Module 1 Summary Exercises

Due Apr 4 at 11:59pm **Points** 30 **Questions** 30
Available Mar 28 at 12am - Apr 4 at 11:59pm 8 days **Time Limit** 1,440 Minutes
Allowed Attempts 2

Instructions

Instructions

These exercises are based on the concepts introduced in Module 1. I encourage you to attempt these exercises twice, especially as a learning and study aid.

You will have two attempts, each of which will last for 24 hours, and only the top score will be counted. You are allowed any resources (including explorations, Piazza, classmates, the internet, etc...).

Good luck!

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	49 minutes	30 out of 30
LATEST	Attempt 2	49 minutes	30 out of 30
	Attempt 1	47 minutes	27 out of 30

Score for this attempt: **30** out of 30
Submitted Apr 4 at 6:33pm
This attempt took 49 minutes.

Question 1

1 / 1 pts

Which utility program reads an assembly language source file and produces an object file?

- editor
- detangler
- assembler

Correct!

- compiler
- linker
- loader

Question 2

1 / 1 pts

A program is considered portable if it . . .

Correct!

- (●) can be executed on multiple platforms.
- ( ) can be quickly copied from conventional RAM into high-speed RAM.
- ( ) can be rewritten in a different programming language without losing its meaning.

Question 3

1 / 1 pts

Language Hierarchy: Rank the following languages from **low level (1)** to **high level (4)**.

Level 4 (Highest Level): English

Level 3: Python

Level 2: ARM Assembly

Level 1 (Lowest level): Machine Code

Answer 1:

Correct!

English

Answer 2:

Correct!

Python

Answer 3:

Correct!

ARM Assembly

Answer 4:

Correct!

Machine Code

Question 4

1 / 1 pts

The linker combines object files into an executable file.

Correct!

- (●) True
- ( ) False

Question 5

1 / 1 pts

What type of tool can convert ARM Assembly to x86 Assembly?

- Linker
- Loader
- Cross Compiler
- (Correct!) Cross Assembler

Question 6

1 / 1 pts

How many **bytes** long is a QUADWORD on x86 systems?

(Correct!) 8

Correct Answers 8 (with margin: 0)

Question 7

1 / 1 pts

How many **bits** long is a DWORD (doubleword) on x86 systems?

Correct!

32

Correct Answers 32 (with margin: 0)

Question 8

1 / 1 pts

The ASCII code values for alphabetic letters (e.g. 'a') are smaller than for decimal digits (e.g. '1').

- True
- False

Correct!

Question 9

1 / 1 pts

The two's complement of an binary value is formed by which process?

Correct!

- reversing (inverting) the bits and adding 1

- adding 2 and reversing the bits
- adding 1 and reversing the bits
- changing the highest bit to a 1

Question 10

1 / 1 pts

A signed integer stores the sign in the most significant bit (MSB) .

Answer 1:

Correct!

most significant bit (MSB)

Question 11

1 / 1 pts

Convert the following ASCII hex representation to a character string: `41 73 73 65 6D 62 6C 79`

Do not add any spaces. For example, the hex `31 2B 7A` represents the string: `1+z`

Correct!

Assembly

Correct Answers

Assembly

Question 12

1 / 1 pts

Convert the following string into its ASCII hex representation: `Science`
Don't use 0x or h to represent the hex values. For example, the ASCII hex representation for "1+z" is 31 2B 7A

Correct!

53 63 69 65 6E 63 65

Correct Answers

536369656E6365

53 63 69 65 6E 63 65

Question 13

1 / 1 pts

Convert the following value from signed decimal to binary: -33

NOTE: Canvas may add a decimal point and thousands place commas, for example 11001100 may appear as 11,001,100.0 ... Please ignore these.

Correct!

11,011,111

Correct Answers 11,011,111 (with margin: 0)

Question 14

1 / 1 pts

Which list contains the correct hexadecimal translation (in order) of the following unsigned decimal integers? 33, 95, 257

- 22, 5E, 11A
- Correct! 21, 5F, 101
- 6A, 5F, 101
- 21, 62, 103

Question 15

1 / 1 pts

Complete the following Unsigned Hexadecimal Addition (answers should also be in Hexadecimal):

NOTE: Canvas may add thousands place commas (for example 9C4B may appear as 9,C4B) ... Please ignore these.

```
  2C35
+ 572B
------
```

Correct!

