Started on	Thursday, 26 November 2020, 12:48 PM
State	Finished
Completed on	Thursday, 26 November 2020, 1:02 PM
Time taken	13 mins 4 secs
Marks	4.00/8.00
Grade	**6.50** out of 13.00 (**50**%)

Question **1**

Correct

Mark 1.00 out of 1.00

Consider the following MIPS instructions. Choose the one expected to take the least time to execute, in an average case:

Select one:

○ sb

○ add

◉ addi ✔

○ sub

○ lw

○ All instructions involve the same CPU components during their execution, and thus, take nearly the same time to execute

Your answer is correct.

The correct answer is: addi

Question **2**

Correct

Mark 1.00 out of 1.00

Recall three major types of hazards for a pipelined execution of CPU instructions, which are namely data, structural, and control hazards.

Do you agree that the method of pipeline bubbling allows to resolve only data hazards, but is completely obsolete for resolving the other remaining types of hazards?

Select one:

○ Agree completely!

◉ Totally disagree! ✔

Your answer is correct.

The correct answer is: Totally disagree!

Question 3

Correct

Mark 1.00 out of 1.00

Which MIPS register contains the memory address of the next program instruction to be executed by a CPU in the following clock cycle?

Select one:

○ IR

○ HI

○ LO

◉ PC✔

○ $a0

○ $s0

○ $t0

○ $v1

Your answer is correct.

The correct answer is: PC

Question 4

Complete

Not graded

Cold boot attack explores vulnerabilities in a memory dump mechanism. What is a memory dump?

Select one:

◉ An unauthorized reboot of a computer, due to a cold boot attack, causing all data loss from a system memory

○ The snapshot of a system memory fragment, that is allocated to a specific program, taken at a specific time, typically immediatelly after an abnormal termination of that program

○ No choice is correct

The questions on vulnerabilities are not graded

The correct answer is: The snapshot of a system memory fragment, that is allocated to a specific program, taken at a specific time, typically immediatelly after an abnormal termination of that program

Question 3

Correct

Mark 1.00 out of 1.00

Which MIPS register contains the memory address of the next program instruction to be executed by a CPU in the following clock cycle?

Question 5

Incorrect

Mark 0.00 out of 1.00

Do you agree that the major advantage of GPU processors, as compared to general-purpose multicore CPUs, is the ability to execute multiple different instructions in parallel, at lower parallelisation overheads?

Select one:

- a.   No, it is not!

- b.   Indeed, this is the main motivation for GPU usage ✖

Your answer is incorrect.

The correct answer is: No, it is not!

Question 6

Incorrect

Mark 0.00 out of 1.00

What is the key idea of a load/store CPU architecture?

Select one:

- All instructions are classified into three major groups: R, I, and J

- No choice is correct ✖

- All instructions have the same length of their binary representation

- There are two types of memory units, with one type holding CPU instructions, and another one holding instruction data

- Program instructions are executed sequentially

- Most of the instructions take input arguments from a CPU register file, and store the computation result back into a register file

Your answer is incorrect.

The correct answer is: Most of the instructions take input arguments from a CPU register file, and store the computation result back into a register file

Question 7

Incorrect

Mark 0.00 out of 1.00

Do you agree that there is some correlation between MIPS instruction types, namely R, I, and J, and the type of instruction pipeline hazards they might cause?

Select one:

- There is no correlation at all! MIPS instruction types and hazard types are two completely independent notions!

- Indeed, there is some correlation. For example, only J-type instructions might lead to control hazards ✖

- No choice is correct

Your answer is incorrect.

The correct answer is: No choice is correct

Question 8

Incorrect

Mark 0.00 out of 1.00

Choose (an) instruction(s) not present in the MIPS Instruction Set from the listed below:

Select one or more:

- ☐ lh
- ☐ sb
- ☐ sll
- ☐ subi
- ☐ mtc1
- ☐ add
- ☐ mul
- ☐ All instructions are present
- ☑ A correct answer depends on either MIPS32 or MIPS64 is assumed ✖

Your answer is incorrect.

The correct answer is: subi

Question 9

Complete

Not graded

Do you agree that cold boot attack explores vulnerabilities in the principles of a speculative execution of modern processors?

Select one:

- ○ Agree
- ◉ No, it is not. Foreshadow attack is the case
- ○ No choice is correct

The questions on vulnerabilities are not graded

The correct answer is: No, it is not. Foreshadow attack is the case

Question 10

Correct

Mark 1.00 out of 1.00

Choose I-type MIPS instruction(s) from the list below:

Select one or more:

☐   add

☐   div

☐   mul

☐   sll

☑   sb ✔

☐   jr

Your answer is correct.

The correct answer is: sb