

## Lab 7

Objective(s) :

To understand programming using different dimensions of Array.

1. Write a program to enter 10 floating numbers in an array and display it.

```
/*Write a program to enter 10 floating numbers in an array and display it.*/
```

```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
int main()
{
    int i;
    float num[10];
    for (i=0;i<10;i++)

        {
            printf("\nEnter number for num[%d]:\t",i);

            scanf("%f",&num[i]);
            system("cls");
            for(i=0;i<10;i++)

                {
                    printf("\nElement on num[%d] = %f",i,num[i]);
                    getch();
                }
            return 0;
        }
}
```

2. Write a program to display largest and smallest element of an array defined in Q. No. 1.

```
/*Write a program to display largest and smallest element of an array defined in Q. No. 1.*/
```

```

#include<stdio.h>
#include<conio.h>
float large_ch(float,float);
float small_ch(float,float);
int main()
{
    float num[10];
    float ch;
    int i;
    for (i=0;i<10;i++)
    {
        printf("\nEnter number for
num[%d]:\t",i);
        scanf("%f",&num[i]);
    }
    ch=large_ch(num[0],num[1]);
    for(i=2;i<10;i++) {

        ch=large_ch(ch,num[i]);

    }
    printf("\nThe largest number = %f",ch);
    ch=0.0;
    ch=small_ch(num[0],num[1]);
    for(i=2;i<10;i++)
    {
        ch=small_ch(ch,num[i]);

    }
    printf("\nThe smallest number = %f",ch);
    getch();
    return 0;
}

```

```

float large_ch(float a,float b)

```

```

{
    if (a>b)
    {
        return a;
    }
    else
    {
        return b;
    }
}

```

```

float small_ch(float a,float b)
{
    if (a<b)
    {
        return a;
    }
    else
    {
        return b;
    }
}

```

3. Write a program to initialize one dimensional array of size 8 and display the sum and average of array elements.

/\*Write a program to initialize one dimensional array of size 8 and display the sum and average of array elements\*/

```

#include<stdio.h>
#include<conio.h>
int main()

```

```

{
    float num[8],s=0;
    int i;

    {for (i=0;i<8;i++) printf("\nEnter
        number for
num[%d]:\t",i);
        scanf("%f",&num[i]);
        s=s+num[i];
    }
    printf("\nThe sum of array elements = %f",s);
    printf("\nThe average of array elements =
%f",s/8);
    getch();
    return 0;

}

```

4. WAP to enter 5 elements and display them in ascending and descending order.

/\*WAP to enter 5 elements and display them in ascending and descending order.\*/

```

#include<stdio.h>
#include<conio.h>
void swap(int*,int*);
int main()
{
    int count,j,i;
    printf("How many numbers to be added in the
array:\t");
    scanf("%d",&count);
    int num[count];
    for (i=0;i<count;i++)
    {
        j=i;
        printf("\nEnter number for num[%d]:\t",j);

        scanf("%d",&num[j]);
    }
}

```

```

        if(j>0)
        {
            if(num[j]>num[j-1])
            {
                do
                {
                    swap(&num[j], &num[j-1]);
                    j=j-1;
                    if(j==0)
                        break;
                }while (num[j]>num[j-1]);
            }
        }
    }

    printf("\n\nIn descending order:");
    for (i=0;i<count;i++) {

        printf("  %d",num[i]);
    }
    printf("\n\nIn ascending
order:"); for (i=(count-
1);i>=0;i--) {
        printf("  %d",num[i]);
    }
    getch();
    return 0;
}

void swap(int *a,int *b)
{
    int c;
    c=*a;
    *a=*b;
    *b=c;
}

