Student Name: Todd Tracy

|  |  |  |
| --- | --- | --- |
| 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

      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.   ;

      B.   ||

      C.  &&

      D.  !

17.  Which is an invalid type of Field:

      A.   readonly – field modifier

      B.   get

      C.   const -field 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) **8**

result = X + X++; X = 4+4 = result 8, X then turns into = 5

result = --X + X; X = 5-1 = 4, 4+4 = result 8

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

**Operator Description Example (A = 5, B = 10)**

+ Adds two numbers A + B = 15

- Subtracts second num from the num A – B = -5

\* Multiple both num A\* B = 50

/ Divide numerator by de-numerator B/A = 2

% Provides remainder after integer division B%A = 0

++ Increase num by value of one. A++ = 6

- - Decrease num by value of one A- - = 4

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

**Operator Description Example (A = 5, B = 10)**

**> Is num A greater than num B, then true (A>B) is not true**

**< Is num A less than num B, then true (A<B) is not true**

**= = If num A equals or not num B, if yes (A = = B) is not true**

**condition true.**

**!= If num A equals or not num B, if yes (A!=B) is true**

**condition NOT true.**

**>= Is num A is greater than or equal to (A>=B) is not true**

**num B, if yes then true.**

**<= Is num A is less than or equal to num B, (A<=B) is true**

**if yes then true.**

What are the basic logical operations? (5 points)

**Operator Description Example in Boolean (A = True, B = False)**

**&& Is A AND B are non zero, then true. (A && B) is false**

**|| Is A OR B are non zero, then true. (A || B) is true**

**! Reverses logical state, if condition is !(A && B) is true**

**true then false.**

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

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

   usSum = 10; usCnt = 2;

   switch (usCnt)

      {

      case 3:

         {

         usSum = usSum + 2;

         break;

         }

      default:

         {

         break;

         }

      case 2:

         {

         usSum = usSum \* 3;

         goto case 3;

         }

      }

 // 10\*3 = 30 + 2 = 32

      usSum = 32

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

   static void Main( }

   {

   int   iSum,;

int   iCnt=Sum, iValue; iTotal;

   char  chChar = "a";

   iSum = chChar

   ;

   while (iSum = 100);

      {

      iSum = iSum + 1;

      }

   )

27.  Given the following program what will the last value of usCnt be when the program completes execution? There is no last value for usCnt Is there anything unusual about this program? No, besides the uint, which is unsigned so can’t be negative, so when it gets to zero instead of turning off at -1.it starts over at 4,294967,295 What does it show and what do you conclude from this? It is a never ending loop. (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;

      }

}

}

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 12351

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

* What is while ( ) statement do? It will execute if everything in the () is true.
* What is IsEmpty? Means that the stack has to be empty to be true and execute.
* What is Pop()? Remove and retrieve the last element in the stack.
* What is {0}? Is the first element in stack.
* What is the code below going to do? It will step over this code if there is item in the stack, as “!” in (!stack.IsEmpty) I believe really means (!stack.IsNOTEmpty), if that is false then this will skip over the Console.WriteLine.

      while (!stack.IsEmpty)

{

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

}

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

Class is a reference type that contain null-references, meaning they don’t reference anything currently, like a pointer. Struct is a value type which means it always contains a value and copy contents of variable into another variable.