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ROLL NO – 2021334
C++ PRACTICAL ASSIGNMENT – 6 Jan 2022

1. **Write a program that creates and displays an array:**

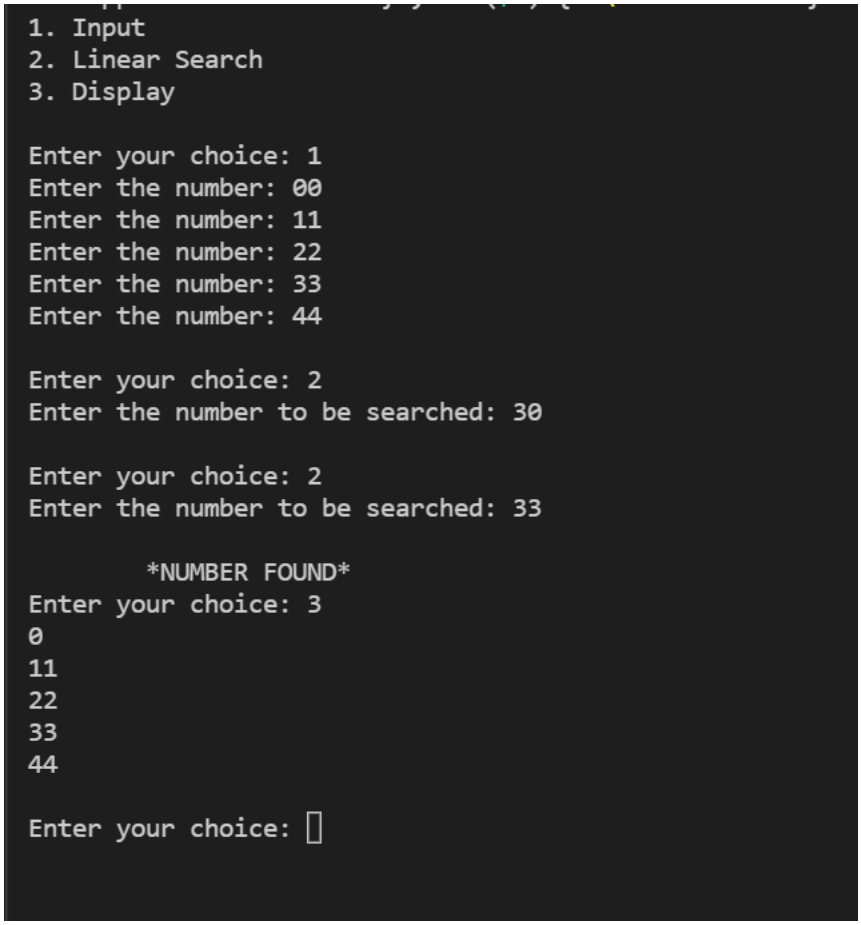
```
#include <iostream>
#include<iomanip>
using namespace std;

int main(){
    int size;
    cout<<setw(15)<< "__ CREATE & DISPLAY THE ARRAY __"<<endl<<endl;

//taking size of the 1D array
    cout<<"\t ENTER THE SIZE OF REQUIRED ARRAY : ";
    cin>>size;

//declare array
    int arrayNum[size];

//taking inputs for array
    cout<<"\t Now Enter "<<size<<" elements for the array"<<endl<<endl;

    for (int i=0; i<size; i++){
        cout<<"Enter the element : ";
        cin>>arrayNum[i]; }

//displaying array
    cout<<"\t ELEMENTS OF THE GIVEN ARRAY ARE : "<<endl<<endl;

    for (int i=0; i<size; i++)
        cout<<setw(4)<<arrayNum[i];
    return 0;
}
```

```
__ CREATE & DISPLAY THE ARRAY __

          ENTER THE SIZE OF REQUIRED ARRAY : 10

          Now Enter 10 elements for the array

Enter the element : 00
Enter the element : 11
Enter the element : 22
Enter the element : 33
Enter the element : 44
Enter the element : 55
Enter the element : 66
Enter the element : 77
Enter the element : 88
Enter the element : 99
          ELEMENTS OF THE GIVEN ARRAY ARE :

   0  11  22  33  44  55  66  77  88  99
```

