Started on	Thursday, 16 February 2023, 2:31 PM
State	Finished
Completed on	Thursday, 16 February 2023, 2:58 PM
Time taken	26 mins 46 secs
Grade	**38.00** out of 50.00 (**76**%)

Information

The theory part of this exam uses sequential navigation when presenting the questions. Therefore, questions must be answered the moment they are presented, as you will not have the option of going back to a previous question.

After the theory part, two programming questions will be presented.

True or False questions (2 points each question)

Question **1**

Correct

Mark 2.00 out of 2.00

A programmed I/O uses interrupts to know the state of the I/O device.

Select one:

- True
- False ✔

The correct answer is 'False'.

Question **2**

Correct

Mark 2.00 out of 2.00

The Program Counter (PC) size determines the number of positions of the memory.

Select one:

- True ✔
- False

The correct answer is 'True'.

Question **3**

Correct

Mark 2.00 out of 2.00

In Paging (memory management), processes are comprised of a number of variable-size blocks.

Select one:

- True
- False ✔

The correct answer is 'False'.

Question **4**

Correct

Mark 2.00 out of 2.00

In a serial processing system, a memory protection mechanism is needed.

Select one:

- True
- False ✔

The correct answer is 'False'.

Question **5**

Correct

Mark 2.00 out of 2.00

The program counter is a User-visible register.

Select one:

- True
- False ✔

The correct answer is 'False'.

Question **6**

Correct

Mark 2.00 out of 2.00

The OS uses memory tables to keep track of both main and virtual memory.

Select one:

- True ✔
- False

The correct answer is 'True'.

Question **7**

Correct

Mark 2.00 out of 2.00

A benefit of threads is the enhance efficiency in communication between programs.

Select one:

- True ✔
- False

The correct answer is 'True'.

Question **8**

Incorrect

Mark 0.00 out of 2.00

In a User-Level Thread implementation, a system call will block all of the threads within the process.

Select one:

- True
- False ✖

The correct answer is 'True'.

Information

Simple Choice questions (4 points each question)

Question **9**

Correct

Mark 4.00 out of 4.00

Select the interrupt that is classified as a hardware interrupt:

Select one:

- a. Accessing an invalid mem address
- b. Illegal machine instruction
- c. Memory parity error ✔
- d. Division by zero

The correct answer is: Memory parity error

Question **10**

Incorrect

Mark 0.00 out of 4.00

Select the advantage of an SMP system that is related to fault tolerance:

Select one:

a. Scaling

b. Availability

c. Incremental Growth

d. None of the above

e. Performance ✖

The correct answer is: Availability

Question **11**

Correct

Mark 4.00 out of 4.00

Select the element that is not part of the process control block:

Select one:

a. Priority

b. Program code ✔

c. State

d. PID

e. None of the above

The correct answer is: Program code

Question **12**

Correct

Mark 4.00 out of 4.00

Select the element that is not part of the thread in the multithreaded process model:

Select one:

- a. User Address space ✔
- b. User Stack
- c. Thread Control Block
- d. None of the above
- e. Kernel Stack

The correct answer is: User Address space

Information

Calculate the following parameters of a hypothetical computer system with these features:

a) HEX notation
b) IR = OPCode + Mem Addr;
c) # of OPCodes = 256
d) PC = 4 HEX digits; and
e) Mem word size = Data (unsigned integer) = IR

Note: do not enter the unit when writing your answer.

Question **13**

Incorrect

Mark 0.00 out of 6.00

Number of HEX digits used to represent an OPCode:

Answer: 16 ✖

The correct answer is: 2

Information

Given the following two-level memory system:

- Level 1 memory access time = TL1
- Level 2 memory access time = TL2
- Average time to access a word from mem = 275 ms
- TL1 = TL2/100
- Miss Ratio = 0.1 (10 %)
- Time to find a word in any level of the memory (0 ms).
- Do not enter the unit when writing your answer.

Calculate:

Question **14**

Correct

Mark 6.00 out of 6.00

Hit Ratio in percentage (**do not include the percentage sign**):

Answer: 0.9 ✔

The correct answer is: 90

Question **15**

Correct

Mark 6.00 out of 6.00

Given the following code:

```
void * func(void  * pointer)
{
   int *int_ptr = (int *) pointer;
   for(int i = 0; i < 6; i++)
      if (i % 2  !=  0 )
         *int_ptr = *int_ptr * 2;
   return NULL;
}

int main()
{
   static int x = 1 ;
   pthread_t tid;
   pthread_create(&tid, NULL, func, (void  *) &x);
   pthread_join (tid, NULL);
   printf ("X  =  % d\n", x);
   return 0;
}
```

How many child threads are created by the main thread?

Answer: 1 ✔

The correct answer is: 1

◄ Attendance

Jump to...

Programming Question 1 ►