2024-09-19

## Warm-up Exercises

## Questions

1. Give two examples of instant messaging applications.

* Solution
* Teams, Facebook messenger, Whatsapp, ICQ, skype, zoom, Discord, …

1. How many bits are in one byte?

* Solution
* 8 bits

1. Why are “ancient” programming languages like COBOL and FORTRAN still in use?

* Solution
* Many banking systems still rely on COBOL in the current day.

#: The least significant (rightmost) bit of even numbers in binary representation is 1. \_\_\_\_\_\_\_\_

Solution

No

#: Commands for managing the IDE and for developing, maintaining and executing programs are contained in the menus, which are located on the menu bar. \_\_\_\_\_\_\_\_

Solution

Yes

#: Is the following statement true: 010000 < 001111? \_\_\_\_\_\_\_\_

Solution

No

#: You can browse the web from within the Visual Studio Community environment. \_\_\_\_\_\_\_\_

Solution

?

#: Visual Studio Enterprise can be used to create apps only in C#. \_\_\_\_\_\_\_\_

Solution

No

#: High-level computer languages are easily understood by a computer without any need of translation. \_\_\_\_\_\_\_\_

Solution

No

#: An assembler converts assembly language programs into machine language. \_\_\_\_\_\_\_\_

Solution

Yes

#: Is the role of CPU to govern computing devices and processes? \_\_\_\_\_\_\_\_

Solution

Yes

#: Was Windows system developed in sixties? \_\_\_\_\_\_\_\_

Solution

No

#: Do console applications provide visual environment? \_\_\_\_\_\_\_\_

Solution

?

1. Computers process data, using sets of instructions called …

* specifications
* computer programs
* recipes
* hardware

1. \_\_\_\_\_\_ Law states that every year or two, the computing power of computers doubles without any increase in price.

* Gate’s
* Moore’s
* Henderson’s
* None of the above.

1. The main purpose of the AUL unit is: \_\_\_\_\_\_.

* to store permanent data
* to store temporary data
* to cool the computer down and prevent overheating
* to perform calculations and logical comparisons for the computer

1. Binary code is: \_\_\_\_\_\_.

* a complex, but easy to use, modern programming language
* a series of 0s and 1s
* high-level machine language instructions
* a series of characters representing the numbers 0 to 9

1. The order of simplicity (easiest to hardest) to a human of the three basic types of languages is: \_\_\_\_\_\_.

* high-level, assembly, machine
* assembly, machine, high-level
* machine, high-level, assembly
* machine, assembly, high-level

1. Which of the following is *true*: C# \_\_\_\_\_\_.

* is object oriented
* contains a powerful class library
* is not limited to web-based applications
* all of the above

1. Visual C# programs are created using Microsoft’s Visual Studio–a collection of software tools called a(n) \_\_\_\_\_\_.

* operating system
* Integrated Programming Environment
* Integrated Development Environment
* Class Library

1. The purpose of the Visual Studio Enterprise is to \_\_\_\_\_\_.

* create a program
* run a program
* debug a program
* all of the above

1. This menu contains commands for opening projects, closing projects, printing project data, etc.

* View menu
* Edit menu
* Tools menu
* File menu

1. A single line comment in C# begins with which double symbol?

* \*\*
* //
* ##
* $$

1. Which method is the starting point of any C# program?

* Open
* Main
* Start
* none of these.

1. All statements in C# end with:

* semicolon
* colon
* comma
* full stop

1. Violations of language rules are referred to as:

* semantic errors
* syntax errors
* run-time errors
* none of these

1. What operator is used to denote remainder (modulo) operation?

* &
* %
* #
* @

1. Which of the following is in highest-to-lowest order of operator precedence?

* multiplication, division, parentheses
* addition, subtraction, division
* parentheses, multiplication, addition
* none of these

1. In C# code: Console.WriteLine($"Initial value is: {myAccount.GetNumber()}"); which method is called (executed) first?

* WriteLine()
* GetNumber()
* they are called at the same time
* none of these

1. Which of these are binary operators?

* / (division)
* \* (multiplication)
* + (addition)
* all of these

1. You can declare the same variable twice in a C# code.

* Yes
* No

1. It is good to initialize all variables upon their creation (declaration).

* Yes
* No

1. Is = the equality operator in C#?

* Yes
* No

1. Visual C# programs are created using Microsoft’s Visual Studio—a collection of software tools called a(n) \_\_\_\_\_.

* Operating system
* Integrated Programming Environment
* Integrated Development Environment
* Class Library.