2. **Write a program that performs linear search using arrays:**

```
include <iostream>
using namespace std;
void input(int a[],int n1);
void display(int a[],int n1);
void linearsearch(int a[],int n1)
{
 int i,x;
 cout<<"Enter the number to be searched: ";
 cin>>x;
 for(i=0;i<10;i++)
 {
 if(a[i]==x)
 {
 cout<<"\n\t*NUMBER FOUND*";
 break;
 }
 }
 if(i==x)
 cout<<"\t*ELEMENT NOT FOUND*";
}
int main()
{
 const int n=5;
 int arr[n];
 int x;
 char ch='y';
 cout<<"1. Input\n";
 cout<<"2. Linear Search"<<endl;
 cout<<"3. Display"<<endl;
 while(ch='y')
 {
```

```
 cout<<"\nEnter your choice: ";
 cin>>x;
 switch(x)
 {
 case 1: input(arr,n);
 break;
 case 2: linearsearch(arr,n);
 break;
 case 3: display(arr,n);
 break;
 }
 }
 cout<<"\nDo you want to continue(y/n)"<<endl;
 cin>>ch;
 return 0;
}
void input(int a[],int n)
{
 int i;
 for(i=0;i<n;i++)
 {
 cout<<"Enter the number: ";
 cin>>a[i];
 }
}
void display(int a[],int n)
{
 int i;
 for(i=0;i<n;i++)
 {
 cout<<a[i]<<endl;
 }
}
```



3. **Write a program that finds sum of odd and even numbers in an array:**

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

int main(){
//declaring variables
   int size;
   int totalSum=0;
   int sumEven=0;
   int sumOdd=0;

   cout<<setw(30)<<"** FIND THE SUM OF ARRAY ELEMENTS **"<<endl;
   cout<<endl;
//taking size of the 1D array
   cout<<"\t ENTER THE SIZE OF REQUIRED ARRAY : ";
   cin>>size;

   cout<<endl;

//declare array
   int arrayNum[size];

//taking inputs for array
   cout<<"\t Now Enter "<<size<<" elements for the array"<<endl;
```

```
    for (int i=0; i<size; i++){
       cout<<"Enter the element : ";
       cin>>arrayNum[i];
    }

  //total sum of elements of the array
    for (int i=0; i<size; i++){
       totalSum+=arrayNum[i];
    }
    cout<<endl<<"-> THE SUM OF ALL ELEMENTS : "<<totalSum<<endl;

  //sum of even & odd elements
    for (int i=0; i<size; i++){
       if (arrayNum[i]%2==0)    sumEven+=arrayNum[i];
       else          sumOdd+=arrayNum[i];
    }
    cout<<endl<<"-> THE SUM OF EVEN ELEMENTS : "<<sumEven;
    cout<<endl<<"-> THE SUM OF ODD ELEMENTS : "<<sumOdd;

    return 0;
  }
```

```
 .\SumOfElements }

** FIND THE SUM OF ARRAY ELEMENTS **

          ENTER THE SIZE OF REQUIRED ARRAY : 6

          Now Enter 6 elements for the array

Enter the element : 12
Enter the element : 13
Enter the element : 15
Enter the element : 7
Enter the element : 9
Enter the element : 10

-> THE SUM OF ALL ELEMENTS : 66

-> THE SUM OF EVEN ELEMENTS : 22
-> THE SUM OF ODD ELEMENTS : 44
```

4. **Write a program that finds the maximum and minimum elements from an array:**

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

int main(){
    int size;

    cout<<setw(15)<< "__ FINDING MINIMUM & MAXIMUM ELEMENTS FROM ARRAY __"<<endl<<endl;

//taking size of the 1D array
    cout<<"\t ENTER THE SIZE OF REQUIRED ARRAY : ";
    cin>>size;
```

```
//declare array
    int arrayNum[size];

//taking inputs for array
    cout<<"\t Now Enter "<<size<<" elements for the array"<<endl<<endl;

    for (int i=0; i<size; i++){
        cout<<"Enter the element : ";
        cin>>arrayNum[i];}

//displaying array
    cout<<endl<<"-> ELEMENTS OF THE GIVEN ARRAY ARE : "<<endl<<endl;
    for (int i=0; i<size; i++){
        cout<<setw(4)<<arrayNum[i];
    }
    cout<<endl;

//finding minimum and maximum
int min=arrayNum[0];
int max=arrayNum[0];

    for (int i=0; i<size;i++){
        if (arrayNum[i]>max)    max=arrayNum[i];
        if (min>arrayNum[i])    min=arrayNum[i];
    }

    cout<<endl<<"-> MAXIMUM ELEMENT OF ARRAY IS : "<<max;
    cout<<endl<<"-> MINIMUM ELEMENT OF ARRAY IS : "<<min;
    return 0;
}
```

```
__ FINDING MINIMUM & MAXIMUM ELEMENTS FROM ARRAY __
        ENTER THE SIZE OF REQUIRED ARRAY : 5

        Now Enter 5 elements for the array

Enter the element : 12
Enter the element : 14
Enter the element : 53
Enter the element : 2
Enter the element : 70

-> ELEMENTS OF THE GIVEN ARRAY ARE :

  12  14  53   2  70

-> MAXIMUM ELEMENT OF ARRAY IS : 70
-> MINIMUM ELEMENT OF ARRAY IS : 2
```

