100	????	
#c0ff	#a0c0	
#c0fe	#a0c0	
#c0fd	#a0c0	
#c0fc	#1051	
#c0fb	#c105	
#c0fa	#a0e0	
#c0f9	????	
#c0f8	????	

Question 17

Correct

Mark 3.00 out of 3.00

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

Using the above table of the history of R bit for the pages in NRU swapping, which page will be sent to the disk first? The pages are scanned starting from the top. Provide a page number.

Answer:

2

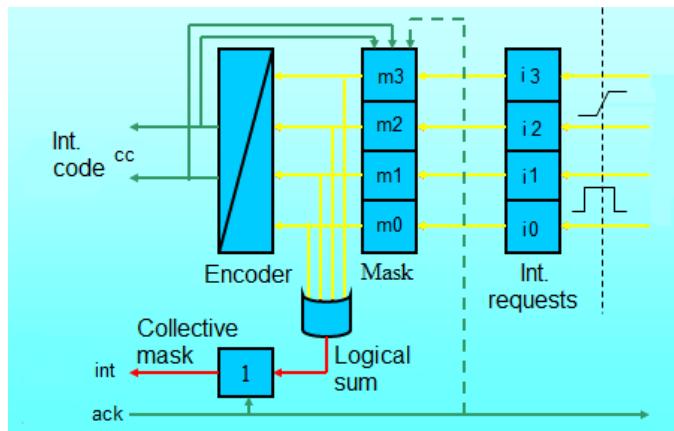


The correct answer is: 2

Question 18

Incorrect

Mark 0.00 out of 3.00



In the given interrupt controller structure, the interrupt mask is 0000 (from m3 to m0), and interrupts 1010 (from i3 to i0) are reported.

The interrupt with index 3 has the highest priority.

What will be the value of the interrupt code cc sent to the processor (provide the code in decimal)?

If no interrupt is reported, enter -1

Answer: ✖

The correct answer is: -1

Rozpoczęto	poniedziałek, 16 czerwca 2025, 10:52
Stan	Ukończone
Ukończono	poniedziałek, 16 czerwca 2025, 11:52
Wykorzystany czas	59 min. 43 sek.
Punkty	28,67/40,00
Ocena	17,92 pkt. na 25,00 pkt. możliwych do uzyskania (71,67%)

Pytanie 1

Poprawnie

Punkty: 1,00 z 1,00

Paging - the key in associative memory is:

Wybierz wszystkie poprawne:

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

Twoja odpowiedź jest poprawna.

Poprawna odpowiedź to: page number

Pytanie 2

Częściowo poprawnie

Punkty: 0,50 z 1,00

WORST-FIT algorithm:

Wybierz wszystkie poprawne:

- a. Requires a descending sort of the list of free blocks ✓
- b. Requires sorting the cut part into the list of free blocks ✓
- c. It allows for fast determining whether there is a free block of the required size
- d. It is designed to reduce external fragmentation

Twoja odpowiedź jest częściowo poprawna.

Poprawnie wybrałeś (-łaś): 2.

Prawidłowymi odpowiedziami są: Requires a descending sort of the list of free blocks, It allows for fast determining whether there is a free block of the required size, It is designed to reduce external fragmentation, Requires sorting the cut part into the list of free blocks

Pytanie 3

Niepoprawnie

Punkty: 0,00 z 1,00

LRU algorithm consists in:

Wybierz wszystkie poprawne:

- a. Ejecting the most recently used page from memory
- b. Removing the least used page from memory ✗
- c. Downloading to memory the page that is most often needed
- d. Downloading to the memory of the page that will be needed as soon as possible

Twoja odpowiedź jest niepoprawna.

Poprawna odpowiedź to: Ejecting the most recently used page from memory

Pytanie 4

Częściowo poprawnie

Punkty: 0,67 z 1,00

The interrupt encoder is:

Wybierz wszystkie poprawne:

- a. a register that tells the processor the interrupt number to be handled
- b. a combinational circuit that calculates the value of a new individual interrupt mask
- c. a combinational circuit that computes the number of the reported and unmasked interrupt with the highest priority ✓
- d. a combinational circuit that transmits to the processor the number of the interrupt to be serviced ✓

Twoja odpowiedź jest częściowo poprawna.

Poprawnie wybrałeś (-łaś): 2.

Prawidłowymi odpowiedziami są: a combinational circuit that computes the number of the reported and unmasked interrupt with the highest priority, a combinational circuit that calculates the value of a new individual interrupt mask, a combinational circuit that transmits to the processor the number of the interrupt to be serviced

Pytanie 5

Częściowo poprawnie

Punkty: 0,50 z 1,00

Interrupt handling - sequence of actions:

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

Twoja odpowiedź jest częściowo poprawna.

Poprawnie wybrałeś (-łaś): 2.

Poprawna odpowiedź to: 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

Pytanie 6

Poprawnie

Punkty: 1,00 z 1,00

The hardware mechanisms necessary for paging are

(note: "frame error" is also called "page fault", "frame fault"):

Wybierz wszystkie poprawne:

- a. Address translation, page index tables, "frame error" interrupt, associative memory, page swapper
- b. Address translation, page index tables, "frame error" interrupt ✓
- c. Address translation, page index tables, page reference bits, "frame error" interrupt
- d. Address translation, page index tables, page reference bits, "frame error" interrupt, associative memory

Twoja odpowiedź jest poprawna.

Poprawna odpowiedź to: Address translation, page index tables, "frame error" interrupt

Pytanie 7

Poprawnie

Punkty: 1,00 z 1,00

Conditional variables in a monitor

Wybierz wszystkie poprawne:

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

Twoja odpowiedź jest poprawna.

Poprawna odpowiedź to: They are used to suspend processes that cannot run because the conditions for their continuation are not met

Pytanie 8

Poprawnie

Punkty: 3,00 z 3,00

For the disk operation scheduling Cyclic SCAN method, the currently being executed operation is in 33 cylinder. The direction in the Cyclic SCAN method is descending. The next scheduled operations (in the order of their queuing) are:

Operation number	1	2	3	4	5
Cylinder number	42	41	30	31	25

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

Odpowiedź: 

Poprawna odpowiedź to: 2

Pytanie 9

Poprawnie

Punkty: 3,00 z 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 00

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

Odpowiedź: 

Poprawna odpowiedź to: 0

Pytanie 10

Niepoprawnie

Punkty: 0,00 z 3,00

frame	M	R	belongs to process (0-not used)
1	0	1	5
2	1	1	0
3	0	0	0
4	1	0	1
5	0	1	0
6	0	1	4
7	1	1	4
8	0	0	3

Using the above table, with the fixed frame allocation rule, which frame will be allocated to the process? The pages are scanned starting from the top. The process for which the frame is needed is 4. Provide a frame number.

Odpowiedź: ×

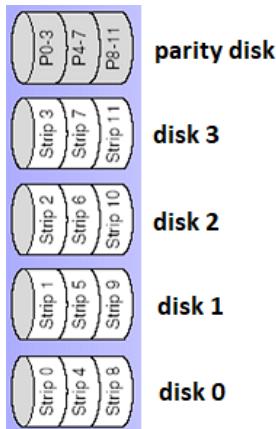
Poprawna odpowiedź to: 2

Pytanie 11

Poprawnie

Punkty: 3,00 z 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
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?

