

What is the largest unsigned integer that may be stored in 24 bits?

- ☐ 65,536
- ☐ 1,048,576
- ☒ 16,777,215
- ☐ 32,767

A signed integer stores the sign in the least significant bit (LSB).

- ☐ True
- ☒ False

The expression $X \vee Y$ is only true when X and Y are both true.

- ☐ True
- ☒ False

The two's complement of an integer is formed by doing which of the following?

- ☐ changing the highest bit to a 1
- ☒ reversing (inverting) the bits and adding 1
- ☐ adding 2 and reversing the bits
- ☐ adding 1 and reversing the bits

A doubleword (on x86 systems) is 32 bits.

- ☒ True
- ☐ False

The three most basic operators in Boolean algebra are AND, OR, and NOT.

- ☒ True
- ☐ False

If an integer's sign bit is 1, the integer is positive.

- ☐ True
- ☒ False

0 is positive 1 is negative

How many bits are used by Unicode characters in MS-Windows?

- ☐ 24
- ☒ 16

- ☐ 7
- ☐ 8

Which of the following binary values is equivalent to hexadecimal 4A2B?

- ☐ 0100 1010 1010 1011
- ☐ 0100 1010 0010 1101
- ☒ 0100 1010 0010 1011
- ☐ 0110 1011 0010 1001

Which of the following correctly describes the Java Virtual Machine?

- ☐ provides virtual memory management for the operating system
- ☒ executes Java Bytecodes
- ☐ translates Java into Java Bytecodes
- ☐ makes Java run faster on x86 computers

A quadword is 4 bytes.

- ☐ True
- ☒ False

Is the expression $X \vee (Y \wedge Z)$ equivalent to $(X \vee Y) \wedge (X \vee Z)$ for all possible inputs of X, Y, and Z?

- ☒ True
- ☐ False

The expression $\neg(X \wedge Y)$ is true when X and Y are both false.

- ☒ True
- ☐ False

A program that combines object files into an executable program is called a _____.

- ☒ linker
- ☐ compiler
- ☐ assembler
- ☐ loader

Which of the following binary values is equivalent to hexadecimal 7CBE?

- ☒ 0111 1100 1011 1110
- ☐ 0111 1100 1100 1110
- ☐ 0111 1011 1011 1100
- ☐ 0111 1101 1011 1110

Which internal bus uses binary signals to synchronize actions of all devices attached to the system bus?

- ☐ I/O bus
- ☐ cache bus
- ☒ control bus
- ☐ address bus
- ☐ city bus
- ☐ data bus

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How much memory can be addressed in Protected mode?

- ☐ 640K
- ☐ 1MB
- ☒ 4GB
- ☐ 16MB

Suppose that you are given the following program. What decimal value does the AX register hold when *someProcedure* is called??

```
.data
x    DWORD    153461
y    BYTE     37
z    BYTE     90

.code
main PROC
mov   AH, y
mov   AL, z
call  someProcedure
inc   EAX
```

```
mov    EBX, z
xor    EAX, EBX
exit
main ENDP
END MAIN
```

- ☒ 9562
- ☐ 3790
- ☐ 9037
- ☐ 23077

The four parts of a CPU are:

- ☐ data bus, memory unit, control unit, arithmetic logic unit
- ☒ clock, registers, control unit, arithmetic logic unit
- ☐ clock, memory unit, control unit, instruction fetch unit
- ☐ address bus, registers, control unit, arithmetic logic unit

Which flag is set when an unsigned value is too large to fit into a destination operand?

- ☐ overflow
- ☒ carry
- ☐ sign
- ☐ red flag
- ☐ auxiliary carry
- ☐ checkered

If a clock oscillates 10 billion times per second, what is the duration of a single clock cycle?

- ☒ 1.0×10^{-10} seconds
- ☐ 1 nanosecond
- ☐ 1 sagon seconds
- ☐ 1.0×10^{-9} seconds
- ☐ 1.0×10^{10} seconds
- ☐ 1 jiffy

If you wanted to find out whether an integer contained an even number of 1 bits, which status flag would be useful?

- ☐ carry
- ☐ overflow
- ☐ sign
- ☒ parity

Which two 32-bit registers are known as extended index registers?

- ☒ ESI, EDI
- ☐ EBP, ESP
- ☐ SI, DI
- ☐ EAX, EBX

What is the name of the time delay in a CPU caused by differences between the speed of the CPU, the system bus, and memory circuits?

- ☐ wait cycle
- ☐ bicycle
- ☐ dead cycle
- ☐ memory write cycle
- ☒ wait state
- ☐ spin cycle

Which register is known as a loop counter?