5. **WAP that reverses the elements from an array:**

```
#include <iostream>
#include <iomanip>
```

```cpp
using namespace std;

int main(){
int size;
    cout<<endl;
    cout<<setw(15)<< "__ CREATE & DISPLAY THE ARRAY __"<<endl<<endl;

//taking size of the 1D array
    cout<<"\t ENTER THE SIZE OF REQUIRED ARRAY : ";
    cin>>size;
    cout<<endl;

//declare array
    int arrayNum[size];
    int newArray[size];

//taking inputs for array
    cout<<"\t Now Enter "<<size<<" elements for the array"<<endl<<endl;

    for (int i=0; i<size; i++){
        cout<<"Enter the element : ";
        cin>>arrayNum[i];
    }

//displaying array
    cout<<endl<<"-> ELEMENTS OF THE GIVEN ARRAY ARE : ";
    for (int i=0; i<size; i++){
        cout<<setw(4)<<arrayNum[i];
    }

//reverse of the array
    for (int i=0; i<=size; i++) {
            newArray[i]=arrayNum[size-i];
        }

    cout<<endl<<endl<<" -> REVERSED ARRAY : ";
    for (int i=1; i<=size; i++)
          cout<<setw(5)<<newArray[i];
    cout<<endl<<endl<<endl;
 }
```

```
__ CREATE & DISPLAY THE ARRAY __

          ENTER THE SIZE OF REQUIRED ARRAY : 7

          Now Enter 7 elements for the array

Enter the element : 11
Enter the element : 22
Enter the element : 33
Enter the element : 44
Enter the element : 55
Enter the element : 66
Enter the element : 77

-> ELEMENTS OF THE GIVEN ARRAY ARE :   11  22  33  44  55  66  77

 -> REVERSED ARRAY :    77   66   55   44   33   22   11
```

6. **Write a program that removes the duplicate elements from the array :**

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

int main(){
int size;
    cout<<endl;
    cout<<setw(15)<< "__ CREATE & DISPLAY THE ARRAY __"<<endl<<endl;

//taking size of the 1D array
    cout<<"\t ENTER THE SIZE OF REQUIRED ARRAY : ";
    cin>>size;
    cout<<endl;

//declare array
    int arrayNum[size];

//taking inputs for array
    cout<<"\t Now Enter "<<size<<" elements for the array"<<endl<<endl;

    for (int i=0; i<size; i++){
        cout<<"Enter the element : ";
        cin>>arrayNum[i];
    }

//displaying array
    cout<<endl<<"-> ELEMENTS OF THE GIVEN ARRAY ARE : ";
    for (int i=0; i<size; i++){
        cout<<setw(4)<<arrayNum[i];
    }
    cout<<endl<<endl<< "__ DELETE DUPLICATE ELEMENTS FROM THE ARRAY __"<<endl;

//Delete duplicates from the array
    int duplicate=arrayNum[0];
```

```
    for (int i=0; i<=size; i++) {
        for(int j=i+1; j<size;){
            if(arrayNum[i]==arrayNum[j]) {
                for (int k=j; k<size-1; ++k) {
                    arrayNum[k]=arrayNum[k+1];
                    --size;
                } }
            else ++j;
        }
    }

    cout<<"-> NEW ARRAY : ";
    for (int i=0; i<size; ++i)
           cout<<setw(5)<<arrayNum[i];
    return 0;
}
```

```
__ CREATE & DISPLAY THE ARRAY __

         ENTER THE SIZE OF REQUIRED ARRAY : 5

         Now Enter 5 elements for the array

Enter the element : 1
Enter the element : 2
Enter the element : 33
Enter the element : 33
Enter the element : 4

-> ELEMENTS OF THE GIVEN ARRAY ARE :    1   2  33  33   4

__ DELETE DUPLICATE ELEMENTS FROM THE ARRAY __
-> NEW ARRAY :     1    2   33    4
```