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

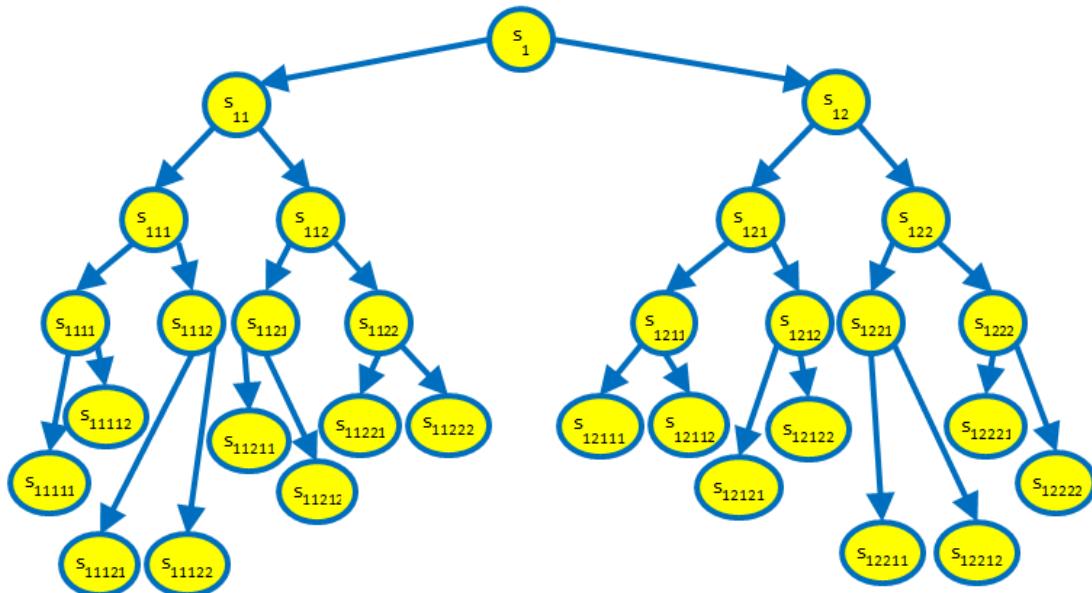
Odpowiedź: ✓

Poprawna odpowiedź to: 10111

Pytanie 12

Niepoprawnie

Punkty: 0,00 z 3,00



Above is the nesting structure of subroutines in some program.

Can there be a dynamic link in subroutine frame s11111 to subroutine frame s11111 ?

answer 0-no, 1-yes

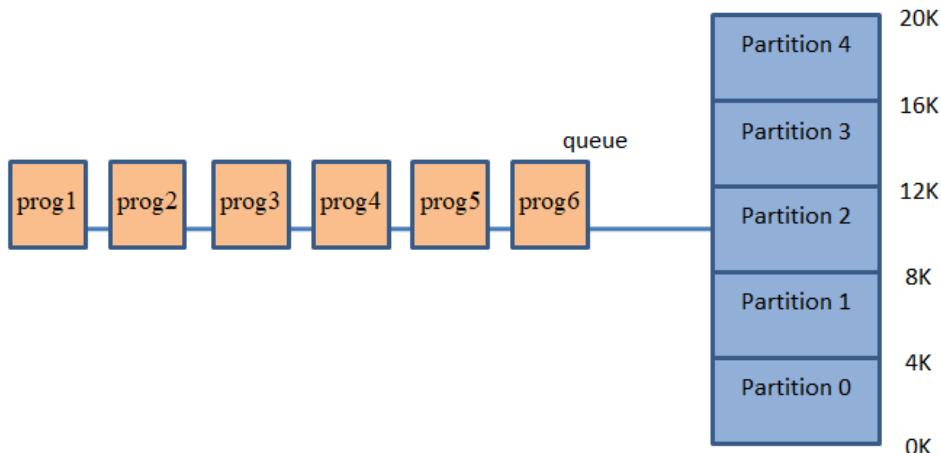
Odpowiedź: ✗

Poprawna odpowiedź to: 1

Pytanie **13**

Poprawnie

Punkty: 3,00 z 3,00



In the above memory division, the programs waiting to be loaded into memory have the following sizes:

- prog1 - 4K
- prog2 - 5K
- prog3 - 4K
- prog4 - 6K
- prog5 - 6K
- prog6 - 5K

Programs are loaded into memory partitions (if possible) in the reverse order of their numbers, from 6 to 1.

Specify, which program will face the internal fragmentation problem as the first. Provide only the program number. If the internal fragmentation cannot occur, enter 0.

Odpowiedź:



Poprawna odpowiedź to: 0

Pytanie 14

Poprawnie

Punkty: 3,00 z 3,00

The virtual address consists of 6b page number and 10b offset. The page index table is shown below (index, content). For decimal address 6192, binary 0001 1000 0011 0000, 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	7
4	-1
3	9
2	5
1	3
0	-1

Odpowiedź: ✓

Poprawna odpowiedź to: 0,048

Pytanie 15

Poprawnie

Punkty: 3,00 z 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

Odpowiedź: ✓

Poprawna odpowiedź to: 5,8

Pytanie 16

Poprawnie

Punkty: 3,00 z 3,00

The organization of memory and processor is word. A word means 16 bits (int also takes one 16-bit word). Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses) is #c100

stack frame before calling subroutine A: #c105

address of subroutine A #1001

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static link, the result of the function is passed in registers. The stack is shown after subroutine A is called, at label point C. Subroutine A is called A(a,a,a); from address #1050.

Regardless of the programming language, subroutine A has the form

A(int x,y,z);

{

 int q = x+0x20;

C: ...

}

Specify what cell #c0fe contains: ✓

Address	content	
#c100	????	
#c0ff	#a0c0	
#c0fe	#a0c0	
#c0fd	#a0c0	
#c0fc	#1051	
#c0fb	#c105	
#c0fa	#a0e0	
#c0f9	????	
#c0f8	????	

Twoja odpowiedź jest poprawna.

Poprawna odpowiedź to:

The organization of memory and processor is word. A word means 16 bits (int also takes one 16-bit word). Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses) is #c100

stack frame before calling subroutine A: #c105

address of subroutine A #1001

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static link, the result of the function is passed in registers. The stack is shown after subroutine A is called, at label point C. Subroutine A is called A(a,a,a); from address #1050.

Regardless of the programming language, subroutine A has the form

```
A(int x,y,z);
{
    int q = x+0x20;
C: ...
}
```

Specify what cell #c0fe contains:[parameter y]

Address	content
#c100	????
#c0ff	#a0c0
#c0fe	#a0c0
#c0fd	#a0c0
#c0fc	#1051
#c0fb	#c105
#c0fa	#a0e0
#c0f9	????
#c0f8	????

Pytanie 17

Niepoprawnie

Punkty: 0,00 z 3,00

page nr	1	2	3	4	5	6	7	8	9
loaded	2	7	15	23	25	35	53	60	62
R bit	1	1	0	1	1	1	1	1	1

Using the above list for the FIFO-second chance swapping algorithm, what will be the bottom row after page replacement execution? The middle row is the number of a time slice in which a page was loaded to a frame. Provide a sequence of bits R for the pages; for example, before page replacement, the bottom row has the image 11011111. We assume that the loaded page gets R=0.

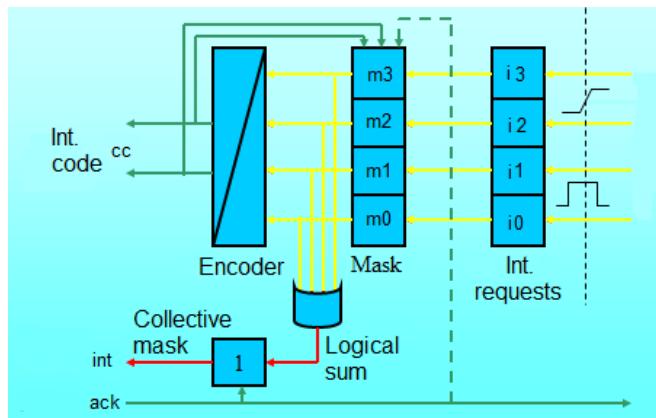
Odpowiedź: 00011111 ✖

Poprawna odpowiedź to: 111111100

Pytanie 18

Poprawnie

Punkty: 3,00 z 3,00



In the given interrupt controller structure, the interrupt mask is 1111 (from m3 to m0), and interrupts 1111 are reported (from i3 to i0).

The interrupt with index 3 has the highest priority.

What will be the value of the interrupt code cc sent to the processor (provide the code in decimal)?

