

Pre-Lecture 3

Due Aug 26 at 9am **Points** 12 **Questions** 12
Available until Aug 26 at 9am **Time Limit** None **Allowed Attempts** 2

Instructions

Take this quiz *after you have watched the required videos and/or read the associated sections of the textbook*. See [Lecture 3: x86 machine model](#).

You may attempt this quiz twice. Incorrect responses are marked after each attempt. Correct answers are revealed at the start of class for this lecture.

Carefully note the deadline for responses. Submissions are not accepted after the deadline, and there is no grace period.

This quiz was locked Aug 26 at 9am.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	6,183 minutes	12 out of 12

Score for this attempt: **12** out of 12

Submitted Aug 25 at 8:31pm

This attempt took 6,183 minutes.

Question 1

1 / 1 pts

In x86, which is an example of CISC (complex instruction set), each instruction requires the same number of bytes to be represented.

☐ True

☒ False

Correct!

Question 2**1 / 1 pts**

Unlike memory in which locations are specified with byte addresses, each register has a special name (e.g., %rbx).

Correct!☒ True☐ False**Question 3****1 / 1 pts**

Give the order in which each tool is invoked to turn C into matching code.

Correct!**Step 1**

compiler

**Correct!****Step 2**

assembler

**Correct!****Step 3**

linker



Other Incorrect Match Options:

- disassembler
- executor

Question 4**1 / 1 pts**

Which of the following gcc flags is used to generate assembly code?

☐ -C

Correct!☐ -d☐ -O2☒ -S☐ -Wall**Question 5****1 / 1 pts**

What is the name of the tool that when used with the -d flag takes an object file as input and gives the corresponding assembly code as output?

Correct!**Correct Answers**

objdump

Question 6**1 / 1 pts**

When the q suffix is used for an x86 instruction, it indicates that the size of the operand is how many bytes?

Correct!**Correct Answers**

8

Question 7**1 / 1 pts**

Suppose:

$M[\text{addr}]$ = the value stored at **addr** in memory

$R[\text{reg}]$ = the value stored in the register named **reg**

Which of the following is the meaning of the first operand (i.e., source operand) in the x86 instruction below?

`addl 4(%eax, %ecx), %edx`

☐ $R[\%eax] + R[\%ecx] * 4$

☐ $M[R[\%eax] + R[\%ecx] * 4]$

☒ $M[4 + R[\%eax] + R[\%ecx]]$

☐ $M[4 + \%eax + \%ecx]$

Correct!

Question 8

1 / 1 pts

Suppose that register `%ecx` contains the hexadecimal value `0x8`. Also, suppose that we have this snapshot of memory:

address	value
0x20c	0x12
0x210	0x2a
0x214	0xd4
0x218	0xfd

What is the value *in decimal* of the operand below?

`0x200(,%ecx,2)`

42

Correct!

Correct Answers

42

Question 9

1 / 1 pts

Suppose that register %rax contains the value 0x8. Which of the following x86 instructions is equivalent to the following?

```
subq %rax, %rsp  
movq %rbp, (%rsp)
```

☐ popq %rbp☐ popq (%rbp)☒ pushq %rbp☐ pushq (%rbp)☐ None of the above.

Correct!

Question 10

1 / 1 pts

Suppose that register %eax contains the value 0x4 and register %ecx contains the value 0xa. What is the value *in decimal* contained in each register after execution of the following x86 instruction?

```
addl %eax, %ecx
```

%eax: %ecx:

Answer 1:

Answer 2:

Correct!

Correct!

14

Question 11

1 / 1 pts

Suppose that register %eax contains the hexadecimal value 0x200 and register %ecx contains the hexadecimal value 0x14. Also, suppose that we have this snapshot of memory:

address	value
0x20c	0x12
0x210	0x2a
0x214	0xd4
0x218	0xfd

What is the value *in decimal* contained in the register %ebx after execution of the following x86 instruction?

```
leal (%eax, %ecx), %ebx
```

Correct!

532

Correct Answers

532

Question 12

1 / 1 pts

Suppose that register %rdx contains program variable x. Fill in the blank to make the C statement `x *= ____`; equivalent to the following x86 instructions:

```
leaq (%rdx, %rdx, 4), %rdx  
salq $2, %rdx
```

Correct!

20

Correct Answers

20

Quiz Score: **12** out of 12