

Engr 123
Exam 1 Review Sheet

January 24, 2018

This exam will be in two parts. The first part is written and you may use your books and/or your notes but you may not use a computer. The second part, to be completed *after* turning in the first part, is done on computer and is similar to the daily computer problems in class.

1. Variables of type `int` are 32 bits long in C#. What is the range of the `int` variables?

2. What is wrong with the following code segment?

```
int i = 2, j = 4;
if(i = j)
    Console.WriteLine("Variables are equal");
else
    Console.WriteLine("Variables are not equal");
```

3. How many lines of print do each of the following produce? Assume all variables have been declared and are of type `int`.

<pre>A) i = 0; while (i < 100) {j = 0; while j < 10) {Console.WriteLine("Hello"); j++; } i += 2; } Lines of Print_____</pre>	<pre>B) i = 9; while(i >= 0) {Console.WriteLine("Hello"); j = -3; while(j < 3) {Console.WriteLine("Mom"); j++; } i--; } Lines of Print_____</pre>
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4. Show what is printed as a result of each of the following: (all variables have been declared to be of type `int`).

<pre>A) a = 7; b = 3; Console.WriteLine(a/b);</pre> <p>Printed Result_____</p>	<pre>B) a = 12; b = 3; c = a/b*2; Console.WriteLine(c);</pre> <p>Printed Result_____</p>
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5. Explain the difference between a *console application* and a *windows application*.

6. Answer the questions below about this method:

```
private void MyMethod()  
{  
    string outNum = "";  
    int i, j, n, fact;  
    n = Convert.ToInt32(Console.ReadLine());  
    i = 1;  
    while(i <= n)  
    {  
        fact = 1;  
        j = i;  
        while(j > 1)  
        {  
            fact *= j;  
            j--;  
        }  
        i++;  
        outNum = Convert.ToString(fact);  
        Console.WriteLine(outNum);  
    }  
}
```

Answer the following questions about this program:

- A) If the input is 10 how many lines will the program produce in the output window when the program runs?.
- B) What does the line `fact *= j;` do?
- C) Why is the variable `fact` initialized to 1 instead of 0?

8. Write a program to evaluate the equation $y = x^3 - 4x^2 + 3x + 1$ for successive values of x beginning at 0 and ending when y is greater than 1000. Use step of 0.1 for the x increment. Print all values of y .

9. Write a program to input a single digit from the keyboard. Print that number plus all of the other digits up to the number 100. Print each number on a new line. For example, your program's output might look like the following:

```
Enter an integer... 96  
96  
97  
98  
99  
100  
Push any key to continue...
```

10. Write a C# console program implementation to input a sequence of positive integers from the keyboard and print their average. The number of integers to be entered is unknown but the last integer will be a 0. Your program should prompt the user to enter an integer. If the integer is nonzero it should be part of the average but nothing should be printed except a prompt for another integer. This procedure should continue until the user enters a zero at which time your program should print the average of the numbers with the appropriate message.