1. Write a function to find the greatest number from the given array of any size. (TSRS)

```c
#include <stdio.h>
int greatestNumber(int[], int);
int main()
{
    int num[15], result, number;
    printf("Enter number of elements to store in array (Max 15 number) : ");
    scanf("%d", &number);
    result = greatestNumber(num, number);
    printf("The greatest number from the given array is %d", result);
    return 0;
}
// below function is for sorting elements of an array
int greatestNumber(int a[], int n)
{
    int i, j, temp;
    printf("Enter %d numbers : ", n);

    // Input from the user
    for (i = 0; i < n; i++)
        scanf("%d", &a[i]);

    for (i = 0; i < n - 1; i++)
    {
        for (j = i + 1; j < n; j++)
        {
            if (a[i] > a[j])
            {
                temp = a[j];
                a[j] = a[i];
                a[i] = temp;
            }
        }
    }
    temp = a[n-1];
    return(temp); // return greatest value in array
}
```

```
================================================================================
Output:
Enter number of elements to store in array (Max 15 number) : 15
Enter 15 numbers : 56 45 87 98 25 111 548 32 78 64 22 5 8 4 58
The greatest number from the given array is 548
```

2. Write a function to find the smallest number from the given array of any size. (TSRS)

```c
#include <stdio.h>
int smallestNumber(int[], int);
int main()
{
    int num[15], result, number;
    printf("Enter number of elements to store in array (Max 15 number) : ");
    scanf("%d", &number);
    result = smallestNumber(num, number);
    printf("The smallest number from the given array is %d", result);
    return 0;
}
// below function is for sorting elements of an array
int smallestNumber(int a[], int n)
{
    int i, j, temp;
```

```
    printf("Enter %d numbers : ", n);

    // Input from the user
    for (i = 0; i < n; i++)
        scanf("%d", &a[i]);

    for (i = 0; i < n - 1; i++)
    {
        for (j = i + 1; j < n; j++)
        {
            if (a[i] > a[j])
            {
                temp = a[j];
                a[j] = a[i];
                a[i] = temp;
            }
        }
    }
    temp = a[0];
    return(temp); // return smallest value in array
}
================================================================================
Output:
Enter number of elements to store in array (Max 15 number) : 6
Enter 6 numbers : 58 45 98 23 54 49
The smallest number from the given array is 23
```

3. Write a function to sort an array of any size. (TSRN)

```
#include <stdio.h>
void sortNumber(int[], int);
int main()
{
    int num[15], number;
    printf("Enter number of elements to store in array (Max 15 number) : ");
    scanf("%d", &number);
    sortNumber(num, number);

    return 0;
}
// below function is for sorting elements of an array
void sortNumber(int a[], int n)
{
    int i, j, temp;
    printf("Enter %d numbers : ", n);

    // Input from the user
    for (i = 0; i < n; i++)
        scanf("%d", &a[i]);

    printf("Sorted Array\n");

    for (i = 0; i < n - 1; i++)
    {
        for (j = i + 1; j < n; j++)
        {
            if (a[i] > a[j])
            {
                temp = a[j];
                a[j] = a[i];
                a[i] = temp;
            }
        }
    }
    for (i = 0; i < n; i++)
```

```
        printf("%d ", a[i]);
}
```

```
Output:
Enter 10 numbers : 98 45 62 77 21 95 8 65 76 105
Sorted Array
8 21 45 62 65 76 77 95 98 105
```

4. Write a function to rotate an array by n position in d direction. The d is an indicative value for left or right. (For example, if array of size 5 is [32, 29, 40, 12, 70]; n is 2 and d is left, then the resulting array after left rotation 2 times is [40, 12, 70, 32, 29])

```
#include <stdio.h>
void sortNumber(int[], int);
int main()
{
    int num[15], number;
    printf("Enter number of elements to store in array (Max 15 number) : ");
    scanf("%d", &number);
    sortNumber(num, number);
    return 0;
}

// below function is for sorting elements of an array
void sortNumber(int a[], int n)
{
    int i, j, temp, h;
    printf("Enter %d numbers : ", n);

    // Input from the user
    for (i = 0; i < n; i++)
        scanf("%d", &a[i]);

    printf("How much position to rotate : ");
    scanf("%d", &h);

    for (i = 0; i < h; i++)
    {
        temp = a[0];
        for (j = 0; j < n - 1; j++)
        {
            a[j] = a[j + 1];
        } // inner for loop end
         a[j] = temp;       // copy first value of array in last position of
array
    } // outer for loop end

    printf("Rotate an array by %d position\n", h);
    // below loop for print rotated values of array
    for (i = 0; i < n; i++)
        printf("%d ", a[i]);
} // function end
```

```
Output:
Enter number of elements to store in array (Max 15 number) : 8
Enter 8 numbers : 5 6 1 78 56 42 23 78
How much position to rotate : 3
Rotate an array by 3 position
78 56 42 23 78 5 6 1
```

