Assignment 07 Arrays

Q1: Find minimum and maximum number in array.

```c
#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.

```c
#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.

```c
#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.

```c
#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.

```c
#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.

```c
#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}

```c
#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.

```c
#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));
}
```

```c
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

```c
#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.

```c
#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>