If no interrupt is reported, enter -1

Odpowiedź: ✓

Poprawna odpowiedź to: 3

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 scheduling ✓
- d. traffic control

The correct answer is: task scheduling

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:

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:

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:

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

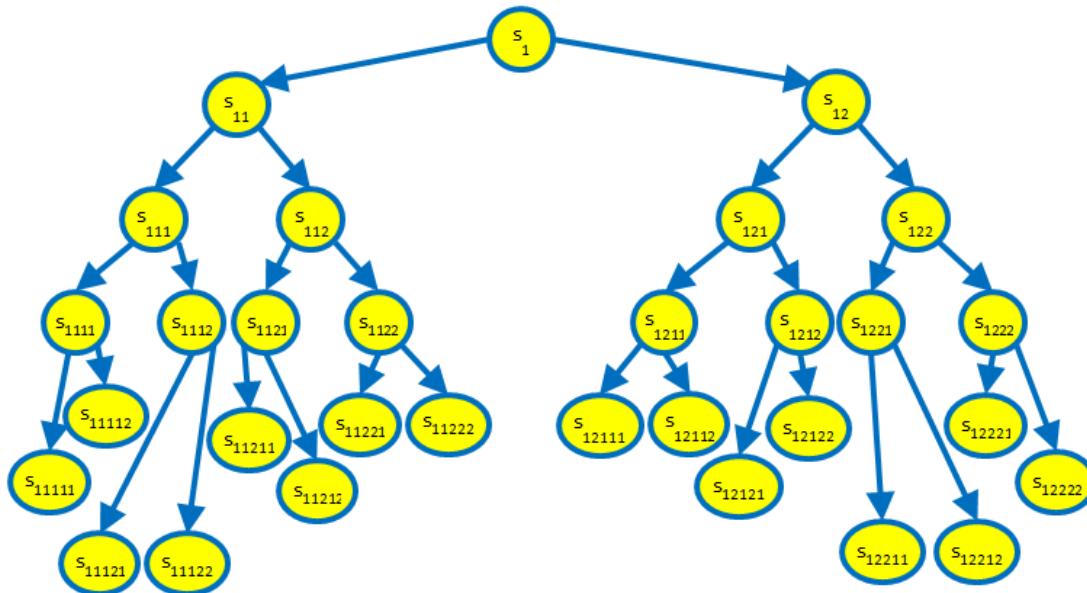
Answer: ✓

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

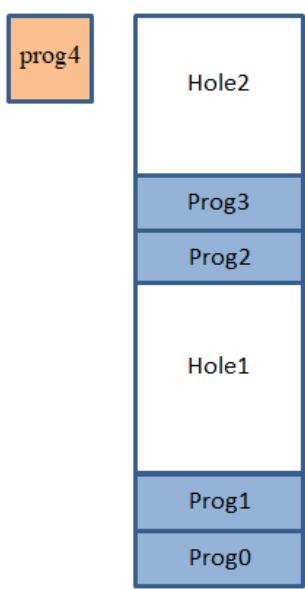
Answer: ✓

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: ✓

===== 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:

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:

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:

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.

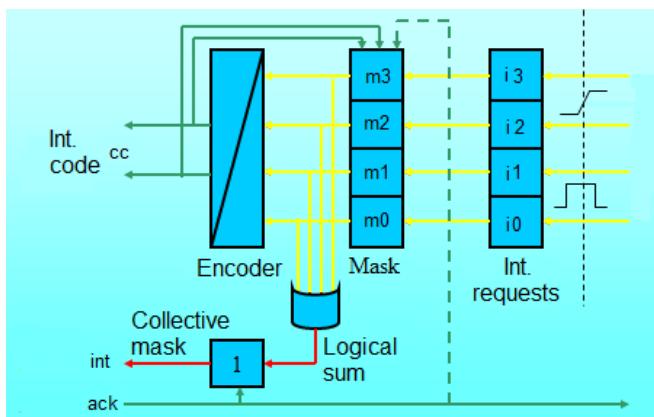
Answer: ✓

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: ✓

The correct answer is: 1

It has started	Monday, June 16, 2025, 10:39 AM
Condition	Completed
Completed	Monday, June 16, 2025, 11:52 AM
Time used	1 hour 13 minutes
Points	40.00/40.00
Rate	25.00 points out of 25.00 possible points (100 %)

Question 1

Correctly

Points: 1.00 out of 1.00

Discontinuous allocation is the result of:

Select all correct:

- a. relocation
- b. compaction
- c. segmentation ✓
- d. paging ✓

Your answer is correct.

The correct answers are: paging, segmantation

Question 2

Correctly

Points: 1.00 out of 1.00

Interrupt vector:

Select all correct:

- a. and. contains the ID of the process that should be restarted
- b. contains minimal information that cannot be saved programmatically ✓
- c. contains the instruction counter, condition bits, interrupt mask, and general purpose registers
- d. it is saved automatically when an interrupt is accepted ✓

Your answer is correct.

The correct answers are: it is saved automatically when an interrupt is accepted, contains minimal information that cannot be saved programmatically

Pytanie 3

Poprawnie

Punkty: 1,00 z 1,00

WORST-FIT algorithm:

Wybierz wszystkie poprawne:

- a. It allows for fast determining whether there is a free block of the required size ✓
- b. It is designed to reduce external fragmentation ✓
- c. Requires a descending sort of the list of free blocks ✓
- d. Requires sorting the cut part into the list of free blocks ✓

Twoja odpowiedź jest poprawna.

Prawidłowymi odpowiedziami są: Requires a descending sort of the list of free blocks, It allows for fast determining whether there is a free block of the required size, It is designed to reduce external fragmentation, Requires sorting the cut part into the list of free blocks

Pytanie 4

Poprawnie

Punkty: 1,00 z 1,00

Which of the following memory allocation schemes causes external fragmentation?

- a. Multiple contiguous fixed partitions of various sizes ✓
- b. Multiple contiguous fixed partitions of equal size
- c. Paging
- d. Sweeping ✓

Prawidłowymi odpowiedziami są: Sweeping, Multiple contiguous fixed partitions of various sizes

Pytanie 5

Poprawnie

Punkty: 1,00 z 1,00

What is true about system level threads?

- a. Thread switching does not require interaction with the operating system.
- b. All threads of the process execute physically simultaneously.
- c. All process threads share the same address space. ✓
- d. All process threads can share the same set of open files. ✓

Prawidłowymi odpowiedziami są: All process threads can share the same set of open files., All process threads share the same address space.

Pytanie 6

Poprawnie

Punkty: 1,00 z 1,00

For concurrency in OS:

- a. cache memory is necessary
- b. timer interrupts are necessary
- c. special processor support is required
- d. interrupt handling is necessary ✓

Poprawna odpowiedź to: interrupt handling is necessary

Pytanie 7

Poprawnie

Punkty: 1,00 z 1,00

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

Wybierz wszystkie poprawne:

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

Twoja odpowiedź jest poprawna.

Poprawna odpowiedź to: identification of the interrupt level, saving the interrupt vector, performing a jump with a trace according to the interrupt table

Pytanie 8

Poprawnie

Punkty: 3,00 z 3,00

For the disk operation scheduling Cyclic SCAN method, the currently being executed operation is in 30 cylinder. The direction in the Cyclic SCAN method is ascending. The next scheduled operations (in the order of their queuing) are:

Operation number	1	2	3	4	5
Cylinder number	41	24	25	34	40

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

Odpowiedź: ✓

Poprawna odpowiedź to: 4

Pytanie 9

Poprawnie

Punkty: 3,00 z 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 00

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

Odpowiedź: ✓

Poprawna odpowiedź to: 0

Pytanie 10

Poprawnie

Punkty: 3,00 z 3,00

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

Using the above table of the history of R bit for the pages in NRU swapping, with global frame allocation rule, which page will be sent to the disk first? The pages are scanned starting from the top. The process for which the frame is needed is 2. Provide a page number.