5. Write a function to find the first occurrence of adjacent duplicate values in the array. Function has to return the value of the element.

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

```c
int firstOccurence(int[], int);
int main()
{
    int a[20], n, result;
    printf("Enter number of elements to store in array (Max 20 numbers): ");
    scanf("%d", &n);
    result = firstOccurence(a, n);
    printf("The first occurrence of adjacent duplicate values in the array is
%d", result);
    return 0;
}

int firstOccurence(int x[], int y)
{
    int i;
    printf("Enter %d numbers : ", y);
    for (i = 0; i < y; i++)
        scanf("%d", &x[i]);
    for (i = 0; i < y; i++)
    {
        if (x[i] == x[i + 1])
            return x[i];
    }
}
```

```
================================================================================
Output:
Enter number of elements to store in array (Max 20 numbers): 7
Enter 7 numbers : 2 5 10 15 15 22 16
The first occurrence of adjacent duplicate values in the array is 15
```

6. Write a function in C to read n number of values in an array and display it in reverse order.

```c
#include <stdio.h>
void reverseNumber(int[],int);
int main()
{
    int num[15], n;
    printf("Enter number of elements to store in array (Max 15 numbers) : ");
    scanf("%d", &n);
    reverseNumber(num, n);
    return 0;
}
//below function is to print array values in reverse order
void reverseNumber(int a[], int b)
{
    int i;
    printf("Enter %d numbers to store in array : ", b);
    for (i = 0; i < b; i++)
        scanf("%d", &a[i]);
    printf("Before reverse\n");
    for (i = 0; i < b; i++)
        printf("%d ", a[i]);
    printf("\nAfter reverse\n");
    for (i = b-1; i >= 0; i--)
        printf("%d ", a[i]);
}
```

```
================================================================================
Output:
Enter number of elements to store in array (Max 10 numbers) : 10
Enter 10 numbers to store in array : 25 65 44 89 7 6 58 56 47 54
Before reverse
25 65 44 89 7 6 58 56 47 54
After reverse
54 47 56 58 6 7 89 44 65 25
```

7. Write a function in C to count a total number of duplicate elements in an array.

```c
#include <stdio.h>
void duplicateElements(int[], int);
int main()
{
    int a[20], n;
    printf("Enter number of elements to store in array (max 20 numbers) : ");
    scanf("%d", &n);
    duplicateElements(a, n);
    return 0;
}

// below function is count a total number of duplicate elements in an array.
void duplicateElements(int a[], int b)
{
    int i, j, count = 0;
    printf("Enter %d numbers : ", b);
    for (i = 0; i < b; i++)
        scanf("%d", &a[i]);

    for (i = 0; i < b; i++)
    {
        for (j = i + 1; j < b; j++)
        {
            if (a[i] == a[j])
            {
                count++;
                break;
            }
        }
    }
      printf("Total Number of Duplicate Elements in this Array   =   %d ",
count);
}
```

```
Output:
Enter number of elements to store in array (max 20 numbers) : 10
Enter 10 numbers : 2 1 3 4 2 5 6 1 9 9
Total Number of Duplicate Elements in this Array  =  3
```

8. Write a function in C to print all unique elements in an array.

```c
#include <stdio.h>
void uniqueElement(int[], int);
int main()
{
    int a[15], n;
    printf("Enter number of elements to store in array : ");
    scanf("%d", &n);
    uniqueElement(a, n);
    return 0;
}

void uniqueElement(int num[], int a)
{
    int i, j, count;
    printf("Enter %d numbers : ", a);
    for (i = 0; i < a; i++)
        scanf("%d", &num[i]);
    printf("The unique elements found in the array are: ");
    for (i = 0; i < a; i++)
    {
        count = 0;
```

```
        for (j = 0; j < a; j++)
        {
            if (i == j)
                j++;

            if (num[i] == num[j])
            {
                count++;
                break;
            }
        }
        if (count == 0)
            printf("%d ", num[i]);
    }
}
```

```
Output:
Enter number of elements to store in array : 8
Enter 8 numbers : 7 5 3 9 5 1 7 2
The unique elements found in the array are: 3 9 1 2
```

