120CS0196

PROGRAMMING LABORATORY-5

CS1000

Assignment-5

Group-'P7' Section:'E'

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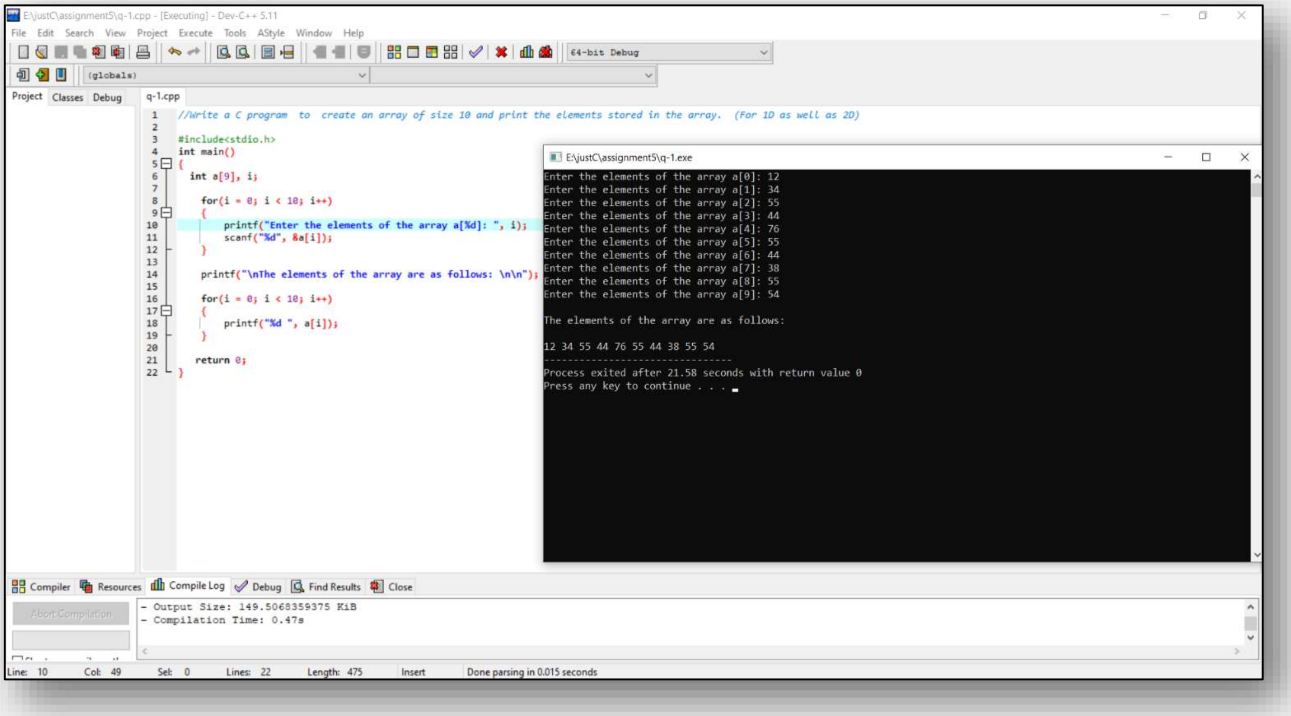
Codes are uploaded on my GitHub account :
https://github.com/prachi237/justC

Assignment-5

1 Write a C program to create an array of size 10 and print the elements stored in the array. (For 1D as well as 2D)

```
//Write a C program  to  create an array of size 10 and print the elements stored in the array.  (For 1D )

#include<stdio.h>
int main()
{
  int a[9], i;

    for(i = 0; i < 10; i++)
    {
        printf("Enter the elements of the array a[%d]: ", i);
        scanf("%d", &a[i]);
    }

    printf("\nThe elements of the array are as follows: \n\n");

    for(i = 0; i < 10; i++)
    {
        printf("%d ", a[i]);
    }
     return 0;
}
```



