DSA LAB

Q1. WAP to create an array that can store max. 50 integers and display the contents of the array.

```
#include <stdio.h>

void  main()
{
   int arr[50];
   int i,n;
   printf("Enter the number of elements in the array :\n");
   scanf("%d",&n);


   for(i=0; i<n; i++)
   {
            printf("integer at index   %d : ",i);
      scanf("%d", &arr[i]);
   }

   printf("\nElements in array are: ");
   for(i=0; i<n; i++)
   {
      printf("%d  ", arr[i]);
   }
   printf("\n");
}
```

```
Enter the number of elements in the array :
3
integer at index   0 : 1
integer at index   1 : 45
integer at index   2 : 67

Elements in array are: 1  45  67
PS C:\Users\KIIT\OneDrive\Desktop\DSA>
```

Q2. WAP to find out the sum of the numbers stored in an array of integers.

```
#include <stdio.h>

void main()
{
   int n, sum=0;
   printf("Enter the number of elements you want to input: ");
   scanf("%d",&n);

   int arr[n];
   for(int i=0; i<n; i++) {
      printf("Enter an integer for index %d: ", i);
      scanf("%d",&arr[i]);
   }
    printf("\n\nThe integers entered are: \n");

   for(int i=0; i<n; i++)
   {
      printf("%d\n",arr[i]);
      sum+=arr[i];
   }
   printf("\nSum of the elements is %d", sum);
}
```

```
Enter the number of elements you want to input: 3
Enter an integer for index 0: 56
Enter an integer for index 1: 76
Enter an integer for index 2: 89


The integers entered are:
56
76
89

Sum of the elements is 221
```

Q3. WAP to find largest and smallest element stored in an array.

```
#include<stdio.h>

int main()
{
int a[50],i,n,large,small;
printf("\nEnter the number of elements : ");
scanf("%d",&n);
printf("\nInput the array elements : ");
for(i=0;i<n;++i)
scanf("%d",&a[i]);

large=small=a[0];

for(i=1;i<n;++i)
{
if(a[i]>large)
large=a[i];

if(a[i]<small)
small=a[i];
}

printf("\nThe smallest element is %d\n",small);
printf("\nThe largest element is %d\n",large);

return 0;
}
```

```
Enter the number of elements : 4

Input the array elements : 12
34
56
79

The smallest element is 12

The largest element is 79
```

Q4. WAP to display the array elements in ascending order.

```
#include <stdio.h>
void main ()
{
  int num[20];
  int i, j, a, n;
  printf("enter number of elements in an array\n");
  scanf("%d", &n);
  printf("Enter the elements\n");

  for (i = 0; i < n; ++i)
    scanf("%d", &num[i]);

  for (i = 0; i < n; ++i)
  {
    for (j = i + 1; j < n; ++j)
    {
      if (num[i] > num[j])
      {
        a = num[i];
        num[i] = num[j];
        num[j] = a;
      }
    }
  }
  printf("The numbers in ascending order is:\n");
  for (i = 0; i < n; ++i)
  {
    printf("%d\n", num[i]);
  }
}
```

```
enter number of elements in an array
5
Enter the elements
98
78
65
43
56
The numbers in ascending order is:
43
56
65
78
98
```

Q5.WAP Input N element into an array.find out sum of all even number and multiply all odd no.

```
#include <stdio.h>
void main()
{
   int i,n,oddmultiplication=1,evenSum=0;
    printf("Enter the number of elements you want to input: ");
   scanf("%d",&n);

   int a[n];
   for(int i=0; i<n; i++) {
      printf("Enter an integer for index %d: ", i);
      scanf("%d",&a[i]);
   }


   printf("\n\nThe integers entered are: \n");

   for(i=0; i<n; i++)
   {
      if(a[i]%2==0)
      {
      evenSum=evenSum+a[i];
      }
   else{
         oddmultiplication=oddmultiplication*a[i];
      }
   }
   printf("The multiplication of all odd numbers are: %d",oddmultiplication);
   printf("\nThe sum of even numbers are: %d",evenSum);
}
```

```
Enter the number of elements you want to input: 5
Enter an integer for index 0: 2
Enter an integer for index 1: 3
Enter an integer for index 2: 4
Enter an integer for index 3: 5
Enter an integer for index 4: 6


The integers entered are:
The multiplication of all odd numbers are: 15
The sum of even numbers are: 12
```

Q6. WAP to search a particular number from the array.

```
#include <stdio.h>
int main()
{
   int a[100],i,n,k;

   printf("Enter number  of the element in   array : ");
   scanf("%d", &n);
   printf("Enter elements in array : ");
   for(i=0; i<n; i++)
   {
      scanf("%d",&a[i]);
   }
    printf("Enter the key : ");
   scanf("%d", &k);

   for(i=0; i<n; i++)
   {
      if(a[i]==k)
      {
                        printf("element found ");
         return 0;
      }

   }

        printf("element  not  found");
}
```

```
Enter number  of the element in   array : 3
Enter elements in array : 45
67
56
Enter the key : 56
element found
```