9. Write a function in C to merge two arrays of the same size sorted in descending order.

```
#include <stdio.h>
void mergeArray(int[], int[], int[]);
int main()
{
    int x[10], y[10], z[20];
    mergeArray(x, y, z);
    return 0;
}

// function to merge two array
void mergeArray(int a[], int b[], int c[])
{
    int x, y, z, i, j, temp;
    printf("Enter number of elements to store in Array-1 : ");
    scanf("%d", &x);
    printf("Enter %d number to store in Array-1 : ", x);
    for (i = 0; i < x; i++)
        scanf("%d", &a[i]);
    // sort array a
    for (i = 0; i < x - 1; i++)
    {
        for (j = i + 1; j < x; j++)
        {
            if (a[i] < a[j])
            {
                temp = a[j];
                a[j] = a[i];
                a[i] = temp;
            }
        }
    }

    printf("Enter number of elements to store in Array-2 : ");
    scanf("%d", &y);
    printf("Enter %d number to store in Array-2 : ", y);
    for (i = 0; i < y; i++)
        scanf("%d", &b[i]);
    // sort array b
    for (i = 0; i < y - 1; i++)
    {
        for (j = i + 1; j < y; j++)
        {
```

```
            if (b[i] < b[j])
            {
                temp = b[j];
                b[j] = b[i];
                b[i] = temp;
            }
        }
    }

    z = x + y; // this statement for to run loop

    // below process is to merge two array values in 3rd array
    int p = 0, q = 0;
    for (i = 0; i < z; i++)
    {
        if (p >= x)
        {
            while (i < z)
            {
                c[i] = b[q];
                i++;
                q++;
                if (i == z)
                    break;
            }
        }
        else if (q >= y)
        {
            while (i < z)
            {
                c[i] = a[p];
                i++;
                p++;
                if (i == z)
                    break;
            }
        }
        else if (a[p] > b[q])
        {
            c[i] = a[p];
            p++;
        }
        else
        {
            c[i] = b[q];
            q++;
        }
    }

    // below loop print merged array
    printf("Merged array : ");
    for (j = 0; j < z; j++)
        printf("%d ", c[j]);
}
```

```
================================================================================
Output:
Enter number of elements to store in Array-1 : 6
Enter 6 number to store in Array-1 : 55 22 41 33 65 54
Enter number of elements to store in Array-2 : 7
Enter 7 number to store in Array-2 : 10 20 30 40 50 60 23
Merged array : 65 60 55 54 50 41 40 33 30 23 22 20 10
```

10. Write a function in C to count the frequency of each element of an array.

```c
#include <stdio.h>
void frequencyElement(int[], int[], int);
int main()
{
    int i, x, a[20], b[40];
    for (i = 0; i < 40; i++)
        b[i] = 0;

    printf("Enter number of array elements to store in array (Max 20 numbers)
: ");
    scanf("%d", &x);
    printf("Enter %d number (number will be less then 40) : ", x);
    for (i = 0; i < x; i++)
        scanf("%d", &a[i]);

    frequencyElement(a, b, x);

    return 0;
}

void frequencyElement(int x[], int y[], int n)
{
    int i, temp, count = 0;
    for (i = 0; i < n; i++)
    {
        temp = x[i];
        y[temp] = y[temp] + 1;
    }
    printf("The frequency of each element of an array are follows :\n");
    for (i = 0; i < 40; i++)
    {
        if (y[i] != 0)
        {
            count++;
            printf("%d ---> %d\n", i, y[i]);
            if (count == n)
                break;
        }
    }
}
```

==========

```
Output:
Enter number of array elements to store in array (Max 20 numbers) : 15
Enter 15 number (number will be less then 40) : 25 35 24 22 26 28 2 7 19 11
25 35 26 22 28
The frequency of each element of an array are follows :
2 ---> 1
7 ---> 1
11 ---> 1
19 ---> 1
22 ---> 2
24 ---> 1
25 ---> 2
26 ---> 2
28 ---> 2
35 ---> 2
```