- ☒ ECX
- ☐ LOX
- ☐ EBX
- ☐ EDX
- ☐ EAX

Which of the following are valid data definition statements that create an array of unsigned bytes containing decimal 10, 20, and 30, named myArray?

- ☒ `myArray BYTE 10, 20, 30`
- ☐ `BYTE myArray[3]: 10, 20, 30`
- ☐ `BYTE myArray 10, 20, 30`
- ☐ `myArray BYTE DUP (3) 10, 20, 30`

Select a data definition statement that creates an array of 500 signed doublewords named `myList` and initializes each array element to the value -1.

- ☐ `SDWORD myList 500 DUP (-1)`
- ☐ `myList 500 SDWORD (-1)`
- ☒ `myList SDWORD 500 DUP (-1)`
- ☐ `myList 500 SDWORD DUP (-1)`

The byte-ordering scheme used by computers to store large integers in memory with the high-order byte at the lowest address is called:

- ☒ big endian
- ☐ byte-minor
- ☐ nibble
- ☐ tasty
- ☐ byte-major
- ☐ little endian

In the following data definition, assume that `List2` begins at offset 2000h. What is the offset of the third value (5)?

```
List2 WORD 3, 4, 5, 6, 7
```

- ☐ 2002h
- ☐ 2008h
- ☐ 20006h
- ☐ 20008h
- ☐ 2000h
- ☒ 2004h

The following is a valid identifier: `AB62-$`

- ☐ True
- ☒ False

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

- ☐ compiler
- ☐ loader
- ☐ editor
- ☐ detangler
- ☒ assembler
- ☐ linker

Which of the following are true about assembly language instructions and directives? (select all that apply)

- ☒ an instruction is executed at runtime
- ☐ a directive is executed at runtime
- ☐ an instruction is executed at assembly time
- ☒ a directive is executed at assembly time

Which letter choice shows the memory byte order, from low to high address, of the following data definition?

```
BigVal DWORD 12345678h
```

- ☐ 56h, 78h, 12h, 34h
- ☐ 34h, 12h, 78h, 56h
- ☒ 78h, 56h, 34h, 12h
- ☐ 12h, 34h, 56h, 78h

Operands may be any of the following: (select all that apply)

- ☒ register name
- ☒ variable name (memory)
- ☒ constant or constant expression
- ☐ reserved word

Which directive identifies the part of a program containing instructions?

- ☐ .net
- ☐ .prog
- ☐ .product
- ☒ .code
- ☐ .data
- ☐ .stack

The integer range of standard ASCII codes is:

- ☐ 0 to 65,535
- ☐ 0 to 270
- ☒ 0 to 127
- ☐ -128 to +127

A program is considered portable if it . . .

- ☐ none of the above
- ☒ 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.

The expression $X \wedge Y$ is true only when X and Y are both true.

- ☒ True
- ☐ False

Device drivers nearly always contain some code written in

- ☒ assembly language
- ☐ an application-oriented language
- ☐ Java
- ☐ machine language

Three hexadecimal digits can be used to represent 12 binary bits.

- ☒ True
- ☐ False

List the three primary steps of the instruction execution cycle, in sequential order.

- ☐ decode, fetch, execute
- ☒ fetch, decode, execute
- ☐ fetch, decode, memory write
- ☐ fetch, memory read, execute

The three types of buses connected to the CPU are:

- ☐ data, system, address
- ☒ data, address, control
- ☐ fetch-decode, control, execution
- ☐ address, control, memory

The basic parts of an instruction, in order from left to right, are:

- ☐ mnemonic, operand(s), comment
- ☐ label, mnemonic, comment
- ☒ label, mnemonic, operand(s), comment
- ☐ comment, label, mnemonic, operand(s)

The following is a valid data definition statement:

```
str1 \
BYTE "This string is quite long!",0
```

- ☒ True
- ☐ False

Given the following array definition, which letter choice contains a valid constant declaration named `ArrayCount` that automatically calculates the number of elements in the array?

```
newArray DWORD 10,20,30,40,50
```

- ☐ ArrayCount = (newArray - \$) - 4
- ☐ ArrayCount = newArray - \$
- ☐ ArrayCount DWORD \$ - newArray
- ☒ ArrayCount = (\$ - newArray) / 4

Which of the following defines a text macro named MESSAGE that contains this string data?

"I'm good at this!",0

- ☐ TEXTTEQU MESSAGE <"I'm good at this!",0>
- ☐ <"I'm good at this!",0> TEXTTEQU MESSAGE
- ☐ TEXTTEQU <"I'm good at this!",0> MESSAGE
- ☒ MESSAGE TEXTTEQU <"I'm good at this!",0>