FUNDAMENTALS OF PROGRAMMING (LAB)

LAB MANUAL 8 (HOME TASKS)

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TASK # 01

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

main.cpp

Run

Output

Clear

```cpp
#include <iostream>
using namespace std;
int main(){
    int size; //declaration of varaibles
cout<<"enter the size of your array: ";cin>>size;
    int arr[size]={}; //declaration of varaible
for(int i=0;i<size;i++){ //creating array
   cout<<"enter the elements of the array: ";cin>>arr[i];}
cout<<"array: ";
for (int i=0;i<size;i++){
    cout<<arr[i];}   //displaying user given output
cout<<endl;
   int n = 0;  //initializing a variable
   int x = arr[0];
```

```
/tmp/RkM2UddaLe.o
enter the size of your array: 10
enter the elements of the array: 0
enter the elements of the array: 1
enter the elements of the array: 2
enter the elements of the array: 2
enter the elements of the array: 2
enter the elements of the array: 3
enter the elements of the array: 4
enter the elements of the array: 4
enter the elements of the array: 5
enter the elements of the array: 6
array: 0122234456
the most repeated element is: 2
```

TASK # 01 (CONT)

```
for (int i=0;i<size;++i){  //finding the recurring elements
        int count = 1;
            for (int j = i + 1; j < size; ++j){//nested loop
                if (arr[i] == arr[j]) {
                    ++count;}}
 if (count > n) {
        n = count;
       x = arr[i];}}
cout<<"the most repeated element is: "<<x;
return 0;}
```

Output

Clear

```
/tmp/RkM2UddaLe.o
enter the size of your array: 10
enter the elements of the array: 0
enter the elements of the array: 1
enter the elements of the array: 2
enter the elements of the array: 2
enter the elements of the array: 2
enter the elements of the array: 3
enter the elements of the array: 4
enter the elements of the array: 4
enter the elements of the array: 5
enter the elements of the array: 6
array: 0122234456
the most repeated element is: 2
```

TASK # 02

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

main.cpp

Run

Output

Clear

```
#include <iostream>
using namespace std;
int main(){
    int size,a; //declaration of varaibles
cout<<"enter the size of your array: ";cin>>size;
    int arr[size]={}; //declaration of varaible
for(int i=0;i<size;i++){ //creating array
   cout<<"enter the elements of the array: ";cin>>arr[i];}
cout<<"array: ";
for (int i=0;i<size;i++){
    cout<<arr[i]<<" ";}   //displaying user given output
cout<<endl;
for (int x = 0; x<size; x++){//aarranging in ascending order
     for (int y = 0; y<size ; y++) { // nested loop
         if (arr[y] > arr[y + 1]) {
```

```
/tmp/lEX6XMGEVK.o
enter the size of your array: 10
enter the elements of the array: 9
enter the elements of the array: 28
enter the elements of the array: 17
enter the elements of the array: 5
enter the elements of the array: 3
enter the elements of the array: 10
enter the elements of the array: 21
enter the elements of the array: 0
enter the elements of the array: 7
enter the elements of the array: 18
array: 9 28 17 5 3 10 21 0 7 18
Arranging the array in ascending order:
0 3 5 7 9 10 17 18 21 28
```

TASK # 02 (CONTD)

```
15          if (arr[y] > arr[y + 1]) {
16              a = arr[y];
17              arr[y] = arr[y + 1];
18              arr[y + 1] = a; } } }
19  cout<<"Arranging the array in ascending order:"<<endl;
20  for (int i = 0; i < size; i++) {
21          cout << arr[i] << " ";}
22  cout<<endl;
23  cout<<"smallest element: "<<arr[0]<<endl;
24  cout<<"largest elemnt: "<<arr[size-1]<<endl;
25  return 0;}
26
```

Output

Clear

```
/tmp/lEX6XMGEVK.o
enter the size of your array: 10
enter the elements of the array: 9
enter the elements of the array: 28
enter the elements of the array: 17
enter the elements of the array: 5
enter the elements of the array: 3
enter the elements of the array: 10
enter the elements of the array: 21
enter the elements of the array: 0
enter the elements of the array: 7
enter the elements of the array: 18
array: 9 28 17 5 3 10 21 0 7 18
Arranging the array in ascending order:
0 3 5 7 9 10 17 18 21 28
smallest element: 0
largest elemnt: 28
```

TASK # 03

Develop a program that takes 5 array elements from user. Swap position [2] element with position [4] element.

main.cpp

Run

```cpp
#include <iostream>
using namespace std;
int main(){
    int size=5; int temp; //declaring variables
    int arr[5]={}; //declaring the array
for(int i=0;i<size;i++){ //creating array
   cout<<"enter the elements of the array: ";cin>>arr[i];}
cout<<"array: ";
for (int i=0;i<size;i++){
    cout<<arr[i]<<" ";}   //displaying user given output
cout<<endl;
    temp=arr[2];         //swapping elements
    arr[2]=arr[4];
    arr[4]=temp;
cout<<"the modified array is:"<<endl;
for (int i=0;i<size;i++){
    cout<<arr[i]<<" ";}
return 0;}
```

Output

Clear

```
/tmp/lEX6XMGEVK.o
enter the elements of the array: 1
enter the elements of the array: 2
enter the elements of the array: 3
enter the elements of the array: 4
enter the elements of the array: 5
array: 1 2 3 4 5
the modified array is:
1 2 5 4 3
```

THEORY

- The tasks performed above all exhibit the properties of an array.. An Array is a collection of data of the same data type, stored at a memory location. Arrays are used to store multiple values in a single variable, instead of declaring separate variables for each value.
- In the first task the required is to find the most repeated element in a given array. This task is accomplished by using three separate loops one of which is a nested loops and a if statement.
- The second tasks requires us to find the smallest and largest variable which is achieved by bubble sorting the array and then displaying the first and last elements of the sorted array on the screen.
- The objective of the final task is to swap the elements at position 2 and 4. this is done by introducing a temporary variable ‘temp’.