Odpowiedź: ✓

Poprawna odpowiedź to: 3

Pytanie 11

Poprawnie

Punkty: 3,00 z 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	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 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

Odpowiedź: ✓

Poprawna odpowiedź to: 10111

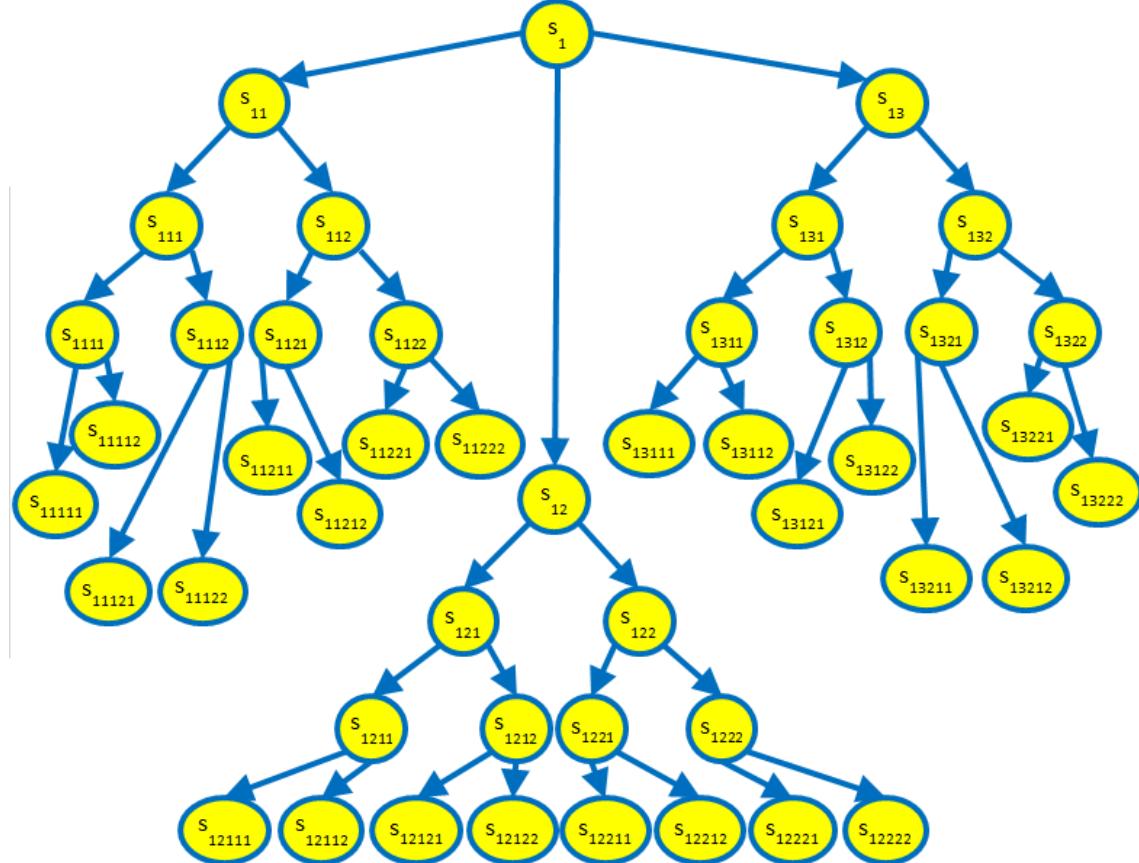
Pytanie 12

Poprawnie

Punkty: 3,00 z 3,00

The stack frame of which subroutine (specify the index) will be pointed by the static link in the frame of the subroutine S1222, that is called from the subroutine S12?

If the call is not possible, enter index -1.



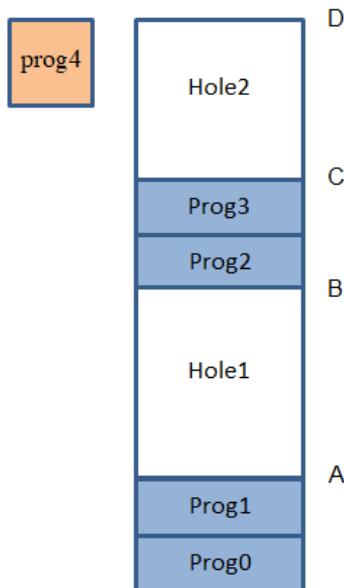
Odpowiedź: ✓

Poprawna odpowiedź: -1

Pytanie 13

Poprawnie

Punkty: 3,00 z 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 - 4K
- B - 6K
- C - 15K
- D - 17K

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?

Odpowiedź:

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

22

Poprawna odpowiedź to: 0

Pytanie 14

Poprawnie

Punkty: 3,00 z 3,00

Assuming that memory cells are 1-byte, the page number in the address field is 13 bits, the offset is 13 bits, the frame number is 11 bits, and all entries in the TIS page index table are on a 4-byte word boundary, please specify:

- the maximum size of the physical memory in MB

Odpowiedź:

Poprawna odpowiedź to: 16

Pytanie 15

Poprawnie

Punkty: 3,00 z 3,00

We have the tasks with the following priorities in the access to a resource (a larger number is a higher priority):

Process number	1	2	3	4	5	6
Priority	45	44	39	38	42	31

The scheduling policy is preemptive, with the decision time constraint based on time slicing.

The current process is number 4. What process will get the resource in the nearest decision? Provide its priority.

Odpowiedź:

45



Poprawna odpowiedź to: 45

Pytanie 16

Poprawnie

Punkty: 3,00 z 3,00

The organization of memory and processor is word-based. A word means 16 bits. (int also takes 1 word) Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

variable b has the value #a0a0

variable c has the value #a0a5

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses): #c100

address of subroutine A #1010

stack frame before calling subroutine A #c105

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static link, the result of the function is passed in registers. The contents of the stack at label point C. Subroutine A is called A(c,b,a); from address #10a0.

regardless of the programming language, the subroutine header A has the form

A(int x,y,z);

{

 int p = z-y;

 int q = x-y;

C: ...

}

The content of the cell at address #c0fb: dynamic link



Address	content
#c100	????
#c0ff	#a0a5
#c0fe	#a0a0
#c0fd	#a0c0
#c0fc	#10a1
#c0fb	#c105
#c0fa	#0005
#c0f9	#0020
#c0f8	????

Twoja odpowiedź jest poprawna.

Poprawna odpowiedź to:

The organization of memory and processor is word-based. A word means 16 bits. (int also takes 1 word) Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

variable b has the value #a0a0

variable c has the value #a0a5

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses): #c100

address of subroutine A #1010

stack frame before calling subroutine A #c105

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static link, the result of the function is passed in registers. The contents of the stack at label point C. Subroutine A is called A(c,b,a); from address #10a0.

regardless of the programming language, the subroutine header A has the form

A(int x,y,z);

{

 int p = z-y;

 int q = x-y;

C: ...

}

The content of the cell at address #c0fb:[dynamic link]

Address	content
#c100	????
#c0ff	#a0a5
#c0fe	#a0a0
#c0fd	#a0c0
#c0fc	#10a1
#c0fb	#c105
#c0fa	#0005
#c0f9	#0020
#c0f8	????

Pytanie 17

Poprawnie

Punkty: 3,00 z 3,00

page	history of R
0	011000
1	011100
2	010001
3	010110
4	001011
5	001100
6	000011
7	000100

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.

Odpowiedź:

6

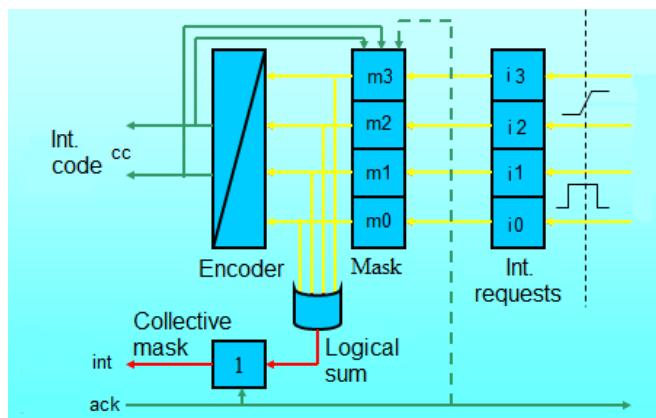


Poprawna odpowiedź to: 6

Pytanie 18

Poprawnie

Punkty: 3,00 z 3,00



In the given interrupt controller structure, the interrupt mask is 1110 (from m3 to m0), and interrupts 0011 (from i3 to i0) are reported.

