MATH 5370: Homework -II

1. Write a program that computes the Nth sum of a geometric series $S(N)=\sum_{i=0}^{N} a r^i$ where :

   1. N, a and r are the user defined input.
   2. The number r is the ratio and for convergence of the series is typically chosen to be strictly between -1 and 1.
      Please perform this task using pointers (as mentioned in task II) [**10 points**]

2. Write a program that generates an array call it array of length n. (n here should be a user defined input and even numbered if it is not even numbered, please prompt the user to enter another array length until the user inputs an even length array).

   I. Fill out the array with entries { 0, 1, 2, 3, …, n-**1**}.[**10 points**]

Access the even and odd indexed entries through <u>pointers</u>.

Print the even and odd indexed entries strictly with the use of pointers.

The output should look something similar to:

Please enter the array size (Please make sure it is even) : 4

The array is { 0, 1, 2, 3}

Even indexed array entries = 0, odd indexed array entries = 1

Even indexed array entries = 2, odd indexed array entries = 3

//I run this program again and this time, I enter an odd number:

Please enter the array size (Please make sure it is even) : 67

Please make sure the size is an even number ! Try again.

II. Repeat the same action as part I but replace the array with the randomly generated numbers (integers) between 0 and n-1. You can use the rand function and the %n for this purpose. [**10 points**]

3. Explain what happens when you try and run the following codes:

[**20 points**]

[assume the necessary headers are included and the namespace std is being used]

I.
```cpp
int main()
{
  cin  >> x ;
   cout << x ;

   return 0 ;
     }
```

II.
```cpp
int main()
   {

      int count ;
      while (count < 100)
         {
            cout << count ;
         }
      return 0 ;

      }
```

III.
```cpp
int main()
      {
      int a, b;
      int sum=a+b;
      cout<<"Enter two numbers to add: ";
      cin>>a;
      cin>>b;
      cout<<"The sum is: "<<sum;

   return 0 ;
      }
```

IV.
```cpp
int main()
      {
      for (unsigned int j = 100 ; j < 1 ; --j)
            cout << j;
   return 0 ;
      }
```