Assignment 12

1. Find minimum and maximum number in array.

```c
#include <stdio.h>
#include <stdlib.h>
int minOfArray(int[], int);
int maxOfArray(int[], int);
void arrayInput(int[], int);

void main()
{
    int size;
    printf("Enter size of array : ");
    scanf("%d", &size);
    int *arr = (int *)malloc(sizeof(int) * size);
    arrayInput(arr, size);
    printf("\n%d : is minimum of given array.", minOfArray(arr, size));
    printf("\n%d : is maximum of given array.", maxOfArray(arr, size));

    free(arr);
}
void arrayInput(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
        printf("\n Enter %d element :", i + 1);
        scanf("%d", &(arr[i]));
    }
}

int minOfArray(int arr[], int size)
{
    int min = arr[0];
    for (int i = 1; i < size; i++)
    {
        if (arr[i] < min)
        {
            min = arr[i];
        }
    }
    return min;
}

int maxOfArray(int arr[], int size)
{
    int max = arr[0];
    for (int i = 1; i < size; i++)
    {
        if (arr[i] > max)
        {
            max = arr[i];
        }
```

```
    }
    return max;
}
```

Output:
PS C:\Code> & 'c:\Users\bhagv\.vscode\.....\TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'
Enter size of array : 5

Enter 1 element :1

Enter 2 element :2

Enter 3 element :3

Enter 4 element :7

Enter 5 element :5

1 : is minimum of given array.
7 : is maximum of given array.
PS C:\Code>

2. Search the given number in array.

```
#include <stdio.h>
#include <stdlib.h>
void arrayInput(int[], int);
// void searchInArray(int[], int, int);
int searchInArray(int[], int, int);
void main()
{
    int size, key;
    printf("Please enter the size of array : ");
    scanf("%d", &size);
    int *arr = (int *)malloc(sizeof(int) * size);
    arrayInput(arr, size);
    printf("\n Enter element to be searched: ");
    scanf("%d", &key);
    int x = searchInArray(arr, size, key);
    if (x >= 0)
    {
        printf("\n Key %d fount at index %d", key, x);
    }
    else
    {
        printf("\n Key %d not fount", key);
    }
    free(arr);
}
void arrayInput(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
```

```
        printf("\n Enter %d element :", i + 1);
        scanf("%d", &(arr[i]));
    }
}
int searchInArray(int arr[], int size, int key)
{
    int status = 0, i;
    for (i = 0; i < size; i++)
    {
        if (arr[i] == key)
        {
            return i;
        }
    }

    // printf("\n Key %d is not in array", key);
    return -1;
}
```

Output:

```
PS C:\Code>  & 'c:\Users\bhagv\.vscode\....\TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'
Please enter the size of array : 5

 Enter 1 element :18

 Enter 2 element :29

 Enter 3 element :234

 Enter 4 element :54

 Enter 5 element :23

 Enter element to be searched: 23

 Key 23 fount at index 4
PS C:\Code>
```

3. Find sum of all numbers.

```
#include <stdio.h>
#include <stdlib.h>
void arrayInput(int[], int);
int sumOfEle(int[], int);
void main()
{
    int size, key;
    printf("Please enter the size of array : ");
    scanf("%d", &size);
    int *arr = (int *)malloc(sizeof(int) * size);
    arrayInput(arr, size);
    printf("\n%d is sum of all elements in array.", sumOfEle(arr, size));

    free(arr);
}
```

```c
int sumOfEle(int arr[], int size)
{
    int sum = 0;
    for (int i = 0; i < size; i++)
    {
        sum += arr[i];
    }
    return sum;
}
void arrayInput(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
        printf("\n Enter %d element :", i + 1);
        scanf("%d", &(arr[i]));
    }
}
```

Output:

PS C:\Code> & 'c:\Users\bhagv\.vscode\.....\TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'
Please enter the size of array : 5