The interrupt with index 3 has the highest priority.

What will be the value of the interrupt code cc sent to the processor (provide the code in decimal)?

If no interrupt is reported, enter -1

Odpowiedź: ✓

Poprawna odpowiedź to: 1

Started on	Monday, 16 June 2025, 10:20 AM
State	Finished
Completed on	Monday, 16 June 2025, 11:40 AM
Time taken	1 hour 19 mins
Marks	26.00/40.00
Grade	16.25 out of 25.00 (65%)

Question 1

Correct

Mark 1.00 out of 1.00

Interrupt request register is:

Select one or more:

- a. a register where interrupt line states are stored ✓
- b. a register that blocks or unblocks individual interrupts
- c. a register that blocks or unblocks all 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 2

Incorrect

Mark 0.00 out of 1.00

Context switch is caused by:

Select one or more:

- a. input/output operations ✗
- b. relocation
- c. interrupts ✓
- d. paging

Twoja odpowiedź jest niepoprawna.

The correct answer is: interrupts



Question 3

Correct

Mark 1.00 out of 1.00

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

- a. task timetable planning
- b. task management
- c. task scheduling ✓
- d. traffic management

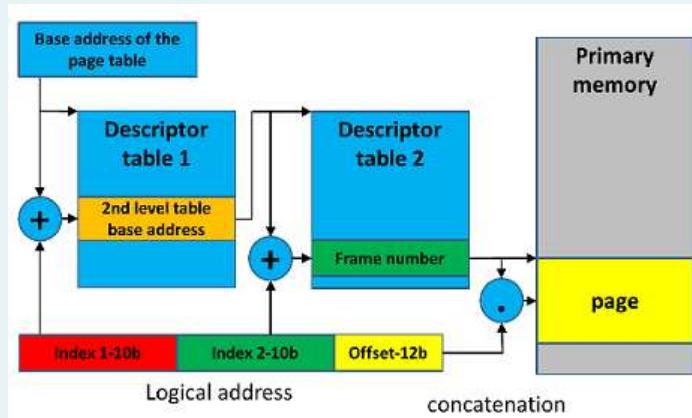
The correct answer is: task scheduling

Question 4

Incorrect

Mark 0.00 out of 1.00

Two-level TIS - place frame no:



Select one or more:

- a. in the table of the first level - on the left in the figure
- b. part in the first level table and part in the second level table
- c. none of the above answers
- d. in the table of the second level - on the right in the figure ✗

Twoja odpowiedź jest niepoprawna.

The correct answer is:

none of the above answers



Question 5

Correct

Mark 1.00 out of 1.00

Paging is in thrashing if:

- a. page cannot be swapped
- b. the system spends less time paging than execution
- c. the system spends more time paging than execution ✓
- d. page faults occur

The correct answer is: the system spends more time paging than execution

Question 6

Correct

Mark 1.00 out of 1.00

What does the file system layer do?

- a. Manages remote file systems
- b. Manages relationships between files
- c. Manages directories ✓
- d. Manages remote files
- e. Manages free storage space ✓

The correct answers are: Manages directories, Manages free storage space

Question 7

Correct

Mark 1.00 out of 1.00

For concurrency in OS:

- a. interrupt handling is necessary ✓
- b. timer interrupts are necessary
- c. special processor support is required
- d. cache memory is necessary

The correct answer is: interrupt handling is necessary



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 ascending. The next scheduled operations (in the order of their queuing) are:

Operation number	1	2	3	4	5
Cylinder number	51	32	39	44	48

After which disk operation the current scan direction will change? Provide the cylinder number of the operation after which the direction will change.

Answer: 

The correct answer is: 51

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 10 and sharing mode 10

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

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

Answer: 

The correct answer is: 0

Question 10

Incorrect

Mark 0.00 out of 3.00

page	Last used	Bit R	belongs to process
1	89	1	4
2	90	0	4
3	91	0	2
4	92	0	3
5	93	1	2
6	94	1	3
7	95	0	2
8	96	1	4

Using the above table of the history of R bit for the pages in Workset swapping algorithm, with priority frame allocation method, which page will be sent to the disk first? The current time slice number is 97, and the time range τ for the workset is 5 (the threshold $97-\tau=92$). Page scan starts from the top. The current process that needs a page to be loaded is 4. A process number is its priority (the smaller number, the higher priority). Provide a page number to be sent to the disk.

Answer: 

The correct answer is: 2

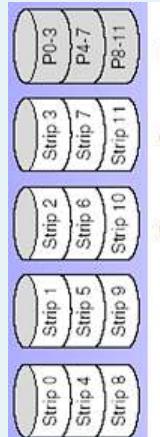


Question 11

Incorrect

Mark 0.00 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
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?

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

Answer: ×

The correct answer is: 10111

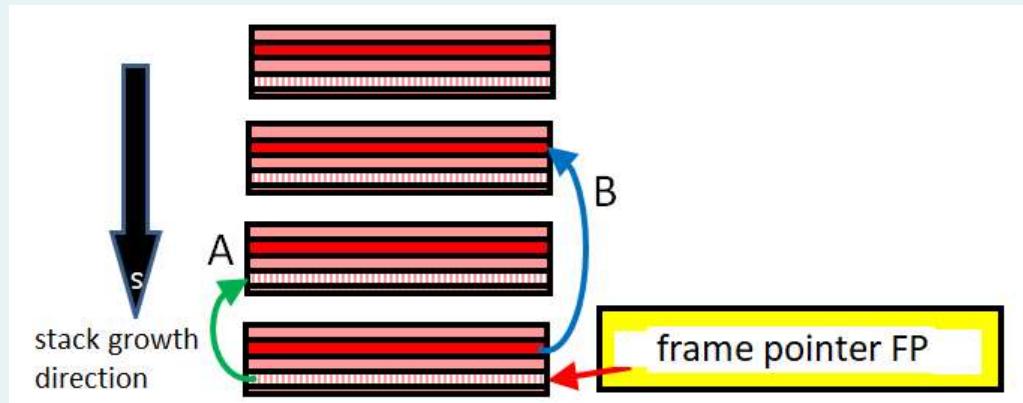


Question 12

Correct

Mark 3.00 out of 3.00

In the shown "snapshot" of the program stack, the static link (A) and the dynamic link (B) are shown. The subroutine pointed by B is the "parent" of the subroutine at the top of the stack in the hierarchy. Could the subroutine on top of the stack be called recursively?

 True ✓ False

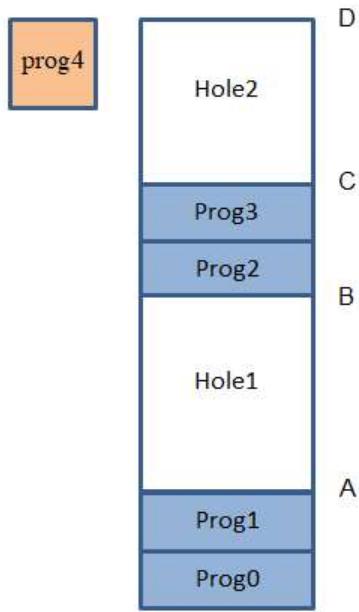
The correct answer is 'True'.



Question 13

Incorrect

Mark 0.00 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 - 6K
- C - 12K
- D - 17K

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 1K into memory?

Answer: 16 ✖

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

4 5

The correct answer is: 4



Question 14

Correct

Mark 3.00 out of 3.00

Assuming that the instruction is 32 bits, the data accessed in the instructions are 2, 4 or 8 bytes, the memory access addressing is on the word (2-byte) boundary, and the page size is 4kB, one instruction can cause the following number of exceptions "page fault":

Answer: 4



The correct answer is: 4

Question 15

Correct

Mark 3.00 out of 3.00

What is the average time in the system for tasks in the batch incoming in this order, using FCFS algorithm?