Q7.WAP to remove a specific element from the array.

```
#include<stdio.h>
void main()
{
   int key,n, i, index = -1;
   printf("Enter number of element in array:");
   scanf("%d",&n);
   int a[n];
    for(int i=0; i<n; i++)
    {
      printf("Enter an integer for index %d: ", i);
      scanf("%d",&a[i]);
   }
    printf("Enter element to delete\n");
   scanf("%d",&key);

   for(i = 0; i < n; i++)
   {
      if(a[i] == key)
      {
         index = i;
         break;
      }
   }
    if(index != -1)
   {

      for(i = index; i < n - 1; i++)
         a[i] = a[i+1];

      printf("New Array : ");
      for(i = 0; i < n - 1; i++)
         printf("%d ",a[i]);
   }
   else
      printf("Element Not Found\n");

}
```

OUTPUT

```
Enter number of element in array:4
Enter an integer for index 0: 4
Enter an integer for index 1: 5
Enter an integer for index 2: 6
Enter an integer for index 3: 7
Enter element to delete
5
New Array : 4 6 7
```

Q8.WAP to insert a new element in a specified position in the array.

```
#include<stdio.h>
int main()
{
   int n, i, pos, num;
   printf("Enter number of elements:");
   scanf("%d",&n);
   int a[n];
   printf("Enter integer numbers\n", (n));
   for(i = 0; i < (n); i++)
      scanf("%d", &a[i]);

   printf("Enter the position where new number has to be inserted\n");
   scanf("%d", &pos);

   if(pos < n)
   {
      printf("Enter a new number to be inserted at position %d\n", pos);
      scanf("%d", &num);
      for(i = n; i > pos; i--)
            a[i] = a[i - 1];

      a[pos] = num;

      printf("Array after inserting %d at position %d\n", num, pos);
      for(i = 0; i < n; i++)
         printf("%d\n", a[i]);
   }
   else
   {
      printf("cannot be inserted ");
   }

   printf("\n");

   return 0;
}
```

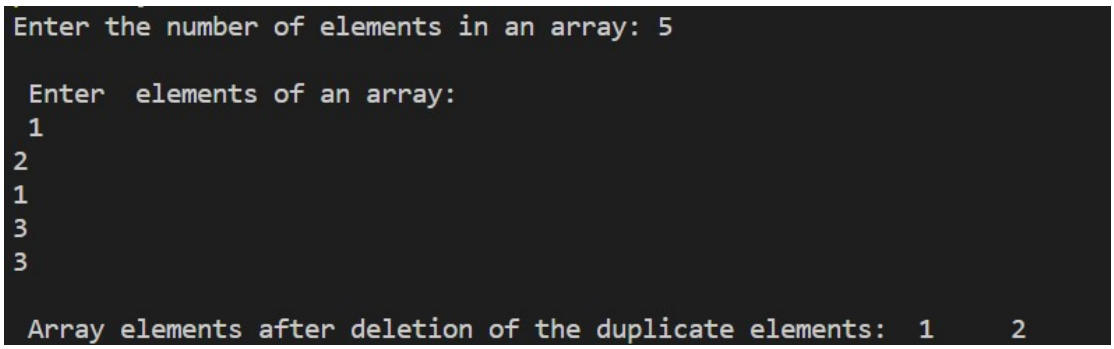
OUTPUT

```
Enter number of elements:3
Enter integer numbers
23
43
54
Enter the position where new number has to be inserted
2
Enter a new number to be inserted at position 2
12
Array after inserting 12 at position 2
23
43
12
```

Q9.WAP to remove duplicates from the Array.

```
#include <stdio.h>
int main ()
{
   int  i, j, k,n;
   printf ("Enter the number of elements in an array: ");
   scanf (" %d", &n);
   int a[n];
   printf (" \n Enter  elements of an array: \n ",n);
   for ( i = 0; i <n; i++)
   {
      scanf (" %d", &a[i]);
   }
   for ( i = 0; i <n; i ++)
   {
      for ( j = i + 1; j <n; j++)
      {
          if ( a[i] == a[j])
         {
            for ( k = j; k <- 1; k++)
            {
               a[k] = a [k + 1];
            }
            n--;
            j--;
         }
      }
   }
   printf (" \n Array elements after deletion of the duplicate elements: ");
   for ( i = 0; i <n; i++)
   {
      printf (" %d \t", a[i]);
   }
   return 0;
}
```

OUTPUT



Q10.WAP to store numbers into an array of n integers, where the array must contain some duplicates.

Find out the most repeating element in the array.

```
#include <stdio.h>

int main()
{
   int arr[] = {1, 2, 3, 4, 2, 7, 8, 8, 3};

   int length = sizeof(arr) / sizeof(arr[0]);

   printf("Duplicate elements in given array: \n");
   for (int i = 0; i < length; i++)
   {
      for (int j = i + 1; j < length; j++)
      {
         if (arr[i] == arr[j])
         {
            printf("%d\n", arr[j]);
         }
      }
   }
   return 0;
}
```

OUTPUT

```
Duplicate elements in given array:
2
3
8
```

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