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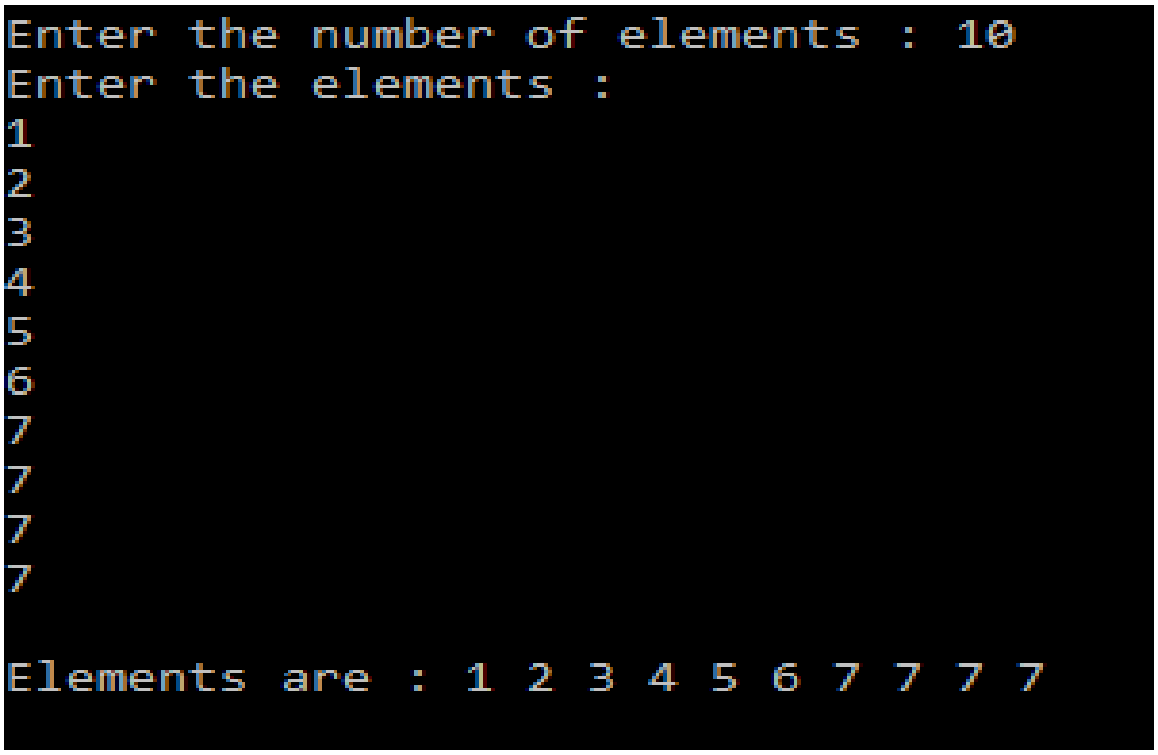
EXPERIMENT 2

Question 1 : Program to perform a traversal operation on 1D array.

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

   printf("Enter the number of elements : ");
   scanf("%d",&n);

   printf("Enter the elements : \n");
   for(i=0;i<n;i++)
   {
      scanf("%d",&arr[i]);
   }

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

}

OUTPUT


Enter the number of elements : 10
Enter the elements :
1
2
3
4
5
6
7
7
7
7
Elements are : 1 2 3 4 5 6 7 7 7 7

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Question 2 : Program to perform an insertion operation on a 1D array.

```
#include<stdio.h>

void main(){
   int arr[100],n;
   int i,temp,idx;

   printf("Enter the number of elements : ");
   scanf("%d",&n);
   printf("Enter the elements : \n");
   for(idx=0;idx<n;idx++)
      scanf("%d",&arr[idx]);

   printf("Enter the new element and its index : ");
   scanf("%d%d",&temp,&i);

   if(i>=n || i<0)
   {
      printf("\nInvalid Index\n");
      return;
   }
   for(idx=i;idx<=n;idx++)
   {
      int curr=arr[idx];
```

```
        arr[idx]=temp;
        temp=curr;
    }
    n++;

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

OUTPUT

```
Enter the number of elements : 10
Enter the elements :
0
1
2
3
4
5
6
8
9
10
Enter the new element and its index : 7
7

Elements are : 0 1 2 3 4 5 6 7 8 9 10
```

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Question 3 : Program to perform deletion operation in a 1D array.