The system is equipped with 4 processors

task	1	2	3	4
processing time	3.6	4.6	2.4	1.2

Answer: 2.95



The correct answer is: 2.9



Question 16

Correct

Mark 3.00 out of 3.00

The organization of memory and processor is word-based. A word means 16 bits (int also takes 1 16-bit word). Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses) #c100

stack frame before subroutine B call #c1010

address of subroutine B #1021

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static connection, the result of the function is passed in registers. The stack is shown after subroutine B is called by itself (recursively), at label point C. Subroutine B is called for the first time B(a-2); somewhere in the program from address #1011. Label C has address #1050.

regardless of the programming language, subroutine B has the form

B(int i);

{

 int p=i+1;

 C: B(i-3);

}

The content of the cell at address #c0f9: 

Address	content
#c100	????
#c0ff	#a0be
#c0fe	#1012
#c0fd	#c010
#c0fc	#a0bf
#c0fb	#a0bb
#c0fa	#1051
#c0f9	#c0fd
#c0f8	#a0bc
#c0f7	????
#c0f6	????



Twoja odpowiedź jest poprawna.

The correct answer is:

The organization of memory and processor is word-based. A word means 16 bits (int also takes 1 16-bit word). Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses) #c100

stack frame before subroutine B call #c1010

address of subroutine B #1021

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static connection, the result of the function is passed in registers. The stack is shown after subroutine B is called by itself (recursively), at label point C. Subroutine B is called for the first time B(a-2); somewhere in the program from address #1011. Label C has address #1050.

regardless of the programming language, subroutine B has the form

```
B(int i);
{
    int p=i+1;
    C:    B(i-3);
}
```

The content of the cell at address #c0f9:[dynamic link]

Address	content
#c100	????
#c0ff	#a0be
#c0fe	#1012
#c0fd	#c010
#c0fc	#a0bf
#c0fb	#a0bb
#c0fa	#1051
#c0f9	#c0fd
#c0f8	#a0bc
#c0f7	????
#c0f6	????

Question 17

Incorrect

Mark 0.00 out of 3.00

page nr	1	2	3	4	5	6	7	8	9
loaded	2	7	15	23	25	35	53	60	62
R bit	0	1	0	1	1	1	1	1	0

Using the above list for the FIFO-second chance swapping algorithm, which page will be sent to the disk first? The middle row is the number of a time slice in which a page was loaded to a frame. Provide a page number.

Answer: ×

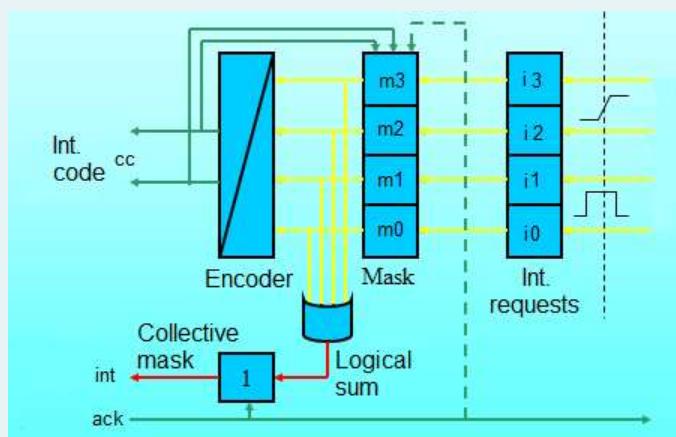


The correct answer is: 1

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), and interrupts 0011 (from i3 to i0) are reported.

The interrupt with index 3 has the highest priority.

What will be the value of the interrupt code cc sent to the processor (provide the code in decimal)?

If no interrupt is reported, enter -1

Answer:

The correct answer is: -1



Started on	Monday, 16 June 2025, 10:52 AM
State	Finished
Completed on	Monday, 16 June 2025, 11:46 AM
Time taken	54 mins 7 secs
Marks	36.00/40.00
Grade	22.50 out of 25.00 (90%)

Question 1

Correct

Mark 1.00 out of 1.00

For concurrency in OS:

- a. interrupt handling is necessary ✓
- b. special processor support is required
- c. timer interrupts are necessary
- d. cache memory is necessary

The correct answer is: interrupt handling is necessary

Question 2

Incorrect

Mark 0.00 out of 1.00

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

Select one or more:

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

Twoja odpowiedź jest niepoprawna.

The correct answers are: page fault, interrupt on write (IOW)

Question 3

Correct

Mark 1.00 out of 1.00

The return from interrupt instruction:

Select one or more:

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

Twoja odpowiedź jest poprawna.

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

Question 4

Correct

Mark 1.00 out of 1.00

What mechanism is used to save and restore the task state?

- a. task descriptor
- b. scheduling data
- c. applications counter
- d. context switch ✓

The correct answer is: context switch

Question 5

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. when new instructions are suspended to be fetched into the pipeline
- c. after saving the full state of the pipeline ✓
- d. after clearing the pipeline from the instructions ✓

Twoja odpowiedź jest poprawna.

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

Question 6

Correct

Mark 1.00 out of 1.00

Inter-process communication can be organized using:

Select one or more:

- a. interrupts
- b. shared memory fields accessible through system calls ✓
- c. messages ✓
- d. shared directly addressable memory fields ✓

Twoja odpowiedź jest poprawna.

The correct answers are: messages, shared directly addressable memory fields, shared memory fields accessible through system calls

Question 7

Correct

Mark 1.00 out of 1.00

A concurrent system is one that, in principle:

Select one or more:

- a. It runs on a multiprocessor computer
- b. Requires the use of timer interrupts
- c. It allows multiple programs/processes/threads to run physically simultaneously
- d. Allows multiple programs/processes/threads to run simultaneously or seemingly simultaneously



Twoja odpowiedź jest poprawna.

The correct answer is: Allows multiple programs/processes/threads to run simultaneously or seemingly simultaneously

Question 8

Correct

Mark 3.00 out of 3.00

For the disk operation scheduling SCAN method, the currently being executed operation is in 33 cylinder.

The direction in the SCAN method is ascending. The next scheduled operations (in the order of their queuing) are:

Operation number	1	2	3	4	5
Cylinder number	42	25	28	37	41

After which disk operation the current scan direction will change? Provide the cylinder number of the operation after which the direction will change.

Answer: 42



The correct answer is: 42

Question 9

Correct

Mark 3.00 out of 3.00

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

Let us 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 00 and sharing mode 10

The second program wants to open the file in mode 01 and sharing mode 11

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

Answer:

 0

The correct answer is: 0

Question 10

Correct

Mark 3.00 out of 3.00

page	M	R	belongs to process
1	1	1	5
2	0	1	3
3	1	0	4
4	0	0	4
5	1	1	5
6	1	1	3
7	0	1	4
8	1	0	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 4. Provide a page number.

Answer: 4 ✓

The correct answer is: 4

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:

0	1	0	0	1	Parity disk
0	0	0	0	0	Disk 3
1	0	1	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 odd.

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?

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

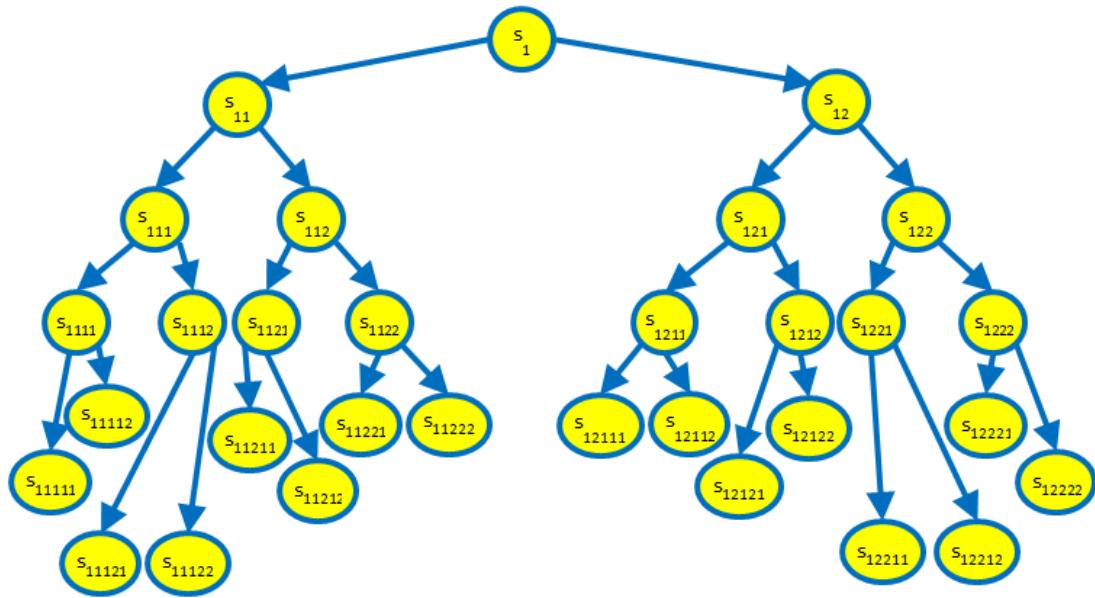
Answer:

