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| IT Foundation using C# | EXAM 1 | Instructor: Vallejo |

Note:  The test is worth **100 points**.  **Show all your work** for each problem.  No partial credit will be given if no work is shown for each answer.  Read the entire description to each question before answering the question.  **Good Luck!**

**True / False (2 points each)**

***Circle One***

1.    A block (**{ }**)can contain more than one statement.      TRUE / FALSE

2.    Every program must have a function called Main.            TRUE / FALSE

3.    The type **int** is signed.                                                          TRUE / FALSE

4.    Multi-line comments are started by **//**.                             TRUE / FALSE

5.    Variables are used only for storing constants.                  TRUE / FALSE

6.    All statements are terminated by a comma.                     TRUE / FALSE

7.    A variable name may begin with an underscore ( \_ ).      TRUE / FALSE

8.    **\n** is used by **WriteLine** to go to the next new line.             TRUE / FALSE

9.    Upper- and lower-case letters are significant for names.  TRUE / FALSE

10.  The type **char** is Unicode (2 bytes).                                     TRUE / FALSE

**Multiple Choice (3 points each)**

11.  Which feature will execute a block of code at least once:

      A.  **while**

      B.   **for**

      C.  **do-while**

      D.  **foreach**

12.  An **int** variable occupies:

      A.  One byte

      B.   9 bits (1 for parity)

      C.   Four bytes

      D.  7 bits (for unsigned)

13.  What function is used to read in a string:

      A.  Console.WriteLine

      B.  Console.Read

      C.  Console.Write

      D.  Console.ReadLine

14.  Which is an INVALID statement:

      A.   x = x / -1;

      B.   y = y + 2 ***(No semicolon)***

      C.   z = z + z;

      D.   t += t;

15. What does X == Y mean?

      A.   X is assigned to Y

      B.   Y is assigned to X

      C.   X is compared to Y

      D.   None of the above

16.  Which of the following is NOT a logical operator:

      A.   ; *(used to terminate a line of code)*

      B.   || *(OR operator)*

      C.  && *(AND operator)*

      D.  ! *(NOT operator)*

17.  Which is an invalid type of Field:

      A.   readonly *(This applies to a field, but it is a modifier)*

      B.   get *(This is a property)*

      C.   const *(This applies to a field, but it is a modifier)*

      D.   None of the above

18.  **break** is used to:

      A.   Exit a program

      B.   Exit stage right

      C.   Exit a function

      D.   Exit a loop

19.  C# ignores:

      A.  Whitespace

      B.   Braces

      C.   Commas

      D.   Semicolons

20.  What is the significance of **while (true)**

      A.   It is an invalid expression

      B.   It is an infinite trip

      C.   It is an infinite statement

      D.   It will never stop

21. What is the result of the following statement for x = 4? (5 points)

result = X + X++; The value of x is incremented when it moves to the next line

result = --X + X; the value of x is decremented when it moves to the next line

ending up with a total of 8

22. What are the basic arithmetic operations? Show the operational signs. (5 points)

a) + Addition

b) - Subtraction

c) / Division

d) \* Multiplication

e) % Modulo (remainder after division)

23.  What are the basic conditional operations (less than, equality, etc.)?

a) == Equals

b) < Less than

c) > Greater than

d) <= Less than or equal to

e) >= Greater than or equal to

f) != Not equal to

f) ++ Increment

f) -- Decrement

What are the basic logical operations? (5 points)

a) && And

b) || Or

c) ! Not

24.  Check if the following *if* expressions below result in TRUE or FALSE? (5 points)

A.                                                         B.

   usCnt = 10; usSum = 10;        usCnt = 10; usSum = 10;

   if (usSum++ == usCnt)          if (usSum == ++usCnt)

      {                           {

      etc...                      etc...

      }                           }

      TRUE        FALSE                              TRUE        FALSE

In both cases the variable is not incremented until after it performs the evaluation

25.  What is the value of usSum after the following code segment? (5 points)

   usSum = 10; usCnt = 2; This is 2 assign statements

   switch (usCnt) Currently holds a value of 2

      {

      case 3:

         {

         usSum = usSum + 2;

         break;

         }

      default:

         {

         break;

         }

      case 2: This is the function that executes

         {

         usSum = usSum \* 3; Now holds a value of 30 then goes

         goto case 3; to “case 3:” where it adds 2 more

         }

      }

      usSum = \_\_\_32\_

26.  ***Circle*** the COMPILER/SYNTAX errors in this program (5 points)

   static void Main( } the bracket, should be closing parenthesis

   {

   int   iSum,; the comma after the variable

int   iCnt=Sum, iValue; iTotal; wrong variable name, first “;” should be “,”

   char  chChar = "a"; type should be string

   iSum = chChar needs to be casted before it can be assigned to an integer

   ;

   while (iSum = 100); iSum does not have a value so this won’t execute

      {

      iSum = iSum + 1;

      }

   ) closing parenthesis should be after “…main(“ replacing bracket

27.  Given the following program what will the last value of usCnt be when the program completes execution?  Is there anything unusual about this program?  What does it show and what do you conclude from this? (10 points)

using System;

class Test

{

static void Main( )

{

uint  usCnt;

uint  usSum = 0;

for (usCnt = 10; usCnt >= 0; usCnt--)

      {

      Console.WriteLine("{0}",usCnt);

      usSum = usSum + usCnt;

      }

}

}

I calculated 55, but that would be if the variables were the signed int, these are unsigned so the usCnt variable went from 0 to its MaxValue when I actually ran it, hence it kept going for a while. Unsigned variables don’t respect the MinValue?

28.  What will the following program display? (10 points)

using System;

class Test

{

static void Main( )

{

int   iX;

int   iY;

iX = 15321;

while (iX != 0)

      {

      iY = iX % 10;

      Console.Write(iY);

      iX /= 10;

      }

Console.WriteLine();

}

}

Display will be \_12351\_\_(the remainder of each iteration after dividing by 10, pretty nifty)

Iterations

iY iX

1 1532

2 153

3 15

5 1

1 0

29.  We have a stack object (10 points):

* What is while ( ) statement do? Keeps the loop going until the condition is met
* What is IsEmpty? A property that tells if the stack is empty or not.
* What is Pop()? Stack method to keep removing the next item on top of stack
* What is {0}? Composite formatting
* What is the code below going to do? Go through the stack while it is not emplty and remove each item at the top of the stack until the stack is empty.

      while (!stack.IsEmpty)

{

Console.WriteLine("Popping {0}", stack.Pop());

}

30. What is the difference between a “Class” and a “Struct” in C#? (10 points)

* You don't need to call **new** unless there is a constructor. Also cannot inherit from a **struct** nor can a **struct** inherit from another type.