**Assignment 08**

Assignment 7 using functions

Q1: Find minimum and maximum number in array.

#include <stdio.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[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));

}

*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 : 8

Enter 1 element :1

Enter 2 element :2

Enter 3 element :3

Enter 4 element :4

Enter 5 element :5

Enter 6 element :6

Enter 7 element :7

Enter 8 element :8

1 : is minimum of given array.

8 : is maximum of given array.

PS C:\Code>

Q2: Search the given number in array.

#include <stdio.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[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);

    }

}

*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;

}

// void searchInArray(int arr[], int size, int key)

// {

//     int status = 0, i;

//     for (i = 0; i < size; i++)

//     {

//         if (arr[i] == key)

//         {

//             status = 1;

//             break;

//         }

//     }

//     if (status == 1)

//     {

//         printf("\n Key %d fount at index %d", key, i);

//     }

//     else

//     {

//         printf("\n Key %d is not in array", key);

//     }

// }

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 :12

Enter 2 element :23

Enter 3 element :33

Enter 4 element :43

Enter 5 element :67

Enter element to be searched: 33

Key 33 fount at index 2

PS C:\Code>

Q3: Find sum of all numbers.

#include <stdio.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[size];

    arrayInput(arr, size);

    printf("\n%d is sum of all elements in array.", sumOfEle(arr, size));

}

*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 : 10

Enter 1 element :1

Enter 2 element :2

Enter 3 element :3

Enter 4 element :4

Enter 5 element :5

Enter 6 element :6

Enter 7 element :7

Enter 8 element :8

Enter 9 element :9

Enter 10 element :9

54 is sum of all elements in array.

PS C:\Code>

Q4: Find odd and even among the numbers.

#include <stdio.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[size];

    arrayInput(arr, size);

    evenNums(arr, size);

    oddNums(arr, size);

}

*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 : 10

Enter 1 element :12

Enter 2 element :23

Enter 3 element :34

Enter 4 element :56

Enter 5 element :67

Enter 6 element :78

Enter 7 element :89

Enter 8 element :90

Enter 9 element :10

Enter 10 element :20

Even Numbers from arrray are : 12 34 56 78 90 10 20

Odd Numbers from arrray are : 23 67 89

PS C:\Code>

Q5: Print alternate elements in array.

#include <stdio.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[size];

    arrayInput(arr, size);

    printAlternateArray(arr, size);

}

*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 : 8

Enter 1 element :1

Enter 2 element :23

Enter 3 element :3

Enter 4 element :4

Enter 5 element :5

Enter 6 element :6

Enter 7 element :7

Enter 8 element :8

1 3 5 7

PS C:\Code>

Q6: Accept array and print only prime numbers of array.

#include <stdio.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[size];

    arrayInput(arr, size);

    printPrimeArray(arr, size);

}

*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\extensions\ms-vscode.cpptools-1.21.6-win32-x64\debugAdapters\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-omztdezg.uko' '--stdout=Microsoft-MIEngine-Out-1s13w5jh.is3' '--stderr=Microsoft-MIEngine-Error-34ldzqwo.11l' '--pid=Microsoft-MIEngine-Pid-xvx3jn5g.ylc' '--dbgExe=C:\TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'

Please enter the size of array : 10

Enter 1 element :1

Enter 2 element :2

Enter 3 element :3

Enter 4 element :4

Enter 5 element :5

Enter 6 element :6

Enter 7 element :7

Enter 8 element :8

Enter 9 element :9

Enter 10 element :13

Prime Numbers from array are : 1 2 3 5 7 13

PS C:\Code>

Q7: Take two array and add sum in third array

Example- arr[5]= {1,2, 3, 4,5} brr[5]={10,20,30, 40, 50} crr[5]={11,22,33,44,55}

#include <stdio.h>

*void* arrayInput(*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[size1], arr2[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);

}

*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]);

    }

}

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 :10

Enter 2 element :20

Enter 3 element :30

Enter 4 element :40

Enter 5 element :50

Sum of both arrays is : 11 22 33 44 55

PS C:\Code>

Q8: Merge two arrays.

#include <stdio.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[size1], arr2[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);

}

*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 : 5

Enter data for array 1 :

Enter 1 element :32

Enter 2 element :12

Enter 3 element :4

Enter 4 element :5

Enter 5 element :6

Enter data for array 2:

Enter 1 element :8

Enter 2 element :7

Enter 3 element :65

Enter 4 element :43

Enter 5 element :21

Merged arrays is : 32 12 4 5 6 8 7 65 43 21

PS C:\Code>

Q9: Reverse the given array

#include <stdio.h>

*void* arrayInput(*int*[], *int*);

*void* main()

{

*int* size;

    printf("Please enter the size of array : ");

    scanf("%d", &size);

*int* arr[size];

    arrayInput(arr, size);

    sortingArray(arr, size);

}

*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 :5

After Rev array : 5 4 3 2 1

PS C:\Code>

Q10: sort the array.

#include <stdio.h>

*void* arrayInput(*int*[], *int*);

*void* sortingArray(*int*[], *int*);

*void* main()

{

*int* size;

    printf("Please enter the size of array : ");

    scanf("%d", &size);

*int* arr[size];

    arrayInput(arr, size);

    sortingArray(arr, size);

}

*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 : 10

Enter 1 element :999

Enter 2 element :120

Enter 3 element :231

Enter 4 element :232

Enter 5 element :564

Enter 6 element :909

Enter 7 element :000

Enter 8 element :12

Enter 9 element :1

Enter 10 element :9

Original array : 999 120 231 232 564 909 0 12 1 9

Sorted array : 0 1 9 12 120 231 232 564 909 999

PS C:\Code>