The correct answer is: 10101

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 s12 stack frame to subroutine s122 frame?

answer: 0-no, 1-yes

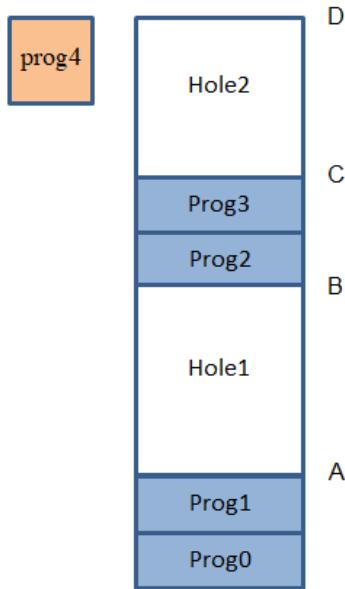
Answer: ✓

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 - 3K
- C - 12K
- D - 19K

The memory is allocated to the programs in the first-fit rule, without making a new hole if the allocated block is larger than the demand. The memory is scanned for the fitting hole starting from the lower addresses.

What will be the internal fragmentation after loading the program Prog4 of size 5K into memory?

Answer: 2 ✓

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

1 7

The correct answer is: 2

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 2704, binary 0000 1010 1001 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?

The system is equipped with 4 processors

task	1	2	3	4
processing time	3.6	5.6	2.8	1.7

Answer: 3.425 ✓

The correct answer is: 3.4

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 4 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: 3, occupying 1 memory cell each, the static link will be at the address relative to the SP (decimal number should be entered):

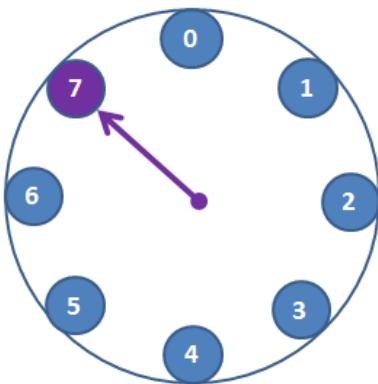
Answer: 28 ×

The correct answer is: 24

Question 17

Correct

Mark 3.00 out of 3.00



page	3	4	5	6	7	0	1	2
R bit	1	1	1	1	1	1	1	1

Using the above list for the Clock swapping algorithm, which page will be sent to the disk first? Provide a page number.

The current position of the "arrow" is 3 (regardless of the position in the picture), and the algorithm works clockwise.

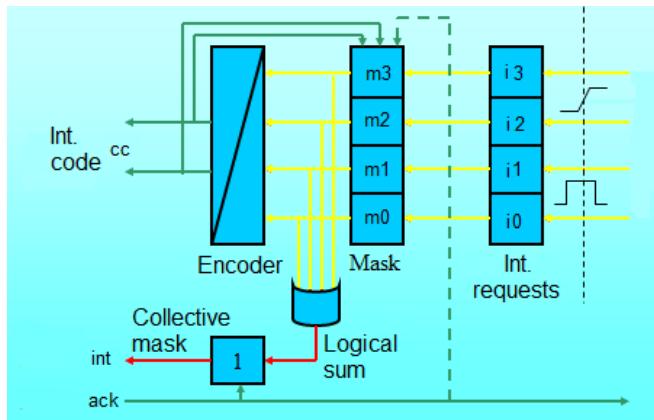
Answer: 3 ✓

The correct answer is: 3

Question 18

Correct

Mark 3.00 out of 3.00



In the given interrupt controller structure, the interrupt mask is 1111 (from m3 to m0), and interrupts 0010 (from i3 to i0) are reported.

The interrupt with index 3 has the highest priority.

What will be the new value of the interrupt mask? Provide the bits .m3m2m1m0 (mask preceded by a point) for example .0101

Answer: ✓

The correct answer is: 0.1100

It has started	Monday, June 16, 2025, 10:23 AM
Condition	Completed
Completed	Monday, June 16, 2025, 11:41 AM
Time used	1 hour 17 minutes
Points	34.50/40.00
Rate	21.56 points out of 25.00 points possible to obtain (86.25 %)

Question 1

Correctly

Points: 1.00 out of 1.00

The following situations trigger "error" exceptions:

Select all correct:

- a. memory reference beyond limit register value ✓
- b. memory reference in the area of the page that is not in memory
- c. a reference to memory that is not in the program address space ✓
- d. an attempt to execute an instruction from the area of the page for which the "no code" bit was set ✓

Your answer is correct.

The correct answers are: a reference to memory that is not in the program address space, memory reference beyond limit register value, an attempt to execute an instruction from the area of the page for which the "no code" bit was set

Question 2

Correctly

Points: 1.00 out of 1.00

At the ready state is a process that:

Select all correct:

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

Your answer is correct.

The correct answer is: waits for a processor

Question 3

Correctly

Points: 1.00 out of 1.00

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

Select all correct:

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

Your answer is correct.

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

Question 4

Incorrectly

Points: 0.00 out of 1.00

The virtualizer that takes over the guest application system call extracodes and transfers them to the host system for execution (adjusting the call parameters accordingly), it can be:

Select all correct:

- a. paravirtualizer
- b. full virtualizer
- c. emulator ✗
- d. API virtualizer ✓

Your answer is incorrect.

The correct answer is: API virtualizer

Question 5

Correctly

Points: 1.00 out of 1.00

What mechanism is used to save and restore the task state?

- a. task descriptor
- b. context switch ✓
- c. applications counter
- d. scheduling data

Poprawna odpowiedź to: context switch

Pytanie 6

Niepoprawnie

Punkty: 0,00 z 1,00

Nested page index tables require activity during:

references



Twoja odpowiedź jest niepoprawna.

Poprawna odpowiedź to:

Nested page index tables require activity during:

[swapping]

Pytanie 7

Częściowo poprawnie

Punkty: 0,50 z 1,00

Dynamic relocation is performed by:

- a. Compiler
- b. Linker
- c. Paging system
- d. Segment descriptors ✓

Prawidłowymi odpowiedziami są: Paging system, Segment descriptors

Pytanie 8

Poprawnie

Punkty: 3,00 z 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 ascending. The next scheduled operations (in the order of their queuing) are:

Operation number	1	2	3	4	5
Cylinder number	51	32	39	44	48

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

Odpowiedź:

4



Poprawna odpowiedź to: 4

Pytanie 9

Poprawnie

Punkty: 3,00 z 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 00

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

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

Odpowiedź:

Poprawna odpowiedź to: 0

Pytanie 10

Poprawnie

Punkty: 3,00 z 3,00

page	Last used	Bit R	belongs to process
1	91	0	3
2	92	1	5
3	89	1	4
4	90	1	5
5	95	0	5
6	96	0	4
7	93	1	4
8	94	0	4

Using the above table of the history of R bit for the pages in Workset swapping algorithm, with local frame allocation method, which page will be sent to the disk first? The current time slice number is 97, and the time range τ for the workset is 3 (the threshold $97-\tau=94$). Page scan starts from the top. The current process that needs a page to be loaded is 3. A process number is its priority (the smaller number, the higher priority). Provide a page number to be sent to the disk.