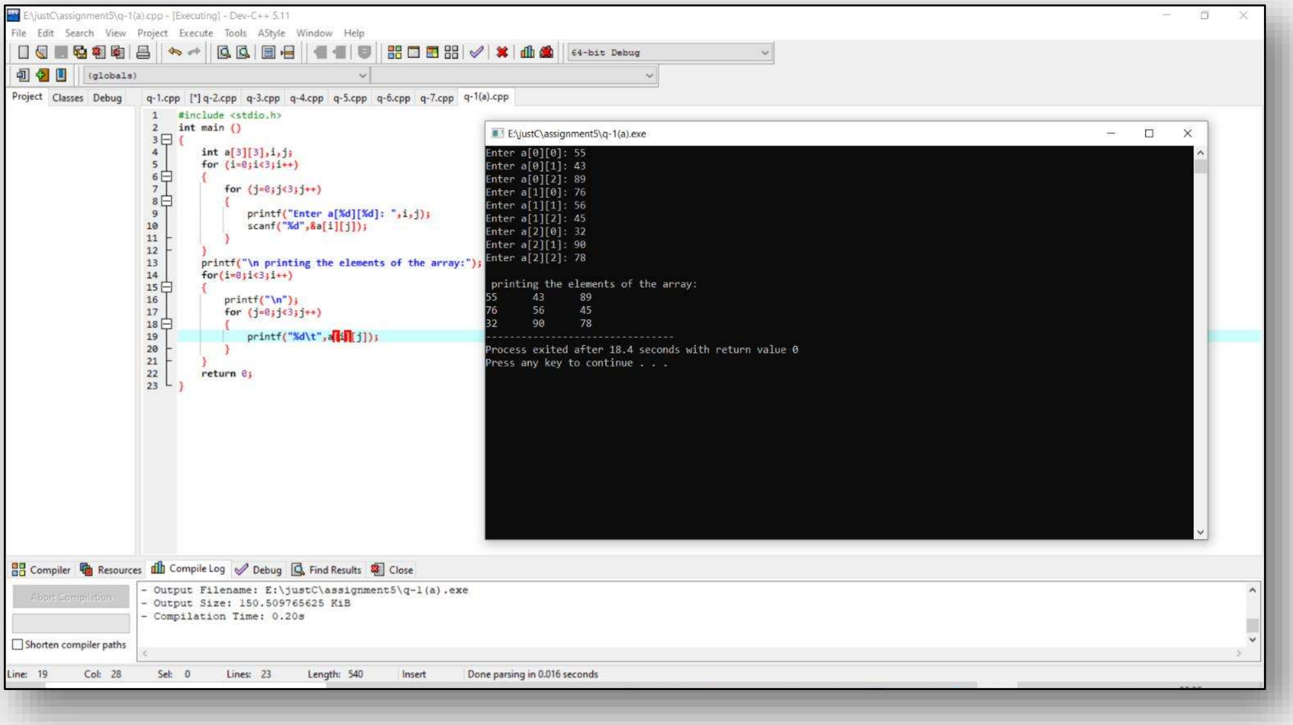
E:\justC\assignment5\q-1.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
64-bit Debug
(globals)
Project Classes Debug
q-1.cpp
E:\justC\assignment5\q-1.exe
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Line: 10 Col: 49 Sel: 0 Lines: 22 Length: 475 Insert Done parsing in 0.015 seconds

```c
//Write a C program  to  create an array of size 10 and print the elements stored in the array.  (For 1D as well as 2D)

#include<stdio.h>
int main()
{
  int a[9], i;

    for(i = 0; i < 10; i++)
    {
        printf("Enter the elements of the array a[%d]: ", i);
        scanf("%d", &a[i]);
    }

    printf("\nThe elements of the array are as follows: \n\n");

    for(i = 0; i < 10; i++)
    {
        printf("%d ", a[i]);
    }

   return 0;
}
```

```
Enter the elements of the array a[0]: 12
Enter the elements of the array a[1]: 34
Enter the elements of the array a[2]: 55
Enter the elements of the array a[3]: 44
Enter the elements of the array a[4]: 76
Enter the elements of the array a[5]: 55
Enter the elements of the array a[6]: 44
Enter the elements of the array a[7]: 38
Enter the elements of the array a[8]: 55
Enter the elements of the array a[9]: 54

The elements of the array are as follows:

12 34 55 44 76 55 44 38 55 54
--------------------------------
Process exited after 21.58 seconds with return value 0
Press any key to continue . . .
```

```
- Output Size: 149.5068359375 KiB
- Compilation Time: 0.47s
```

```c
//Write a C program  to  create an array of size 10 and print the elements stored in the array.  (For 2D)


#include <stdio.h>

int main ()

{

    int a[3][3],i,j;

    for (i=0;i<3;i++)

    {

        for (j=0;j<3;j++)

        {

            printf("Enter a[%d][%d]: ",i,j);

            scanf("%d",&a[i][j]);

        }

    }

    printf("\n printing the elements of the array:");

    for(i=0;i<3;i++)

    {
        printf("\n");
        for (j=0;j<3;j++)
        {
           printf("%d\t",a[i][j]);
        }
    }
          return 0;
}
```