8,360

Correct Answer 8,360

Question 16

1 / 1 pts

Complete the following Unsigned Binary Addition (answers should also be in Binary):

NOTE: Canvas may add thousands place commas (for example 11001100 may appear as 11,001,100) ... Please ignore these.

```
  10110011
+ 00110001
```

```
----------
```

Correct!

11,100,100

Correct Answer 11,100,100

Question 17

1 / 1 pts

Complete the following **unsigned** Binary Subtraction:

```
  11101001
- 11010111
----------
```

NOTE: Represent answer as an 8-bit value, with no spaces or characters other than 0s and 1s.

Correct!

00010010

Correct Answers 10010

00010010

Question 18

1 / 1 pts

Complete the following **unsigned** Hexadecimal Subtraction:

```
  C6F1
- A735
------
```

NOTE: Represent answer as a 16-bit hex (four character) value, with no spaces or characters other than 0-9, A-F.

Correct!

1FBC

Correct Answers 1FBC

Question 19

1 / 1 pts

Convert the following **signed** SWORD to a decimal value.

```
0011 1001 0001 1110
```

Correct!

14,622

Correct Answers 14,622 (with margin: 0)

Question 20

1 / 1 pts

Convert the following **unsigned** WORD to a decimal value.

```
1111 1010 0000 1111
```

Correct!

64,015

Correct Answers 64,015 (with margin: 0)

Question 21

1 / 1 pts

A bus is a set of parallel wires used to conduct a group of electrical signals simultaneously.

Answer 1:

Correct!

bus

Question 22

1 / 1 pts

When transferring instructions and data between the *Main Memory Unit* and the *CPU*, they will be placed on the Data Bus.

Answer 1:

Correct!

Data

Question 23

1 / 1 pts

What would you call an ordered list of organized instructions existing somewhere in memory, and associated with a data structure for storage of data?

- Assembler
- Instruction Set Architecture (ISA)

Runtime Stack

Correct!

Program

Question 24

1 / 1 pts

Place the steps for a *memory read* in the correct order.

1. [Select]
2. Assert a Read
3. Wait until operation is complete.
4. [Select]

Answer 1:

Correct!

Specify the memory address on the Address Bus via MAR.

Answer 2:

Correct!

Assert a Read

Answer 3:

Correct! Wait until operation is complete.

Answer 4:

Correct! Move data to its destination.

Question 25

1 / 1 pts

Please place the following steps of the instruction execution cycle in their proper order.

Correct! **Step 1:** Fetch the instruction at the

Correct! **Step 2:** Increment the Instruction I

Correct! **Step 3:** Decode the instruction in t

Correct! **Step 4:** If the instruction requires r

Correct! **Step 5:** Execute the instruction.

Correct!

Step 6: If the output operand is in

Question 26

1 / 1 pts

How much memory can be addressed in Real-address mode?

- 4GB
- 16MB
- 1MB

Correct!

- 640K

Question 27

1 / 1 pts

In the IA-32 architecture, which of the following are valid 8-bit register references?

- EAX

- [ ] AX
- [ ] SH
- [ ] EL
- [x] AL — Correct!
- [x] DH — Correct!

Question 28

1 / 1 pts

In the IA-32 architecture, which of the following are valid 16-bit register references?

- [ ] ESI
- [x] CX — Correct!
- [x] SP — Correct!
- [ ] BL
- [x] SS — Correct!

- [ ] AH

Question 29

1 / 1 pts

The status flags are implemented as individual bits within the Status & Control Register.

Correct!

- (•) True
- ( ) False

Question 30

1 / 1 pts

Correctly match the status flags to their description.

Correct!

The Carry flag — set when an unsigned arit

Correct!

The Overflow flag — set when the result of a si

Correct!	**The Sign flag**	set when the result of an a
Correct!	**The Zero flag**	set when the result of an a
Correct!	**The Parity flag**	set if the least-significant b

Quiz Score: **30** out of 30