Odpowiedź:

Poprawna odpowiedź to: 1

Pytanie 11

Poprawnie

Punkty: 3,00 z 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	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 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

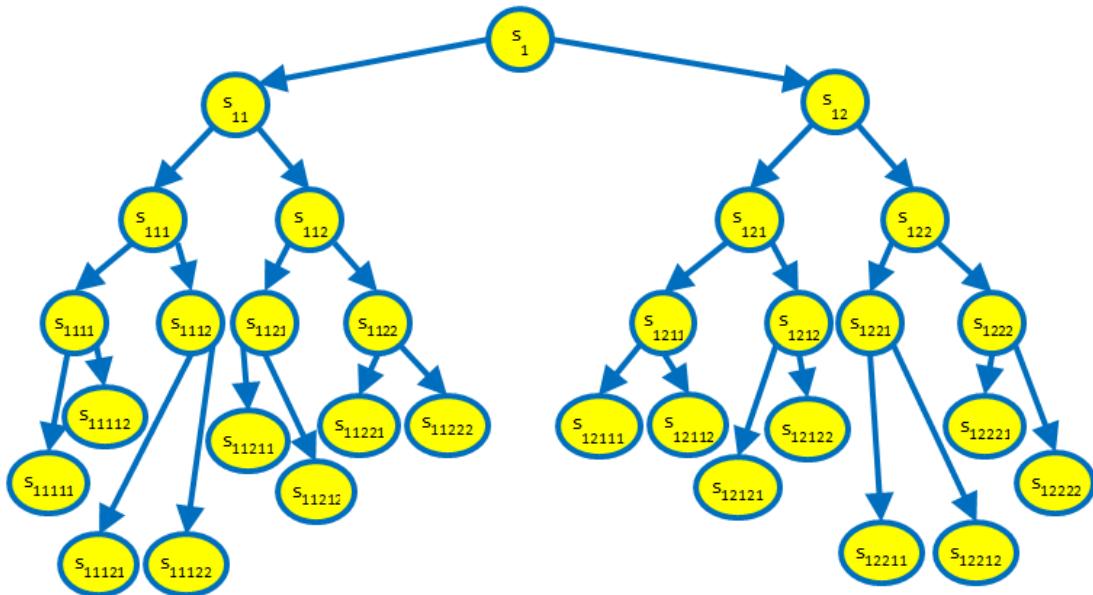
Odpowiedź: ✓

Poprawna odpowiedź to: 10111

Pytanie 12

Poprawnie

Punkty: 3,00 z 3,00



Above is the nesting structure of subroutines in some program.

Can there be a static link in subroutine s121 stack frame to subroutine s12 frame?

answer: 0-no, 1-yes

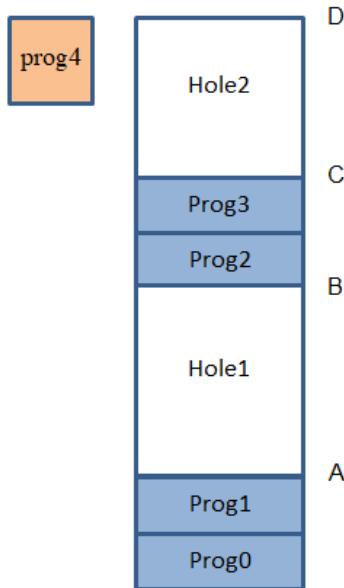
Odpowiedź: ✓

Poprawna odpowiedź to: 1

Pytanie 13

Poprawnie

Punkty: 3,00 z 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 - 3K
- B - 7K
- C - 12K
- D - 14K

The memory is allocated to the programs in the best-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?

Odpowiedź:

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

4 2

Poprawna odpowiedź to: 0

Pytanie 14

Poprawnie

Punkty: 3,00 z 3,00

The virtual address consists of 8b page number and 8b offset. The page index table is shown below (index, content). For decimal address 1840, binary 0000 0111 0011 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	4
6	-1
5	7
4	11
3	6
2	-1
1	2
0	1

Odpowiedź: 4.048 ✓

Poprawna odpowiedź to: 4,048

Pytanie 15

Poprawnie

Punkty: 3,00 z 3,00

What is the average time in the system for tasks in the batch incoming in this order, using FCFS algorithm?

task	1	2	3	4
processing time	3,1	6,7	2,8	1,1

Odpowiedź: 9,8 ✓

Poprawna odpowiedź to: 9,8

Pytanie 16

Poprawnie

Punkty: 3,00 z 3,00

The organization of memory and processor is word-based. A word means 16 bits (int also takes 1 16-bit word). Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses) #c100

stack frame before subroutine B call #c1010

address of subroutine B #1021

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static connection, the result of the function is passed in registers. The stack is shown after subroutine B is called by itself (recursively), at label point C. Subroutine B is called for the first time B(a-2); somewhere in the program from address #1011. Label C has address #1050.

regardless of the programming language, subroutine B has the form

B(int i);

{

 int p=i+1;

 C: B(i-3);

}

The content of the cell at address #c0f9: dynamic link ✓

Address	content
#c100	????
#c0ff	#a0be
#c0fe	#1012
#c0fd	#c010
#c0fc	#a0bf
#c0fb	#a0bb
#c0fa	#1051
#c0f9	#c0fd
#c0f8	#a0bc
#c0f7	????
#c0f6	????

Twoja odpowiedź jest poprawna.

The correct answer is:

The organization of memory and processor is word-based. A word means 16 bits (int also takes 1 16-bit word). Hexadecimal values are preceded by a # character.

variable a has the value #a0c0

top of the stack (full descending, i.e. the stack pointer points to the most recently put element on the stack, and the stack expands towards lower addresses) #c100

stack frame before subroutine B call #c1010

address of subroutine B #1021

Calling rules: Parameters are put on the stack in accordance with the convention of the C language, i.e. starting from the last one, without a static connection, the result of the function is passed in registers. The stack is shown after subroutine B is called by itself (recursively), at label point C. Subroutine B is called for the first time B(a-2); somewhere in the program from address #1011. Label C has address #1050.

regardless of the programming language, subroutine B has the form

```
B(int i);
{
    int p=i+1;
    C: B(i-3);
}
```

The content of the cell at address #c0f9:[dynamic link]

Address	content
#c100	????
#c0ff	#a0be
#c0fe	#1012
#c0fd	#c010
#c0fc	#a0bf
#c0fb	#a0bb
#c0fa	#1051
#c0f9	#c0fd
#c0f8	#a0bc
#c0f7	????
#c0f6	????

Question 17

Correctly

Points: 3.00 out of 3.00

page	history of R
0	101100100
1	0000010001
2	011011111
3	110110100

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

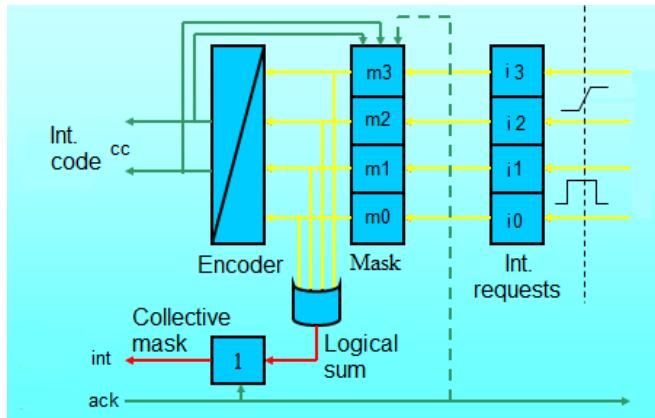
Answer: ✓

The correct answer is: 1

Question 18

Incorrectly

Points: 0.00 out of 3.00



In the given interrupt controller structure, the interrupt mask is 1111 (from m3 to m0), and interrupts 0010 (from i3 to i0) are reported.

The interrupt with index 3 has the highest priority.

What will be the new value of the interrupt mask? Provide the bits .m3m2m1m0 (mask preceded by a point) for example .0101

Answer: 1101 X

The correct answer is: 0.1100