Results

Morgan Bergen — 2nd Attempt

1 question requires grading

41.67%

5
Out of 12 points

12:20
Time for this attempt

3 attempts left Take Now

Attempt History

Your Answers:

1 1 / 1 point

Consider the following C code. Let us assume that the function sum() is currently executing in the processor. Which main memory address is currently available in the return address register ra?

```
int sum(int a, int b)
    return a+b;
}
void main() {
      int x=10;
      int y=20;
      int z= sum(x,y);
      z++;
      x=x+2;
}
```

- Memory address that stores first instruction of sum()
- ✓ Memory address that stores the line z++
- Memory address that stores first instruction of main ()
- Memory address that stores the line x=x+2

2 0 / 1 point

What operation is always needed before storing (push operation) something to the stack?

- Decreasing the stack pointer value
- Clearing the existing data on the stack
- ✗ Storing the return address to the stack pointer register
- Increasing the stack pointer value

3 0 / 1 point

Let's assume that x=8. Which of the following we can calculate using logical left shift ?

All numbers in decimal

- $x \times 12$
- $x \times 16$
- $x \times 32$
- ✓ $x \times 8$

4 1 / 1 point

Why do we use registers in addition to the main memory?

- ALU can securely access the data in register
- Registers can provide more storage space compared to main memory
- ✓ ALU can access the registers faster compared to the main memory
- Registers provide a non-volatile storage for data

5 1 / 1 point

Which of the following is true for volatile type qualifier?

- Compiler can optimize and remove volatile objects if there is no use in the code
- ✓ The value of volatile variable could be changed by external devices
- ✓ Should be used to represent registers of memory-mapped peripheral
- Indicates that an object's value is constant

6 1 / 1 point

Match the correct binary values for different steps of 2's complement calculation for decimal number 20

Step 1: Convert the decimal to binary	✓ 00010100
Step 3: Add 1 to get the 2's complement	✓ 11101100
Step 2: Invert the digits	✓ 11101011

7 5 points possible

a. Write the MIPS assembly code for the assignment statement as given below **(2.5 points)**

C[250] = C[240] - b

C is an array stored in the memory. Assume that register $s2 is storing the variable b, $s3 is storing the base address of the array C. Use register $t1 for storing temporary values.

b. Write the machine code in binary for the assembly codes for the assembly codes in question (a) and mark the different segments (e.g., *op, rs, rt etc.*) on the machine code. Use the MIPS instruction reference guide on Canvas. An example format is below: **(2.5 points)**

000000	10001	10010	01000	00000	100000
opcode	rs	rt	rd	shamt	funct

```
lw $t0, 960($s3)$
sub $t1, $t0, $s2
sw $t1, 1000($s3)
```

Waiting for grade

8 1 / 1 point

Which are the possible reasons for choosing C over Java for programming embedded hardware ?

- ✓ Low memory requirement
- ✓ Faster code execution
- Simpler to write and easier to maintain
- Improved security against overflow attacks