<u>Question 1:</u> In the MIPS architecture, which registers have values that do not change during program execution?

○ $at
○ $zero
○ $sp
○ $ra
○ pc
○ lo
○ Another answer

<u>Question 2:</u> What is the serial number of register $k1?

○ 5
○ 13
○ 21
○ 25
○ 26
○ 27
○ 30
○ Another answer

<u>Question 3:</u> When you finish executing a basic instruction and start executing a new instruction, how much does the pc register increase?

○ 0x8

○ 0x2

○ 0x4

○ 0x1

○ 0x16

○ Another answer

<u>Question 4:</u> In the Mars application, when translating from source code to base code, which of the following tasks will be performed?

□ Convert labels to addresses
□ Convert registers from names to serial numbers
□ Convert constants from decimal to hexadecimal
□ Replace pseudo-commands with basic commands

Question 5: Given the following code:

```
.text
    li $a0, 0
    li $a1, 0
    li $a2, 5
l1:
    beq $a1, $a2, end
    add $at, $a1, $a1
    add $a0, $a0, $at
    addi $a1, $a1, 1
    j l1
end:
```

What is the value of the $a0 register after executing the above code?

☐ 5
☐ 6
☐ 15
☐ 20
☐ 30
☐ 40
☐ 60

Question 6: Given the following code:

```
# DIGITTAL LAB SIM 7-SEGMENT LED SIMULATION

.eqv SEVENSEG_LEFT 0xFFFF0011
.eqv SEVENSEG_RIGHT 0xFFFF0010

.text
main:
    li $a0, 0x6F #Set value for right 7seg_led
    jal SHOW_7SEG_RIGHT
    li $a0, 0x66 #Set value for left 7seg_led
    jal SHOW_7SEG_LEFT
exit:
    li $v0, 10
    syscall
endmain:
SHOW_7SEG_LEFT:
    li $t0, SEVENSEG_LEFT
    sb $a0, 0($t0)
    jr $ra
SHOW_7SEG_RIGHT:
    li $t0, SEVENSEG_RIGHT
    sb $a0, 0($t0)
    jr $ra

# END PROGRAM
```

Choose the correct statements:

☐ For the code to execute properly, you must connect to "Digital Lab Sim" before running this code

☐ The 7-segment LED on the left shows the number 4

☐ The 7-segment LED on the right shows the number 9

☐ The 7-segment LED on the right shows the number 8

☐ The 7-segment LED on the left shows the number 6

☐ The 7-segment LED on the right shows the number 6

☐ When connecting "Digital Lab Sim" after running the code, the above code can still run correctly

☐ The 2-digit number that appears in "Digital Lab Sim" after running the code is a perfect square number

☐ The 2-digit number that appears in "Digital Lab Sim" after running the code is a prime number

☐ The 2-digit number that appears in "Digital Lab Sim" after running the code is an even number

☐ The dot in "Digital Lab Sim" does not appear after running the code successfully

Question 7: Given the following code:

```
text
    li $a1, 0
    li $a2, 5
    li $v0, 11
l1:
    beq $a1, $a2, end
    addi $a0, $a1, X
    syscall
    addi $a1, $a1, 1
    j l1
end:
```

Let the code above print "mnopq" after execution, what is the value of x? (The value to fill in the box is a number, ex.: 2024)

Answer:

Question 8: In the R command format, what is the opcode value always? (The value to fill in the box is a number, ex.: 2024)

Answer:

Question 9: Translate the following command into machine code (Written in Hexa, with "0x" in front, ex.: 0x12345678): addi $t8, $t9, 2024

Answer: