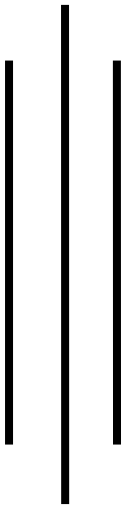
Tribhuvan University
Institute of Engineering
Purwanchal Campus
LAB Sheet



C Lab Report Submitted By:

Name: Sandip Sapkota

Roll No: PUR079BCT076

Submitted To:

Department of Electronics and Computer Engineering

Lab Date:2080/03/26

Submission Date:2080/04/19

Marks & Signature

LAB SHEET NO.7 [To be familiar with Array]

1. WAP to store 10 integer elements in an array and print it.

Code:

```
#include <stdio.h>

int main()
{
   int a[10],i;
   printf("Enter the 10 values to store in array:\n");
   for (i=0; i<10; i++){
      scanf("%d",&a[i]);
   }
   printf("The elements are \n");
   for (i=0; i<10; i++){
     printf("a[%d]=%d\n",i,a[i]);
   }
   return 0;
}
```

Output:

Enter the 10 values to store in array:
1 2 3 4 5 6 7 8 9 10
The elements are
a[0]=1
a[1]=2
a[2]=3
a[3]=4
a[4]=5
a[5]=6
a[6]=7
a[7]=8
a[8]=9
a[9]=10

2. WAP to calculate and print the sum and average of n elements of array.

Code:

```
#include <stdio.h>
int main()
{
   int a[100],i,n,sum=0, average;
   printf("How many values do you want to enter?\n");
   scanf("%d", &n);
   printf("Enter the %d elements\n ",n);
   for (i=0; i<n; i++){
      scanf("%d",&a[i]);
      sum = sum+ a[i];
   average= sum /n;
   }
   printf("The sum of array is %d\n",sum);
   printf("The average is %d\n",average);
   return 0;
}
```

Output:

```
How many values do you want to enter?
4
Enter the 4 elements
1
2
3
4
The sum of array is 10
The average is 2
```

3. WAP to sort n elements of array in descending order.

Code:

```
#include <stdio.h>
void input(int a[], int n){
   int i;
   printf("Enter the elements:");
   for(i=0; i<n;i++){

      scanf("%d", &a[i]);
   }
}
void display(int a[],int n){
   int i;
   printf("The elements in descending order  are:\n");
   for (i=0;i<n;i++){
      printf("a[%d]=%d\n",i,a[i]);
   }
}
void bubble_sort(int a[],int n){
   int i,j,temp;
   for(i=0;i<n-1;i++){
      for(j=i+1;j<n;j++){
         if(a[i]<a[j]){
            temp=a[i];
            a[i]=a[j];
            a[j]=temp;
         }

      }
   }
}
int main()
{
   int a[100],n;
   printf("How many elements do you want to enter");
   scanf("%d", &n);
   input(a,n);
   bubble_sort(a,n);
   display(a,n);
   return 0;
}
```

Output:

```
How many elements do you want to enter5
Enter the elements:1
4
7
8
3
The elements in descending order  are:
a[0]=8
a[1]=7
a[2]=4
a[3]=3
a[4]=1
```

4. WAP to count the frequency of the elements in an array.

Code:

```
#include <stdio.h>
int main()
{
int n;
printf("Enter the number of elements: ");
scanf("%d", &n);
int arr[n];
printf("Enter %d integers: ", n);
for (int i = 0; i < n; i++)
{
scanf("%d", &arr[i]);
}
int count = 0, num;
printf("Enter the number to count the frequency: ");
scanf("%d", &num);
for (int i = 0; i < n; i++)
{
if (arr[i] == num)
{
count++;
}
}
printf("The frequency of %d in the given array is %d\n", num, count);
return 0;
}
```

Output:

Enter the number of elements: 6
Enter 6 integers: 1 1 1 2 3 4
Enter the number to count the frequency: 1
The frequency of 1 in the given array is 3

5. WAP to pass 1D array to the minmax() function. The function should calculate the maximum and minimum among the elements of the array. Print the maximum and minimum in the main() function.

