```c
/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q1.Write a program that will initialize an integer array and
display all its elements
**/
#include<stdio.h>

int main()
{
    int arr[5]={1,2,3,4,5},i;
    for(i=0;i<5;i++)
    {
        printf("%d,",arr[i]);
    }
    return 0;
}

/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q2.Write a program that will input n numbers and display the minimum.
**/
#include<stdio.h>

int main()
{
    int arr[10],i,n,l=0;
    printf("Enter how many numbers you are going to enter:\n");
    scanf("%d",&n);

    printf("Enter some numbers:\n");
    for (i=0;i<n;i++)
    {
        scanf("%d",&arr[i]);
    }
    for (i = 1; i < n; i++)
        if (arr[i] < arr[l])
        l = i;

    printf("The minimum is %d.\n", arr[l]);
    return 0;
}
/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q3.Write a program that will input n numbers and display the minimum and maximum.
**/
```

```c
#include<stdio.h>

int main()
{
    int arr[100];
    int i, max, min, n;

    printf("Enter size of the array: \n");
    scanf("%d", &n);

    printf("Enter elements in the array: \n");
    for(i=0; i<n; i++)
    {
        scanf("%d", &arr[i]);
    }
    // Assume first element as maximum and minimum
    max = arr[0];
    min = arr[0];

    for(i=1; i<n; i++)
    {
        // If current element is greater than max
        if(arr[i] > max)
        {
            max = arr[i];
        }
        // If current element is smaller than min
        if(arr[i] < min)
        {
            min = arr[i];
        }
    }
    printf("Maximum element = %d\n", max);
    printf("Minimum element = %d\n", min);
    return 0;
}
/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q4.Write a program that will input n numbers, calculate the sum of all even
numbers and all
odd numbers in the array and print the larger sum.
**/
#include<stdio.h>

int main()
```

```
{
    int n, i, a[10];
    int Even_Sum = 0, Odd_Sum = 0, max;

    printf("Enter the Size of an Array : \n");
    scanf("%d", &n);

    printf("Enter the Array Elements\n");
    for (i = 0; i < n; i++)
    {
        scanf("%d", &a[i]);
    }
    // taking initially maxmimum element is the initial value of array
    max = a[0];
    for (i = 0; i < n; i++)
    {
        // checking maximum element
        if (a[i] > max)
        {
            max = a[i];
        }
        // Checking even and odd eleemts and keep sum of those
        if (a[i] % 2 == 0)
        {
            Even_Sum = Even_Sum + a[i];
        }
        else
        {
            Odd_Sum = Odd_Sum + a[i];
        }
    }

    printf("The Sum of Even Numbers in this Array = %d \n", Even_Sum);
    printf("The Sum of Odd Numbers in this Array = %d \n", Odd_Sum);
    printf("The maximum number is : %d\n", max);
    return 0;
}

/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q5.Write a program to input n elements into an array and then copy the elements
to another
array after adding 1 to each of the elements.
**/
#include <stdio.h>
```

```c
int main()
{
    int a[10], b[10], i, n;
    char c;
    printf("Enter the number of element you want to enter in array 1:\n");
    scanf("%d", &n);
    printf("Enter the elements:\n");
    for (i = 0; i < n; i++)
    {
        scanf("%d", &a[i]);
    }
    for (i = 0; i < n; i++)
    {
        b[i] = a[i] + 1;
    }
    printf("The array 2 is: {");
    for (i = 0; i < n; i++)
    {
        printf("%d,", b[i]);
    }
    printf("}\n");
    return 0;
}

/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q6.Write a program to input an array of n elements and apply linear search
algorithm to
search an element. Print the position of the element if it is found, otherwise
display the
message the element not found.
**/
#include<stdio.h>

int main()
{
    int a[100],i,n,key;
    printf("Enter size of the array : \n");
    scanf("%d",&n);
    printf("Enter Elements in array : \n");
    for ( i = 0; i < n; i++)
    {
        scanf("%d",&a[i]);
    }
```

```c
    printf("Enter the element that to search! : \n");
    scanf("%d",&key);

    for ( i = 0; i < n; i++)
    {
        // Checking wheather the inputed number is in array or not
        if (a[i]==key)
        {
            printf("Element found at index %d\n",i);
        }
    }
    if (i=n)
    {
        printf("The element is not found\n");
    }

    return 0;
}