Enter 1 element :1

Enter 2 element :23

Enter 3 element :54

Enter 4 element :32

Enter 5 element :1

111 is sum of all elements in array.
PS C:\Code>

4. Find odd and even among the numbers.

```c
#include <stdio.h>
#include <stdlib.h>
void arrayInput(int[], int);
void evenNums(int[], int);
void oddNums(int[], int);
void main()
{
    int size, key;
    printf("Please enter the size of array : ");
    scanf("%d", &size);
    int *arr = (int *)malloc(sizeof(int) * size);
    arrayInput(arr, size);
    evenNums(arr, size);
    oddNums(arr, size);

    free(arr);
}
void arrayInput(int arr[], int size)
```

```
{
    for (int i = 0; i < size; i++)
    {
        printf("\n Enter %d element :", i + 1);
        scanf("%d", &(arr[i]));
    }
}
void evenNums(int arr[], int size)
{
    printf("\n Even Numbers from arrray are : ");
    for (int i = 0; i < size; i++)
    {
        if ((arr[i] % 2) == 0)
        {
            printf("\t%d", arr[i]);
        }
    }
}
void oddNums(int arr[], int size)
{
    printf("\n Odd Numbers from arrray are : ");
    for (int i = 0; i < size; i++)
    {
        if ((arr[i] % 2) != 0)
        {
            printf("\t%d", arr[i]);
        }
    }
}
```

Output:

```
PS C:\Code>  & 'c:\Users\bhagv\.vscode\.... \TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'
Please enter the size of array : 5

 Enter 1 element :1

 Enter 2 element :5

 Enter 3 element :4

 Enter 4 element :2

 Enter 5 element :8

 Even Numbers from arrray are :        4       2       8
 Odd Numbers from arrray are :  1       5
PS C:\Code>
```

5. Print alternate elements in array.

```c
#include <stdio.h>
#include <stdlib.h>
void arrayInput(int[], int);
void printAlternateArray(int[], int);
void main()
{
    int size;
    printf("Please enter the size of array : ");
    scanf("%d", &size);
    int *arr = (int *)malloc(sizeof(int) * size);
    arrayInput(arr, size);
    printAlternateArray(arr, size);

    free(arr);
}
void arrayInput(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
        printf("\n Enter %d element :", i + 1);
        scanf("%d", &(arr[i]));
    }
}
void printAlternateArray(int arr[], int size)
{
    for (int i = 0; i < size; i += 2)
    {
        printf("\t %d", arr[i]);
    }
}
```

Output:

```
PS C:\Code>  & 'c:\Users\bhagv\.vscode\.....\TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'
Please enter the size of array : 5

 Enter 1 element :9

 Enter 2 element :8

 Enter 3 element :7

 Enter 4 element :6

 Enter 5 element :5
        9       7       5
PS C:\Code>
```

6. Accept array and print only prime numbers of array.

```c
#include <stdio.h>
#include <stdlib.h>
void arrayInput(int[], int);
void printPrimeArray(int[], int);
int isPrime(int);
void main()
{
    int size;
    printf("Please enter the size of array : ");
    scanf("%d", &size);
    int *arr = (int *)malloc(sizeof(int) * size);
    arrayInput(arr, size);
    printPrimeArray(arr, size);
    free(arr);
}
void arrayInput(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
        printf("\n Enter %d element :", i + 1);
        scanf("%d", &(arr[i]));
    }
}
void printPrimeArray(int arr[], int size)
{
    printf("\nPrime Numbers from array are :");
    for (int i = 0; i < size; i++)
    {
        if (isPrime(arr[i]))
        {
            printf("\t %d", arr[i]);
        }
    }
}
int isPrime(int num)
{
    int i = 2, cnt = 0;
    while (i <= num / 2)
    {
        if (num % i == 0)
        {
            return 0;
        }
        i++;
    }
    return 1;
}
```

Output:

```
PS C:\Code>  & 'c:\Users\bhagv\.vscode\.....\TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'
Please enter the size of array : 5
```