Code:

```
#include <stdio.h>
void minmax(int a[],int n,int *min,int *max){
    int i;
    *max,*min=a[0];
    for(i=0;i<n;i++){
        *max=(a[i]>*max)?a[i]:*max;
        *min=(a[i]<*min)?a[i]:*min;
    }
}
int main()
{
    int a[100],n,max=0,min=0,i;
     printf("How many elements do you want to enter?:\n");
    scanf("%d",&n);
    printf("Enter the elements:\n");
    for(i=0;i<n;i++)
    {
scanf("%d",&a[i]);
    }
minmax(a,n,&min,&max);
printf("Maxium number in array =%d\nMinimum number in array=%d",max,min);
    return 0;
}
```

Output:

```
How many elements do you want to enter?:
5
Enter the elements:
1
2
3
4
5
Maxium number in array =5
```

6. WAP to multiply matrix of different size if possible using 2D array.

Code:

```
#include <stdio.h>
   int main()
{
            int a[100][100],b[100][100],c[100][100],m,n,p,q,i,j,k;
   printf("Enter the order first of matrix:");
   scanf("%d %d",&m,&n);
   printf("Enter the order second of matrix:");
   scanf("%d %d",&p,&q);
   if(n!=p){
      printf("Matrix cannot not be mutlipled due to unequal order of matrix");

   }else{
printf("Enter the first matrix");
for(i=0;i<m;i++){
   for(j=0;j<n;j++){
      scanf("%d",&a[i][j]);
   }
}
printf("Enter the second matrix");
for(i=0;i<p;i++){
   for(j=0;j<q;j++){
      scanf("%d",&b[i][j]);
   }
}
for(i=0;i<m;i++){

   for(j=0;j<q;j++){
      c[i][j]=0;
      for(k=0;k<n;k++){
         c[i][j]=c[i][j]+a[i][k]*b[k][j];
      }
   }
}
printf("The results of matrix is \n");
for(i=0;i<m;i++){
   printf("|");
   for(j=0;j<q;j++){

      printf("%d\t",c[i][j]);
   }printf("|\n");

}

   }
   return 0;
}
```

Output:

```
Enter the numbers of elements in series
10
Enter the value of x
2
The sum of series is 6.388995
```

7. WAP to find the transpose of the matrix.

Code:

```
#include <stdio.h>
int main()
{
   int a[100][100],b[100][100],i,j,m,n;
   printf("Enter the order first of matrix:");
   scanf("%d %d",&m,&n);
 printf("Enter the first matrix");
for(i=0;i<m;i++){
   for(j=0;j<n;j++){
      scanf("%d",&a[i][j]);
   }
}

for(i=0;i<m;i++){
   for(j=0;j<n;j++){
      b[i][j]=a[j][i];
   }
}
printf("The transpose of given matrix is :\n");
for(i=0;i<m;i++){
   for(j=0;j<n;j++){
      printf("%d\t",b[i][j]);
   }
   printf("\n");
}


   return 0;
}
```

Output:

```
Enter the order first of matrix:2
2
Enter the first matrix1
2
3
4
The transpose of given matrix is :
1       3
2       4
```

8. WAP to find the sum of the rows and column of the matrix.

Code:

```
#include <stdio.h>
int main()
{
   int a[100][100], m, n, i, j,sumofrow,sumofcol;
   printf("Enter the order of the matrix:");
   scanf("%d%d", &m, &n);
   printf("Enter the matrix:");
   for (i = 0; i < m; i++)
   {
      for (j = 0; j < n; j++)
         scanf("%d", &a[i][j]);
   }
   for (i = 0; i < m; i++)
   {
      sumofrow=0;
      for (j = 0; j < n; j++)
       sumofrow=sumofrow+a[i][j];
       printf("Sum of elements in row %d=%d\n",i+1,sumofrow);
   }
for (j = 0; j < n; j++)
   {
      sumofcol=0;
 for (i = 0; i < m; i++)
       sumofcol=sumofcol+a[i][j];
       printf("Sum of elements in col %d=%d\n",j+1,sumofcol);
   }

   return 0;
}
```

Output:

```
Enter the order of the matrix:2
2
Enter the matrix:44
55
66
77
Sum of elements in row 1=99
Sum of elements in row 2=143
Sum of elements in col 1=110
Sum of elements in col 2=132
```