NUST-SMME-

CS-114 Fundamentals of Programming LAB MANUAL-8
Hometasks

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Task 1: -

Q1. Take an array and find the most repeated element in that array.

Code: -

```
#include<iostream>
using namespace std;
int main()
{
    cout<<"TASK 1:- Input array and most repeated element will be displayed \n";
    int n;
    cout<<"Please enter the number of elements in your array \n";
    cin>>n;

    char a[n];
    cout<<"Please enter your array:- \n";
    //Inputting initial array
    for(int i=0; i<n; i++){
        cin>>a[i];
    }

    /*Making another ray that will store all values that show how many times each element has repeated.
    for n elements in array a, there will be n elements in array b. Each element of array b shows how many times the corresponding element of array 'a' has
    repeated. This is done by incrementing that specific element of array b whenever the corresponding element of array a is equal to any other element in the
    array 'a' apart from the element itself*/
    int b[n];
    for(int i = 0; i<n; i++)
    {
    int m=1;      //value of m is set back to 1, for each repitition.
        for(int j=0; j<n; j++ )
        {
            if(i==j)
            {continue;
            }
            else if(a[i]==a[j])
            {
                m++;  //for each element repeating, the corresponding respective element in the other is increased by 1.
            }
        }
    b[i] = m;   //each element in array b shows number of repititions of the element in that position
    }
    bool isgreater;
    int d =0;
```

```
        }
    b[i] = m;   //each element in array b shows number of repititions of the element in that position
    }
    bool isgreater;
    int d =0;
    for(int i = 0; i<n; i++){
    //Running two loops to compare one term of array with others.
        for(int j = 0; j<n; j++){
            if(i==j)
            {continue;
            }
            else if(b[i]>=b[j])
            {
                if(d == a[i])  //this condition is stated to avoid repeated outputs for the same number over each repitition.
                {isgreater = false;
                break;}
                else{
                isgreater = true;
            }
        }
            else{
                //As soon as above condition is not followed, loop is broken and nekst iteration is considered
                isgreater = false;
                break;
            }

    }
    d =a[i];

        if(isgreater){

            cout<<"The most repeated element in the array is: \n"<<a[i]<<"\nIt has repeated "<<b[i]<<" times \n";
    }
    }
    cout<<"(Note that two terms can be shown if two differents elements are most repeated)\n";
//END OF TASK 1

//
```

Output: -

```
TASK 1:- Input array and most repeated element will be displayed
Please enter the number of elements in your array
6
Please enter your array:-
Cheese
The most repeated element in the array is:
e
It has repeated 3 times
(Note that two terms can be shown if two differents elements are most repeated)

--------------------------------
Process exited after 27.48 seconds with return value 0
Press any key to continue . . .
```

```
TASK 1:- Input array and most repeated element will be displayed
Please enter the number of elements in your array
7
Please enter your array:-
2
2
1
3
4
4
0
The most repeated element in the array is:
2
It has repeated 2 times
The most repeated element in the array is:
4
It has repeated 2 times
(Note that two terms can be shown if two differents elements are most repeated)

--------------------------------
Process exited after 41 seconds with return value 0
Press any key to continue . . .
```

Task 2: -

Q2. Let's say an array is a [8] = {13, 15, 17, 9, 99, 77, 65, 43}. Find largest and and smallest element.

Code: -

```
cout<<"TASK 2:- \n";
cout<<"Taking the array a[8] = {13, 15, 17, 9, 99, 77, 65, 43}, and finding smallest and largest element. \n";
int q;
int n=8;
int a[8] = {13, 15, 17, 9, 99, 77, 65, 43};
//Checking for largest term.
bool islargest;
for(int i=0; i<n; i++)
{
//Running nested loop to compare ith term(each term) with all other terms (jth term).
    for(int j=0; j<n; j++)
    {
    if(a[i] >= a[j]){
        islargest = true; //fulfilled only when each element is larger or equal to all other elements.
    }
    else{
        islargest = false;
        break; //for any element which doesnt satisfy the required condition, it is declared as false and broken out of loop
    }
    }
if(islargest){
    cout<<"\n The largest term in your array is: "<<a[i];
    break;
```

```
        break; //for any element which doesnt satisfy the required condition, it is declared as false and broken out of loop
    }
    }
if(islargest){
    cout<<"\n The largest term in your array is: "<<a[i];
    break;
}
}
//Checking for smallest term.
bool issmallest;
for(int i=0; i<n; i++)
{
//Running nested loop to compare ith term(each term) with all other terms (jth term).
    for(int j=0; j<n; j++)
    {
    if(a[i] <= a[j]){
        issmallest = true; //fulfilled only when each element is smaller or equal to all other elements
    }
    else{
        issmallest = false; //for any element which doesnt satisfy the required condition, it is declared as false and broken out of loop
        break;
    }
    }
if(issmallest){
    cout<<"\n and the smallest term in your array is: "<<a[i];
    break;
}
}
```

Output: -

```
TASK 2:-
Taking the array a[8] = {13, 15, 17, 9, 99, 77, 65, 43}, and finding smallest and largest element.

 The largest term in your array is: 99
 and the smallest term in your array is: 9
```

Task 3: -

Q3. Develop a program that takes 5 array elements from the user. Swap position [2] element with position [4] element. (Hint: Use the same method of swapping values we used for variables using a third variable temp.)

Code: -

```
//END OF TASK 2

    cout<<"\n TASK 3:- Swapping position 2 element with position 4 element of a 5 element array \n";
    cout<<"Please enter your 5 element array: \n";
    int p[5];
    //Inputting 5-element array
    for(int i = 0; i<5; i++){
        cin>>p[i];
    }
    int temp;
    //Swapping 2nd position with 4th and 4th with 2nd.
    temp = p[1];
    p[1] = p[3];
    p[3] = temp;

    //Displaying new array after swapping position 2 and 4
    cout<<"The modified array after swapping the positions is:- \n";
    for(int i =0; i<5; i++){
        cout<<p[i]<<" ";
    }
//END OF TASK 3
return 0;
}
```

Output: -

```
 TASK 3:- Swapping position 2 element with position 4 element of a 5 element array
Please enter your 5 element array:
6
67
34
522
09
The modified array after swapping the positions is:-
6 522 34 67 9
--------------------------------
Process exited after 35.07 seconds with return value 0
Press any key to continue . . .
```