Homework 04
IM/2019/054
RPDS Sandakelum

1. Design a program that reads a value of N and then compute the average of the Next N elements of inputs.

```
#include <iostream>
using namespace std;

int main() {

 int count, i=0;
 double number, average, sum=0;

//Ask the user the number of inputs
 cout << "How many numbers: ";
 cin >> count;

//Input numbers and sum them
 while(i < count) {
   cout << "Enter a number: ";
   cin >> number;
   sum = sum + number;
   i++;
 }

\//Calculate average
 average = sum / count;

 //Display average
 cout << "Average: " << average << endl;

return 0;
}
```

2. Revise your program from question 1 so that now it computes only the average of those input items that are greater than 10.

```
#include <iostream>
using namespace std;

int main() {

 int count, i=0, greater=0;
 double number, average, sum=0;

//Ask the user the number of inputs
 cout << "How many numbers: ";
 cin >> count;

 while(i < count) {
   cout << "Enter a number: ";
   cin >> number;
   //Find number greater than 20 and sum them
   if(number >= 10) {
     sum = sum + number;
     greater = greater+1;
   }
   i++;
 }

//Calculate average
 average = sum / greater;

 //Display average
 cout << "Average: " << average << endl;

return 0;
}
```

3. Design a program that reads a value of N and then computes the smallest and the largest numbers in the next N elements of inputs.

```
#include <iostream>
using namespace std;

int main() {

  int i=0, count=0;
  double number, max=0, min=0;

  //Ask the user number of inputs
  cout << "Enter the number of values: ";
  cin >> count;

  //Loop to find largest and smallest value
  while (i<count) {
    cout << "Enter a number: ";
    cin >> number;
    //Assign first values get for number for both max and min(only for the fist time)
    if (i==0) {
      max=number;
      min=number;
    }
    //Check values coming after first value is the max or min
    else {
      if (number>max)
        max=number;
      else if (number<min)
        min = number;
    }

  i++;
  }

  //display largest and smallest value
  cout << "Largest number is " << max << endl;
  cout << "Smallest number is " << min << endl;

return 0;
}
```

4. Design a program that reads a value of N and then computes the THIRD smallest number in the next N elements of inputs.

```
#include <iostream>
#include <bits/stdc++.h>
using namespace std;

int main() {

  int n, i;

  //Ask the user the number of inputs
  cout << "How many numbers: ";
  cin >> n;

  //define array
  int arr[n];

  //Prompt the user inputs to array
  for (i = 0; i < n; i++) {
    cout << "Please enter a number: " ;
    cin >> arr[i];
  }

  //Sort the array
  int c = sizeof(arr) / sizeof(arr[0]);
  sort(arr, arr + c);

  //Display third smallest number
  cout << "Third smallest number is: " << arr[2] << endl;

  return 0;
}
```

5. Design a function to compute the greatest common divisor of two integers read from input data.

```
#include <iostream>
using namespace std;

int main() {

int num1, num2, gcd, i;

//Ask the user to input two inteagers
cout << "Enter the first number: ";
cin >> num1;
cout << "Enter the second number: ";
cin >> num2;

//Find greatest common divisor
for(i=1;i<=num1 && i<=num2;i++){
  if (num1%i==0 && num2%i==0){
    gcd = i;
  }
}

//display greatest common divisor
cout << "Greatest common divisor of "<<num1<<" and "<<num2<<" is "<<gcd<<endl;

return 0;
}
```

6. Design a function to compute the smallest common factor of two integers read from input data.

```
#include <iostream>
using namespace std;

int main() {

int num1, num2, scf, gcd, i;

//Asking the user to input two integers
cout << "Enter the first number: ";
cin >> num1;
cout << "Enter the second number: ";
cin >> num2;

//Calculate greatest common divisor
for(i=1; i<=num1 && i<=num2; i++){
  if(num1%1==0 && num2%i==0){
    gcd = i;
  }
}

//Calculate smallest common factor
scf = (num1*num1)/gcd;

//Dsiplay smallest common divisor
cout << "Smallest common factor is " << scf << endl;

return 0;

}
```