**Introduction to Computer Programming**

**Lab Journal - Lab 2**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Enrollment #: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objective:**

1. Getting Familiar with input output statements.
2. Understanding different data types.
3. Understanding the use of arithmetic operators and performing calculations
4. Getting familiar with the const keyword
5. Write the following codes in your compiler, execute them and Write the output.

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| char grade = ‘A’;  cout << "Grade is :" << grade << endl; |
| Output: |
| int marks = 80;  cout << "Marks are :" << marks << endl; |
| Output: |
| int marks;  cout << "Enter marks: ";  cin >> marks;  cout << "Marks are:" << marks << endl; |
| Output: |
| float radius;  float pi = 3.14;  float circum;    cout << "Enter radius: ";  cin >> radius;  circum = 2 \* pi \* radius;  cout << "Circumference of circle with radius " << radius << " is "<< circum << endl; |
| Output: |
| This code has two errors. Solve them First before writing the output. Hint: You can build the program and see the ErrorList Window to see the errors. Or you can also see the red squigly line in your compiler underlining the point of error.  double radius = 250800000; //in inches  const float pi = 3.14;  double circumOfEarth;    circum = 2 \* pi \* radius;  cout << "Circumference of Earth in inches with radius " << radius << " is "<< circum << endl; |
| Output: |
| const float pi = 3.14;    cout << "Enter value of pi: ";  cin >> pi;  cout << "Value of pi is "<< pi << endl;  Build this program. You will see that it has an error on the input line of the program. Now remove the keyword const before the variable pi and build now. Does it still has an error?  So you see the values of const variables (who has the word const before them) can not be changed/modified in the program. They are constant! |
| What did you learn about const keyword? |
| //This is a program that increase the value of count variable by 1.  int count = 10;    count = count + 1;  cout << "Value of Count is: " << count << endl;  count += 1;  cout << "Value of Count is: " << count << endl;  Compile this program and see the output.  You will notice that count += 1; is the same as count = count + 1;  So you have learned a shorter way of writing count = count + 1; |
| Output:- |
| int carsLeft = 20;    carsLeft = carsLeft - 1;  cout << "Total number of cars left is: " << carsLeft << endl;  Rewrite the above code by replacing the line number 2 by a shorter version |
| Code:- |

1. Now Write Code for the following problems yourselves. Write code as well as the snapshot of their output in the journal below

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| **Problem 1:**  Write a program in C++ that accepts the values of two variables num1 and num2 from the user and   1. Add them and store the result in a third variable sum. 2. Subtract them and store the result in a fourth variable difference. 3. Multiply them and store the result in a fifth variable product.   Display the output of this program in the following format:  Sum of \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Difference of \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_.  Product of \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_.  These dashes will have the values of num1, num2, sum, difference and product respectively. |
| Code:  Output: |
| **Problem 2:**  Write a program in C++ that accepts the base and height of a right-angle triangle from the user and displays the area of the triangle.  (Hint: Formula for area of right angle triangle = (base\*height)/2) |
| Code:  Output: |
| **Problem 3:** A person is running in a circular ground. Write a program in C++ that asks the user to input the radius of the ground in meters and the number of rounds the person completes. The program should display the total distance travelled by the person in meters.  (Hint: Formula for distance = circumference\*rounds)  Note: You can see the formula for circumference in the codes provided to you in Task 1. |
| Code:  Output: |
| **Bonus Problem: -**  This task will not be marked. Just give it a try. It’s a bonus problem.  Write a program in C++ that asks the user to enter two integer numbers, stores them in variable 'num1' and 'num2' respectively. The program swaps the values of two variables with each other using a third variable 'temp' and displays the values of both variables after swapping. |
| Code:  Output: |

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