/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q7. Write a program to input an array of n elements and apply binary search
algorithm to
search an element. Print the position of the element if it is found, otherwise
display the
message the element not found.
**/
#include <stdio.h>

int main()
{
    int a[100], i, n, key, low, high, mid;
    printf("Enter size of the array : \n");
    scanf("%d", &n);

    printf("Enter Elements in array : \n");
    for (i = 0; i < n; i++)
    {
        scanf("%d", &a[i]);
    }
    printf("Enter the element that to search! : \n");
    scanf("%d", &key);
    low = 0;
    high = n - 1;
```

```c
    while (low <= high)
    {
        // Checking wheather the inputed number is in array or not
        mid = (low + high) / 2;
        if (a[mid] < key)
        {
            low = mid + 1;
        }
        else if (a[mid] > key)
        {
            high = mid - 1;
            mid = (low + high) / 2;
        }
        else
        {
            printf("The key is found at index %d\n", mid);
            break;
        }
    }
    if (i=n)
    {
        printf("The element is not found\n");
    }

    return 0;
}
/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q8.Write a program to insert an element at a certain position in an array of n
numbers after
taking suitable user inputs.
**/
#include<stdio.h>

int main()
{
    int a[100], i, n, key, pos;
    printf("Enter the number of elements in array : \n");
    scanf("%d", &n);

    printf("Enter Elements in array : \n");
    for (i = 0; i < n; i++)
    {
        scanf("%d", &a[i]);
    }
```

```
    printf("Enter the element that to insert! and \nthe index where u want to
insert that element: \n");
    scanf("%d%d",&key,&pos);

    i=n-1;
    while(i>=pos)
    {
        a[i+1]=a[i];
        i--;
    }
    a[pos]=key;
    n++;
    printf("Successfully Inserted!\nNow the array become {");
    for (i = 0; i < n; i++)
    {
        printf("%d,",a[i]);
    }
    printf("}\n");
    return 0;
}
/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q9.Write a program to delete an element from a certain position in an array of n
numbers
after taking suitable user inputs.
**/
#include<stdio.h>

int main()
{
    int a[100], i, n, key, pos;
    printf("Enter the number of elements in array : \n");
    scanf("%d", &n);

    printf("Enter Elements in array : \n");
    for (i = 0; i < n; i++)
    {
        scanf("%d", &a[i]);
    }
    printf("Enter the element that to delete! and \nthe index where the eleemnt
is present: \n");
    scanf("%d%d",&key,&pos);
    key=a[pos];
    i=pos;
    while(i<=n-1)
```

```
    {
        a[i]=a[i+1];
        i++;
    }
    n--;
    printf("Successfully Deleted!\nNow the array become {");
    for (i = 0; i < n; i++)
    {
        printf("%d,",a[i]);
    }
    printf("}\n");
    return 0;
}
/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q10.Write a program that will sort a list of numbers in ascending order by using
Selection sort
algorithm
**/
#include <stdio.h>

int main()
{
    int a[10], n, i, j, min, temp;
    printf("Enter the number of elements in array : \n");
    scanf("%d", &n);

    printf("Enter Elements in array : \n");
    for (i = 0; i < n; i++)
    {
        scanf("%d", &a[i]);
    }

    j = 0;
    while (j < n - 1)
    {
        min = j;
        i = j + 1;
        while (i < n)
        {
            if (a[i] < a[min])
            {
                min = i;
            }
            i++;
```

```
        }
        if (min != j)
        {
            temp = a[j];
            a[j] = a[min];
            a[min] = temp;
        }
        j++;
    }
    printf("After Sorting the array according to the ascending order\nNow the
array become : {");
    for (i = 0; i < n; i++)
    {
        printf("%d,", a[i]);
    }
    printf("}");

    return 0;
}
/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q11.Write a program that will read a 2D array and display it in matrix format.
**/
#include <stdio.h>

void main()
{
    int arr[10][10], i, j, nr, nc;
    printf("Enter number of rows and column:\n");
    scanf("%d%d", &nr, &nc);
    printf("Input elements in the matrix :\n");
    for (i = 0; i < nr; i++)
    {
        for (j = 0; j < nc; j++)
        {
            printf("element - [%d],[%d] : ", i, j);
            scanf("%d", &arr[i][j]);
        }
    }

    printf("\nThe matrix is : \n");
    for (i = 0; i < nr; i++)
    {
        for (j = 0; j < nc; j++)
        {
```