```

5. Write a program to read two matrices of order 3 \* 2, add them and display the resultant matrix in matrix form.

/\*Write a program to read two matrices of order 3 \* 2, add them and

display the resultant matrix in matrix form\*/

```
#include<stdio.h>
```

```
#include<conio.h>
```

```
int main()
```

```
{    int mat1[3][2],mat2[3][2];
```

```
    int i,j;
```

```
    printf("For matrix 1:\n");
```

```
    for (i=0;i<3;i++)
```

```
    {    printf("\nEnter the value of a%d1      a  
%d2:\t", (i+1), (i+1));
```

```
    }    scanf("%d %d",&mat1[i][0],&mat1[i][1]);
```

```
    printf ("\n\nFor matrix 2:\n");
```

```
    {    for (i=0;i<3;i++)
```

```
        printf("\nEnter the value of a%d1      a  
%d2:\t", (i+1), (i+1));
```

```
    }    scanf("%d %d",&mat2[i][0],&mat2[i][1]);
```

```
    printf("\n\nSum of two matrices:");
```

```
    {    for (i=0;i<3;i++)
```

```
        printf("\n%d          %d", (mat1[i][0]+mat2[i]  
[0]), (mat1[i][1]+mat2[i][1]));
```

```
    }
```

```
    getch();
```

```
    return 0;
```

```
}
```

6. Write a program to multiply two 3\*3 matrix.

```
/*Write a program to multiply two 3*3 matrix.*/
```

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int m1,m2,n1,n2,i,j,k;
    printf("Enter the dimension of first matrix
(m,n):\t");
    scanf("%d%d",&m1,&n1);
    int mat1[m1][n1];
    printf("\nEnter the dimension of second matrix
(m,n):\t");
    scanf("%d%d",&m2,&n2);
    int mat2[m2][n2];
    int prod[m1][n2];
    for(i=0;i<m1;i++)
    {
        for (j=0;j<n2;j++)
        {
            prod[i][j]=0;
        }
    }
    if (n1==m2 && (n1&& n2&&m1&&m2!=0))
    {
        printf("\n\nFor matrix
1:\n"); for (i=0;i<m1;i++)
        {
            for (j=0;j<n1;j++)
            {
                printf("\nEnter the value of a(%d,
%d):\t", (i+1), (j+1));
                scanf("%d",&mat1[i][j]);
            }
        }

        printf ("\n\nFor matrix 2:\n");
```

```

        for (i=0;i<m2;i++)
        {
            for (j=0;j<n2;j++)
            {
                printf("\nEnter the value of a(%d,
%d):\t", (i+1), (j+1));
                scanf("%d", &mat2[i][j]);
            }
        }

```

```

        for(i=0;i<m1;i++)
        {
            for(k=0;k<n2;k++)
            {
                for (j=0;j<m2;j++)
                {
                    prod[i][k]=prod[i][k]+(mat1[i]
[j]*mat2[j][k]);}
                }
            printf("\n\nProduct:\n");
            for(i=0;i<m1;i++)
            {
                for(k=0;k<n2;k++)
                {
                    printf("%d\t",prod[i][k]);
                }
                printf("\n");
            }

        }
        else
        {
            printf("\n\nInvalid dimension for
multiplication!!");
        }
        getch();
        return 0;
    }

```



7. WAP to find transpose of a 3\*3 matrix.

```
/*WAP to find transpose of a 3*3 matrix*/

#include<stdio.h>
#include<conio.h>
int main()
{
    int m,n,i,j;
    printf("Enter dimension of
matrix(m,n):\t"); scanf("%d%d",&m,&n);
    int mat[m][n];
    for (i=0;i<m;i++)
    {
        for (j=0;j<n;j++)
        {
            printf("\nEnter the value of a(%d,
%d):\t", (i+1), (j+1));
            scanf("%d",&mat[i][j]);
        }
    }
    printf("\n\nTranspose:\n");
    for(i=0;i<n;i++)
    {
        for(j=0;j<m;j++)
        {
            printf("%d\t",mat[j][i]);
        }

        printf("\n");
    }

    getch();
    return 0;
}
```