**Assignment 12**

1. Find minimum and maximum number in array.

#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>

1. 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>

1. 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);

}

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>

1. Find odd and even among the numbers.

#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>

1. Print alternate elements in array.

#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>

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

#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>

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

#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>

1. Merge two arrays

#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>

1. Reverse the given array.

#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>

1. Sort the array.

#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>