Chapter 3- lab assignment

Note: Submit your assignment in the drop box "chapter 3 assignment" **Ravi Patel**

Q1- What is the output (6 pts)

1. State if it is true or false, where the value limit is 10 and count, x and y are 0's.

      a-   (count == 0) && (limit < 5)

      b-   ! (count < -2 || x < y) && (count >= 0)) // check the precedence operators

        A - FALSE (0)

        B - TRUE (1)

2. **break** statement is encountered inside a loop, the loop is immediately terminated and program control resumes at the next statement following the loop. It can be used to terminate a case in the switch statement. **What is the output of this program**

```
main( )
{       int n = 5;
    while (--n > 0)
     {
        if (n == 2)
        break;
        cout << n << " ";
     }
        cout << "End of Loop.";
  }
```

                    //OUTPUT:
                    //4 3 End of Loop. //breaks loop @ n==2

3. In this program, there are two declaration of a variable (number) as int type. The second int is a local variable in the block statement.

```
main ( )
    { int number = 22;        //number assigned to 22
      {   int number = 42;  //number locally assigned to 42
          cout << number << " "; //prints number stored locally (within block statement)
      }
    cout << number; //prints number stored globally (outside of block statement, in main())
    }
```

                    //OUTPUT:
                    //42 22

Q2- Program codes (9 pts):

1. Use switch – case and the **enum operation {mul, div, add, sub, power, root}** to simulate a simple calculator.

```
//CPSC 230 Ravi Patel CALCULATOR
#include <iostream>
#include <cmath>

using namespace std;
int main(int argc, char *argv[]) {
    int x,y;
    char z;
    cout << "Enter the first number in your operation: ";
    cin >> x;
    cout << "Enter the second number in your operation: ";
    cin >> y;
    cout << "\n";
    cout << "Which operation would you like to perform?" <<"\n"<< endl;
    cout << "Enter function (+, -, *, /, 'p' for power, 'r' for root): ";
    cin >> z;
    switch(z) {
    case '+' : cout << "The answer is: " << x + y; break;
    case '-' : cout << "The answer is: " << x - y; break;
    case '*' : cout << "The answer is: " << x * y; break;
    case '/' : cout << "The answer is: " << x / y; break;
    case 'p' : cout << "The answer is: " << pow(x, y); break;
    case 'r' : cout << "The answer is: " << pow(x, 1.0/y); break;
    default : cout << "Invalid Operation";
        break;
    }
    return 0;
}


//SAMPLE OUTPUT:
//Enter the first number in your operation: 5
//Enter the second number in your operation: 2
//
//Which operation would you like to perform?
//
//Enter function (+, -, *, /, 'p' for power, 'r' for root): p
//The answer is: 25
```

2. Use for loop to input 10 values, then calculate the sum and average of odd numbers

```
//CPSC 230 RAVI PATEL ODD NUM CALCULATOR
#include <iostream>

using namespace std;
int main(int argc, char *argv[]) {
    int nums[10];
    int count = 10;
    float number;
    float sum = 0;
    float avg = 0;
    int oddcount = 0;

    for (int i = 0; i < count; i++)
    {
        cout <<"Enter a number: ";
        cin >> number;
        nums[i] = number;
    }

    for (int i = 0; i < count; i++){
        if (nums[i]%2 != 0)
            sum += nums[i];
        if (nums[i]%2 != 0)
            oddcount++;
        avg = sum / oddcount;
        //cout << nums[i];
    }
        cout << "\n";
        cout << "Sum of all odd numbers: " << sum;
        cout << "\n";
        cout << "Average of all odd numbers: " << avg;
}

//SAMPLE OUTPUT:
//Enter a number: 1
//Enter a number: 2
//Enter a number: 3
//Enter a number: 4
//Enter a number: 5
//Enter a number: 6
//Enter a number: 7
//Enter a number: 8
//Enter a number: 9
//Enter a number: 10
//Sum of all odd numbers: 25
//Average of all odd numbers: 5
```

3. Use for loop to generate the Fibonacci values of all numbers less than n ,

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 …

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, ….

```
//CPSC 230 RAVI PATEL FIBONACCI CALCULATOR
#include <iostream>

using namespace std;
int main(int argc, char *argv[]) {
int n;

cout<<"Generating all fibonacci values below n. Value of n? : ";
cin>>n;

if (n>=1 && n <= 100) {

int a = 0;
int b = 1;
int sum;

    for (int i = 0; i < n; i++)
        {
        if (a <= n)
            cout<<a<<", ";
            sum = a + b;
            a = b ;
            b = sum;
        if (a > n)
            break;
        }


}

else
cout<<"This calculator can only use a number between 1 & 100 to avoid overflow.
Sorry!";

return 0;
}

//SAMPLE OUTPUT:
//Generating all fibonacci values below n. Value of n? : 55
//0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55,
```