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

/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q12.Write a program to input two matrices and do the matrix addition after
checking suitable
condition.
**/
#include <stdio.h>

int main()
{
    int nr1, nr2, nc1, nc2, i, j, first[10][10], second[10][10], sum[10][10];

    printf("Enter the number of rows and columns of matrix 1:\n");
    scanf("%d%d", &nr1, &nc1);
    printf("Enter the number of rows and columns of matrix 2:\n");
    scanf("%d%d", &nr2, &nc2);

    if (nr1 != nr2 || nc1 != nc2)
    {
        printf("The Matrix addition is not possible !\nEnter valid input!!\n");
    }
    else
    {
        printf("Enter the elements of first matrix\n");
        for (i = 0; i < nr1; i++)
        {
            for (j = 0; j < nc1; j++)
            {
                printf("element - [%d],[%d] : ", i, j);
                scanf("%d", &first[i][j]);
            }
        }
        printf("Enter the elements of second matrix\n");
        for (i = 0; i < nr2; i++)
        {
            for (j = 0; j < nc2; j++)
            {
                printf("element - [%d],[%d] : ", i, j);
```

```
                scanf("%d", &second[i][j]);
            }
        }
        printf("Sum of entered matrices:-\n");

        for (i = 0; i < nr1; i++)
        {
            for (j = 0; j < nc1; j++)
            {
                sum[i][j] = first[i][j] + second[i][j];
                printf("%d\t", sum[i][j]);
            }
            printf("\n");
        }
    }
    return 0;
}
/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q13.Write a program to input two matrices and do the matrix multiplication after
checking
suitable condition.
**/
#include <stdio.h>

int main()
{
    int m1, m2, n1, n2, i, j, k, first[10][10], second[10][10], multiply[10][10];

    printf("Enter the number of rows and columns of matrix 1:\n");
    scanf("%d%d", &m1, &n1);
    printf("Enter the number of rows and columns of matrix 2:\n");
    scanf("%d%d", &m2, &n2);

    if (n1 != m2)
    {
        printf("The Matrix multiplication is not possible !\nEnter valid
input!!\n");
    }
    else
    {
        printf("Enter the elements of first matrix\n");
        for (i = 0; i < m1; i++)
        {
            for (j = 0; j < n1; j++)
```

```
            {
                printf("element - [%d],[%d] : ", i, j);
                scanf("%d", &first[i][j]);
            }
        }
        printf("Enter the elements of second matrix\n");
        for (i = 0; i < m2; i++)
        {
            for (j = 0; j < n2; j++)
            {
                printf("element - [%d],[%d] : ", i, j);
                scanf("%d", &second[i][j]);
            }
        }

        for (i = 0; i < m1; i++)
        {
            for (j = 0; j < n1; j++)
            {
                multiply[i][j] = 0;
                for (k = 0; k < m2; k++)
                {
                    multiply[i][j] = multiply[i][j] + first[i][k] * second[k][j];
                }
            }
        }

        printf("Multiplication of entered matrices:-\n");

        for (i = 0; i < m1; i++)
        {
            for (j = 0; j < n2; j++)
                printf("%d\t", multiply[i][j]);

            printf("\n");
        }
    }
    return 0;
}
/**
Name- PRIYANSHU MALLICK, Roll No- 13
Q14.Write a program to input a matrix and transpose it.
**/
#include <stdio.h>
int main()
```

```
{
    int arr[20][20], tr[20][20], i, j, m, n;
    printf("\nEnter the Number of Rows and Coloumns : \n");
    scanf("%d%d", &m, &n);

    for (i = 0; i < m; i++)
    {
        for (j = 0; j < n; j++)
        {
            printf("element - [%d],[%d] : ", i, j);
            scanf("%d", &arr[i][j]);
            tr[j][i] = arr[i][j];
        }
    }
    printf("The transpose of entered matrix is: \n");
    for (i = 0; i < n; i++)
    {
        printf("\n");
        for (j = 0; j < m; j++)
        {
            printf(" %d ", tr[i][j]);
        }
    }
    return 0;
}
```