E:\justC\assignment5\q-1(a).cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
64-bit Debug
(globals)
Project Classes Debug
q-1.cpp [*] q-2.cpp q-3.cpp q-4.cpp q-5.cpp q-6.cpp q-7.cpp q-1(a).cpp
E:\justC\assignment5\q-1(a).exe
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
□ Shorten compiler paths
Line: 19 Col: 28 Sel: 0 Lines: 23 Length: 540 Insert Done parsing in 0.016 seconds

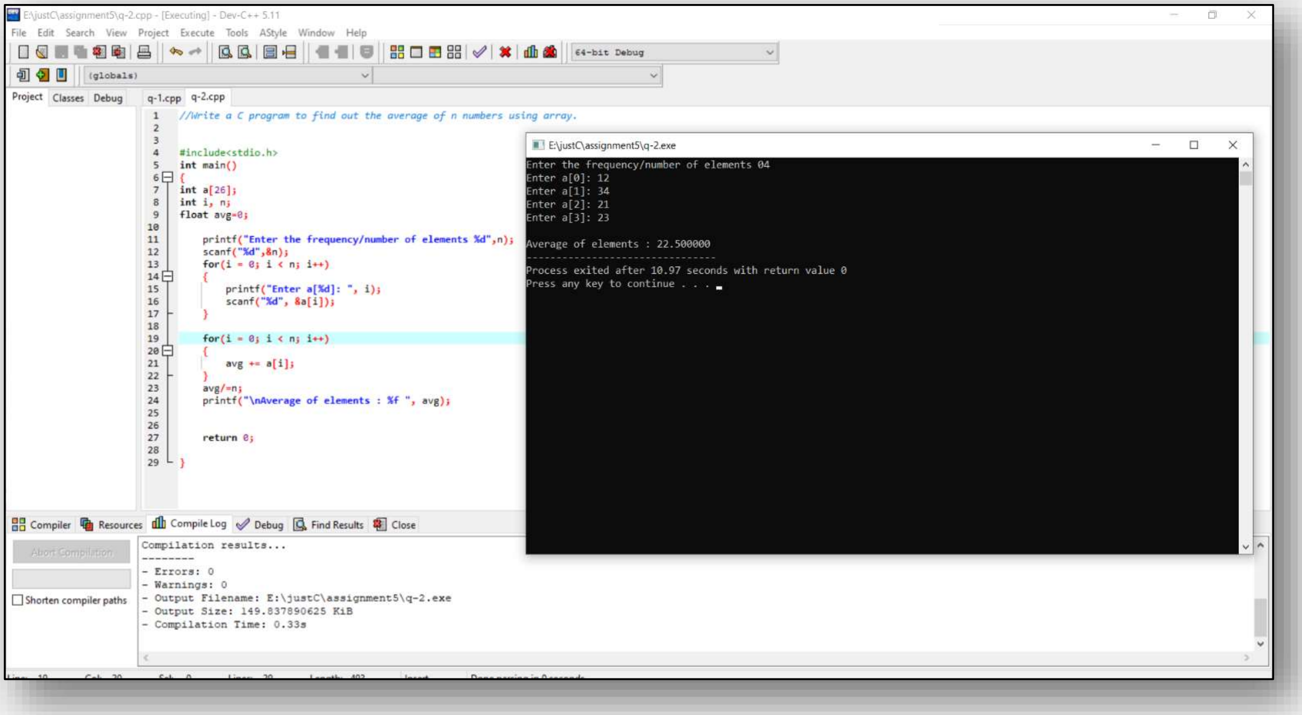
```
#include <stdio.h>
int main ()
{
    int a[3][3],i,j;
    for (i=0;i<3;i++)
    {
        for (j=0;j<3;j++)
        {
            printf("Enter a[%d][%d]: ",i,j);
            scanf("%d",&a[i][j]);
        }
    }
    printf("\n printing the elements of the array:");
    for(i=0;i<3;i++)
    {
        printf("\n");
        for (j=0;j<3;j++)
        {
            printf("%d\t",a[i][j]);
        }
    }
    return 0;
}
```

```
Enter a[0][0]: 55
Enter a[0][1]: 43
Enter a[0][2]: 89
Enter a[1][0]: 76
Enter a[1][1]: 56
Enter a[1][2]: 45
Enter a[2][0]: 32
Enter a[2][1]: 90
Enter a[2][2]: 78

 printing the elements of the array:
55      43      89
76      56      45
32      90      78
--------------------------------
Process exited after 18.4 seconds with return value 0
Press any key to continue . . .
```

```
- Output Filename: E:\justC\assignment5\q-1(a).exe
- Output Size: 150.509765625 KiB
- Compilation Time: 0.20s
```