Enter 1 element :21

Enter 2 element :34

Enter 3 element :54

Enter 4 element :67

Enter 5 element :89

Prime Numbers from array are : 67 89
PS C:\Code>

7. Take two array and add sum in third array
    a. Example-
    b. arr[5]= {1,2, 3, 4,5}
    c. brr[5]={10,20,30, 40, 50}
    d. crr[5]={11,22,33,44,55}

```c
#include <stdio.h>
#include <stdlib.h>
void arrayInput(int[], int);
// int sumOfEle(int[], int);
void sumOfArrays(int[], int[], int);
void printArray(int[], int);

void main()
{
    int size1, size2;
    printf("Please enter the size of array1 : ");
    scanf("%d", &size1);
    printf("Please enter the size of arra2 : ");
    scanf("%d", &size2);
    int *arr1 = (int *)malloc(sizeof(int) * size1);
    int *arr2 = (int *)malloc(sizeof(int) * size2);
    printf("\nEnter data for array 1 :");
    arrayInput(arr1, size1);
    printf("\nEnter data for array 2:");
    arrayInput(arr2, size2);
    printf("\nSum of both arrays is :");
    sumOfArrays(arr1, arr2, size1);
    free(arr1);
    free(arr2);
}
// int sumOfEle(int arr[], int size)
// {
//     int sum = 0;
//     for (int i = 0; i < size; i++)
//     {
//         sum += arr[i];
//     }
//     return sum;
// }
void arrayInput(int arr[], int size)
```

```
{
    for (int i = 0; i < size; i++)
    {
        printf("\nEnter %d element :", i + 1);
        scanf("%d", &(arr[i]));
    }
}
void sumOfArrays(int arr1[], int arr2[], int size)
{
    int sumArray[size];
    for (int i = 0; i < size; i++)
    {
        sumArray[i] = arr1[i] + arr2[i];
    }
    printArray(sumArray, size);
}
void printArray(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
        printf("\t %d", arr[i]);
    }
}
void sumOfSecondSmall(int arr1[], int arr2[])
{
    int size1 = ((sizeof(arr1)) / sizeof(arr1[0]));
    int size2 = ((sizeof(arr2)) / sizeof(arr2[0]));
    if (size1 > size2)
    {
        int sumOfArray[size1];
        for (int i = 0; i < size1; i++)
        {
        }
    }
    else
    {
        int sumOfArray[size2];
    }
}
```

Output:

PS C:\Code> & 'c:\Users\bhagv\.vscode\ \TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'
Please enter the size of array1 : 5
Please enter the size of arra2 : 5

Enter data for array 1 :
Enter 1 element :1

Enter 2 element :2

Enter 3 element :3

Enter 4 element :4

Enter 5 element :5

Enter data for array 2:
Enter 1 element :9

Enter 2 element :8

Enter 3 element :7

Enter 4 element :6

Enter 5 element :5

Sum of both arrays is : 10 10 10 10 10
PS C:\Code>

8. Merge two arrays

```c
#include <stdio.h>
#include <stdlib.h>
void arrayInput(int[], int);
void mergeArrays(int[], int[], int, int);
void printArray(int[], int);

void main()
{
    int size1, size2;
    printf("Please enter the size of array1 : ");
    scanf("%d", &size1);
    printf("Please enter the size of arra2 : ");
    scanf("%d", &size2);
    int *arr1 = (int *)malloc(sizeof(int) * size1);
    int *arr2 = (int *)malloc(sizeof(int) * size2);

    printf("\nEnter data for array 1 :");
    arrayInput(arr1, size1);
    printf("\nEnter data for array 2:");
    arrayInput(arr2, size2);
    printf("\n Merged arrays is :");
    mergeArrays(arr1, arr2, size1, size2);

    free(arr1);
    free(arr2);
}

void arrayInput(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
        printf("\nEnter %d element :", i + 1);
        scanf("%d", &(arr[i]));
    }
}

void mergeArrays(int arr1[], int arr2[], int s1, int s2)
```

```
{
    int newArray[s1 + s2];
    int j = 0, i;
    for (i = 0; i < s1; i++)
    {
        newArray[i] = arr1[i];
    }
    for (j = 0; j < s2; j++, i++)
    {
        newArray[i] = arr2[j];
    }
    // printf("\ni = %d", i);
    // printf("\nj = %d \n", j);
    printArray(newArray, (s1 + s2));
}

void printArray(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
        printf("\t %d", arr[i]);
    }
}
```