1. The starting point of a C# application is the

* Main
* Start
* Open
* None of the above.

1. C# statements in C# usually end with:

* :
* ;
* #
* .

1. \_\_\_\_\_ are violations of language rules.

* Logic errors
* Syntax errors
* Run-time errors
* None of the above.

1. A variable is:

* An instruction for the compiler
* A location in memory where a value is stored
* A description of a method call (including the argument list)
* None of the above.

1. What is an algorithm?

* The actions (and their order) that solve a particular problem
* An English description of a problem to be solved
* The declaration of an object.
* None of the above.

1. The order of simplicity (easiest to hardest) to a human of the three basic types of languages is:

* High-level, machine, assembly
* Machine, high-level, assembly
* Assembly, machine, high-level
* High-level, assembly, machine.

1. Which of these are binary operators?

* \* (multiplication)
* + (addition/concatenation)
* / (division)
* All of these.

1. What is the correct order of actions in developing software?

* Define the problem, develop an algorithm, code a C# program, run tests
* Code a C# program, develop an algorithm, run tests
* Code a C# program, run tests, develop an algorithm.
* Define the problem, run tests, code a C# program.

1. What is the resulting value of c at the end of the following code segment?

int c = 5;  
c \*= --c;

* 25
* 15
* 20
* None of the above

1. What value will be printed on the output:

int A = 16; int B = 3;  
Console.WriteLine(A/B);

* 1
* 5.33
* -1
* 5

1. Some compilers will automatically remove body statements from loops that do not need to be executed multiple times through a process known as \_\_\_\_\_.

* Classification
* Optimization
* Interpretation
* None of the above.

## Problems

1. Find 3 syntax errors in this short C# code.

int num11 =1;  
int num2 ==2;  
if num11>-num2) {Console.WriteLine(“Yes”);}  
else {Console.WriteLie(“No”);}

Solution

int num11 =1;

int num2 ==2; // == comparison operator cannot be used with variable declaration

if num11>-num2) {Console.WriteLine(“Yes”);} // if condition missing open parenthesis

else {Console.WriteLie(“No”);} // WriteLie is not a method in the Console class, whereas WriteLine is.

1. What sequence will appear on the output of this C# code? Which parameter of SD(int[] A, int B) method is passed by value?

* using System;  
  class Program  
  {  
   static void SD(int[] A, int B)  
   {  
   A[2] += A[2];  
   B /= B;  
   }  
   static void Main(string[] args)  
   {  
   int[] A = { 0, 1, 2, 3 };  
   S(A, A[2]);  
   Console.Write($"[{A[0]},{A[1]},{A[2]},{A[3]}]");  
   }  
  }
* Solution
* The sequence that appears in the output is 0, 1, 4, 3. The parameter int B is passed by value.

1. Consider the following code:

for (int y = 1; y <= 3; y++)  
{  
 for (int z = 1; z < 5; z++)  
 Console.Write("Scene " + y + ", take " + z + ". " );  
 Console.WriteLine();  
}

* How many times does the outer loop iterate (i.e., how many scenes are shot)?
* How many times does the inner loop iterates (i.e., how many takes for each scene)?
* Finally, what is the total number of iteration of the nested loops (i.e., how many takes are made, total)?

Solution

3, 4, 12

1. Mark the pretest loops:
   * do while
   * switch
   * while
   * for
   * if-else-if

* Solution
* for and while are the pretest loops
* Which of the following correctly declares and creates a two-dimensional rectangular array of integers?
  + int[,] sum = new int[10, 40];
  + int[][] sum = new int[25, 43];
  + int sum[] = new int[20, 20];
  + None of the above.
* C# supports two types of two-dimensional arrays:
  + quadrilateral and isosceles
  + jagged and rectangular
  + jagged and round
  + None of the above.