CSPB 2400 - Park - Computer Systems

Started on	Saturday, 3 February 2024, 7:18 PM
State	Finished
Completed on	Saturday, 3 February 2024, 7:24 PM
Time taken	6 mins 39 secs
Marks	22.00/22.00
Grade	**10.00** out of 10.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

Determine the appropriate instruction suffix based on the operands.

```
mov l ✔     (%rsp, %rdx, 8), %edx
```

b w q

Your answer is correct.

Because this refers to 32-bit register values (e.g. **%edx**), you would use **movl**.

Question **2**

Correct

Mark 1.00 out of 1.00

Determine the appropriate instruction suffix based on the operands.

mov [l] ✔ %edi, (%rax)

[b] [w] [q]

Your answer is correct.

Because this refers to 32-bit register values (e.g. **%edi**), you would use **movl**.

Question **3**

Correct

Mark 1.00 out of 1.00

Determine the appropriate instruction suffix based on the operands.

pop [l] ✔ %edi

[b] [w]

Your answer is correct.

Because the register specified is a 32-bit register, you would use a 32-bit operator (**popl**)

Question **4**

Correct

Mark 4.00 out of 4.00

Suppose register %rax holds value 5 and %rcx holds value 10. Fill in the table below with formulas indicating the value that will be stored in register %rdx for each of the given assembly code instructions: (Answer in decimal)

Instruction	Result
leal (%rax, %rcx, 3), %rdx	35 ✔
leal 0xA (, %rax, 8), %rdx	50 ✔
leal 8 (%rax, %rcx), %rdx	23 ✔
leal (%rax, %rax), %rdx	10 ✔

Question **5**

Correct

Mark 4.00 out of 4.00

Suppose register %rax holds value 10 and %rcx holds value 4. Fill in the table below with formulas indicating the value that will be stored in register %rdx for each of the given assembly code instructions: (Answer in decimal)

Instruction	Result
leal (%rax, %rax, 2), %rdx	30 ✔
leal 4 (%rcx, %rax), %rdx	18 ✔
leal (, %rcx, 4), %rdx	16 ✔
leal 4 (%rax, %rcx, 8), %rdx	46 ✔

Question **6**

Correct

Mark 1.00 out of 1.00

What does this command mean? addl 16(%ebp),%ecx

Select one:

- a. Mem[Reg[ebp]] = Reg[ecx] + Mem[Reg[ebp] + 16]
- b. Reg[ecx] = Reg[ecx] + Mem[Reg[ebp]] + 16
- c. Reg[ecx] = 16 + Mem[Reg[ebp]]
- d. Reg[ecx] = Reg[ecx] + Mem[Reg[ebp] + 16] ✔

Your answer is correct.

Question **7**

Correct

Mark 1.00 out of 1.00

The notation **M[x]** refers to the value of memory at address **x**, and **Reg[x]** refers to the value of register **x**.

What does this instruction mean?

addq $0x11 , (%rax)

Select one:

a. Mem[Reg[rax]] = 17 + Reg[rax]

b. Reg[rax] = 11 + Reg[rax]

c. Mem[Reg[rax]] = 17 + Mem[Reg[rax]] ✔

d. Reg[rax] = 11 + Mem[Reg[rax]]

Your answer is correct.

Question **8**

Correct

Mark 1.00 out of 1.00

What does this command mean? subl $0x11 , (%eax)

Select one:

a. Mem[Reg[eax]] = Mem[Reg[eax]] - 17 ✔

b. Reg[eax] = Reg[eax] - 11

c. Mem[Reg[eax]] = Reg[eax] - 17

d. Reg[eax] = 11 - Mem[Reg[eax]]

Your answer is correct.

Question **9**

Correct

Mark 4.00 out of 4.00

Suppose register %rax holds value 10 and %rcx holds value 4. Fill in the table below with the value that will be stored in register %rdx for each of the given assembly code instructions: (Answer in decimal)

Instruction	Result
leal (%rax, %rax, 4), %rdx	50 ✔
leal (, %rax, 2), %rdx	20 ✔
leal 8 (%rcx, %rcx), %rdx	16 ✔
leal (%rcx, %rax), %rdx	14 ✔

Question **10**

Correct

Mark 4.00 out of 4.00

Suppose register %rax holds value 10 and %rcx holds value 4. Fill in the table below with formulas indicating the value that will be stored in register %rdx for each of the given assembly code instructions: (Answer in decimal)

Instruction	Result
leaq 6 (%rax), %rdx	16 ✔
leaq (%rax, %rcx), %rdx	14 ✔
leaq 0xC(%rax, %rcx, 4), %rdx	38 ✔
leaq 8(, %rcx, 2), %rdx	16 ✔