Output:

```
PS C:\Code>  & 'c:\Users\bhagv\.vscode\....\TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'
Please enter the size of array1 : 5
Please enter the size of arra2 : 3

Enter data for array 1 :
Enter 1 element :9

Enter 2 element :8

Enter 3 element :7

Enter 4 element :6

Enter 5 element :5

Enter data for array 2:
Enter 1 element :1

Enter 2 element :2

Enter 3 element :3

 Merged arrays is :     9      8      7      6      5      1      2      3
PS C:\Code>
```

9. Reverse the given array.

```c
#include <stdio.h>
#include <stdlib.h>
void arrayInput(int[], int);
void reverseArray(int[], int);
void printArray(int[], int);
void main()
{
    int size;
    printf("Please enter the size of array : ");
    scanf("%d", &size);
    int *arr = (int *)malloc(sizeof(int) * size);
    arrayInput(arr, size);
    reverseArray(arr, size);
    free(arr);
}
void arrayInput(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
        printf("\n Enter %d element :", i + 1);
        scanf("%d", &(arr[i]));
    }
}
void printArray(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
        printf("\t %d", arr[i]);
    }
}
void reverseArray(int arr[], int size)
{
    int temp;
    for (int i = 0; i < (size) / 2; i++)
    {
        temp = arr[i];
        arr[i] = arr[size - (i + 1)];
        arr[size - (i + 1)] = temp;
    }
    printf("\nAfter Rev array :");
    printArray(arr, size);
}
```

Output:

```
PS C:\Code>  & 'c:\Users\bhagv\.vscode\...\TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'
Please enter the size of array : 5
 Enter 1 element :1
 Enter 2 element :2
 Enter 3 element :3
 Enter 4 element :4
 Enter 5 element :6
After Rev array :       6       4       3       2       1
PS C:\Code>
```

10. Sort the array.

```c
#include <stdio.h>
#include <stdlib.h>
void arrayInput(int[], int);
void sortingArray(int[], int);
void printArray(int[], int);
void main()
{
    int size;
    printf("Please enter the size of array : ");
    scanf("%d", &size);
    int *arr = (int *)malloc(sizeof(int) * size);
    arrayInput(arr, size);
    sortingArray(arr, size);
    free(arr);
}
void arrayInput(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
        printf("\n Enter %d element :", i + 1);
        scanf("%d", &(arr[i]));
    }
}
void printArray(int arr[], int size)
{
    for (int i = 0; i < size; i++)
    {
        printf("\t %d", arr[i]);
    }
}

void sortingArray(int arr[], int size)
{
    printf("\n Original array : ");
    printArray(arr, size);
    int temp;
    for (int i = 0; i < size; i++)
    {
        for (int j = 0; j < size - 1 - i; j++)
        {
            if (arr[j] > arr[j + 1])
            {
                temp = arr[j];
                arr[j] = arr[j + 1];
                arr[j + 1] = temp;
            }
        }
    }
    printf("\n Sorted array : ");
    printArray(arr, size);
```

```
}
```

Output:

```
PS C:\Code>  & 'c:\Users\bhagv\.vscode\...\TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'
Please enter the size of array : 5

 Enter 1 element :7

 Enter 2 element :6

 Enter 3 element :2

 Enter 4 element :99

 Enter 5 element :13

 Original array :    7    6    2    99    13
 Sorted array :    2    6    7    13    99
PS C:\Code>
```