```
#include<stdio.h>

void main() {
   int arr[100],n,i;
   printf("Enter the number of elements : ");
   scanf("%d",&n);
   printf("Enter the elements : \n");
   for(i=0;i<n;i++)
      scanf("%d",&arr[i]);

   int temp;
   printf("Enter the index : ");
   scanf("%d",&i);

   if(i>=n || i<0)
   {
      printf("\nInvalid Index\n");
      return;
   }

   arr[i]=arr[i+1];

   for(int idx=i+1;idx<n;idx++)
```

```
        arr[idx]=arr[idx+1];

    n--;

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

OUTPUT

```
Enter the number of elements : 10
Enter the elements :
10
20
30
40
50
60
70
80
90
100
Enter the index : 4

Elements are : 10 20 30 40 60 70 80 90 100
```

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Question 4 : Program find an element in a 1D array using Linear Search.

```
#include<stdio.h>

void main() {
   int arr[100],n,i;
   printf("Enter the number of elements : ");
   scanf("%d",&n);

   printf("Enter the elements : \n");
   for(i=0;i<n;i++)
   {
      scanf("%d",&arr[i]);
   }

   int ele,found=0;
   printf("\nEnter the element : ");
   scanf("%d",&ele);

   for(i=0;i<n;i++)
   {
      if(ele==arr[i])
      {
         found=1;
         break;
```

```
    }
  }

  if(found==1)
    printf("\nElement found at index : %d\n",i);
  else
    printf("\nElement not found\n");
}
```

OUTPUT

```
Enter the number of elements : 10
Enter the elements :
1
2
3
4
5
6
7
8
9
10

Enter the element : 7

Element found at index : 6
```

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Question 5 : Program to perform Matrix multiplication using 2D array.

```
#include<stdio.h>
void main() {
   int a[100][100],b[100][100],n1,m1,n2,m2;
   int c[100][100];

   printf("Enter number of rows and number of columns for 1st Matrix : ");
   scanf("%d%d",&n1,&m1);
   printf("\nEnter elements of 1st Matrix : \n");
   for(int i=0;i<n1;i++)
   {
      for(int j=0;j<m1;j++)
         scanf("%d",&a[i][j]);
   }

   printf("Enter number of rows and number of columns for 2nd Matrix : ");
   scanf("%d%d",&n2,&m2);
   printf("\nEnter elements of 2nd Matrix : \n");
   for(int i=0;i<n2;i++)
   {
      for(int j=0;j<m2;j++)
         scanf("%d",&b[i][j]);
   }

   if(m1==n2)
```

```
  {
    for(int i=0;i<n1;i++)
    {
      for(int k=0;k<m2;k++)
      {
        int sum=0;
        for(int j=0;j<m2;j++)
        {
          sum+=(a[i][j]*b[j][k]);
        }
        c[i][k]=sum;
      }
    }

    printf("\nResult Matrix : \n");
    for(int i=0;i<n1;i++)
    {
      for(int j=0;j<m2;j++)
      {
        printf("%d ",c[i][j]);
      }
      printf("\n");
    }
  }
  else
  {
    printf("\nMultiplication not possible as column number of 1st is not equal to row number of 2nd\n");
  }
}
```

OUTPUT

```
Enter number of rows and number of columns for 1st Matrix :
2
3

Enter elements of 1st Matrix :
1
1
1
2
2
2
Enter number of rows and number of columns for 2nd Matrix :
3
4

Enter elements of 2nd Matrix :
1
1
1
1
2
2
2
2
3
3
3
3

1st Matrix :
1       1       1
2       2       2

2nd Matrix :
1       1       1       1
2       2       2       2
3       3       3       3

Result Matrix :
6       6       6       6
12      12      12      12
```