

Tutorial 2

1. Write the output for each of the following segments of code.

- (a)

```
int x = 7;
int y = 3;
cout << x/y << " and " << x%y;
```
- (b)

```
double b = 5;
cout << b/2 << (int) b%2;
```
- (c)

```
int x = 2;
double y = 3.0;
cout << setprecision(2);
cout << x * y << " and " << x / y;
```
- (d)

```
double a = 5.5;
cout << (int) a / 2 << "\n";
cout << setprecision(2) << a;
```

2. Briefly explain and correct the error(s) in each of the code segments below.

- (a)

```
int a = 5;
int double = 2*a;
int triple = 3*a;
cout << "Doubling 5 gives " << double << " and tripling gives "
<< triple;
```
- (b)

```
int x, y;
cin << x << y;
cout << "x = " << x << "\ny = " << y;
```

3. Suppose *x*, *y*, and *z* are `int` variables and *x* = 2, *y* = 5, and *z* = 6. What is the output of each of the following statements?

- (a) `cout<<"x = "<<x<<" , y = "<<y<<" , z = "<<z<<endl;`
- (b) `cout<<"x + y = "<<x + y<<endl;`
- (c) `cout<<"Sum of "<<x<<" and "<<z<<" is "<<x+z<<endl;`
- (d) `cout<<"z / y = "<<z / y<<endl;`
- (e) `cout<<"2 times "<<x<<" = "<<2*x<<endl;`

4. Write a single `cout` statement that prints the text below.

Krodo says:
"I ♥ YOU!"

(Hint: The heart is given by the escape character `\3.`)

5. The program below is supposed to compute the average of two numbers. The program compiles without error, but does not correctly compute the average. Describe the logic error(s) and write the corrected lines. You do not need to rewrite the entire program. The line numbers are written along the left column to help you write your answer; they are not part of the program code. Make as few changes as possible.

```
1  #include <iostream>
2  using namespace std;
3  int main ( )
4  {
5      int total;
6      cout << "Enter a number: ";
7      int a;
8      cin >> a;
9      total = total + a;
10     cout << "Enter another number: ";
11     int b;
12     cin >> b;
13     total = total + a;
14     double average = total / 2;
15     cout << "The average is " << average << ".\n";
16     return 0;
17 }
```

6. Write the output for the following program statements (which are not related to one another) (Note: Show all blank spaces with the symbol \square):
- (a) `cout<<setw(10)<<"ABC";`
 - (b) `cout<<setfill('#')<<setw(10)<<"ABC";`
 - (c) `cout<< left << setfill('@') << setw(6) << "ABC";`
 - (d) `cout<<fixed<<setprecision(2)<<123.456;`
 - (e) `cout<<setprecision(7)<<showpoint<<123.45;`
 - (f) `cout<<setprecision(5)<<123.5748<<endl<<setprecision(6)<<123.5748;`
7. Draw a flowchart and write a C++ program that will read 4 integers through a **single** `cin` function. Then, calculate and display the sum (add up all the integers) and product (multiply all the integers) of these values. Set the field width of the output values to be 10. The following is the example output:

Output:

```
Enter 4 integers > 10 20 30 40
Sum of all      :      100
Product of all  :    240000
```

8. Nicholas wrote a program that computes the average of two integers entered by the user. The program compiles, but doesn't seem to produce the correct results. The part of Nicholas' code that computes the average is shown below.

```
int num1, num2;  
cout << "Enter two numbers: ";  
cin >> num1 >> num2;  
cout << "The average is " << (num1+num2)/2;
```

Explain what is wrong with Nicholas' code and suggest how to fix it. Demonstrate your solution.