2) Write a C program to find out the average of n numbers using array.

```
#include<stdio.h>
int main()
{
  int a[40];
   int i, n;
  float avg=0;
   printf("Enter the frequency/number of elements %d",n);
   scanf("%d",&n);
   for(i = 0; i < n; i++)
   {
       printf("Enter a[%d]: ", i);
       scanf("%d", &a[i]);
   }
  for(i = 0; i < n; i++)
   {
       avg += a[i];
   }
   avg/=n;
   printf("\nAverage of elements : %f ", avg);
return 0;
}
```



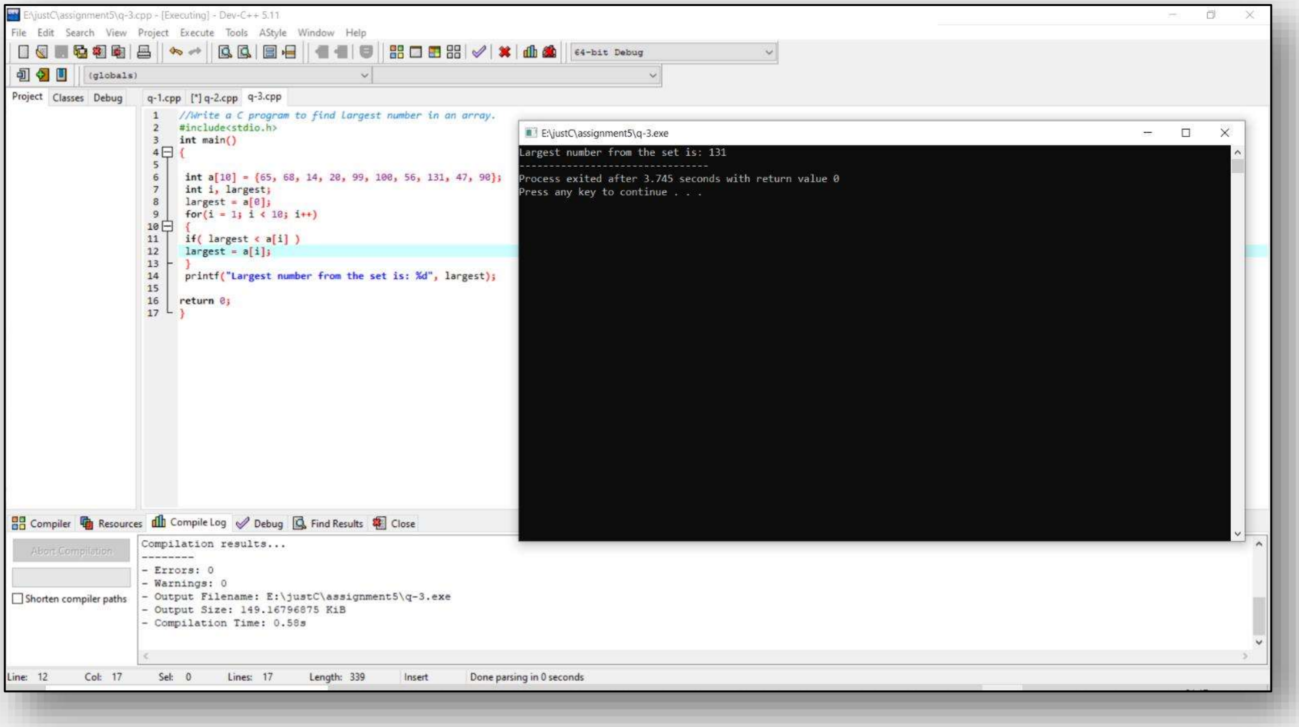
```
//Write a C program to find out the average of n numbers using array.


#include<stdio.h>
int main()
{
int a[26];
int i, n;
float avg=0;

    printf("Enter the frequency/number of elements %d",n);
    scanf("%d",&n);
    for(i = 0; i < n; i++)
    {
        printf("Enter a[%d]: ", i);
        scanf("%d", &a[i]);
    }

    for(i = 0; i < n; i++)
    {
        avg += a[i];
    }
    avg/=n;
    printf("\nAverage of elements : %f ", avg);


    return 0;

}
```

```
Enter the frequency/number of elements 04
Enter a[0]: 12
Enter a[1]: 34
Enter a[2]: 21
Enter a[3]: 23

Average of elements : 22.500000
--------------------------------
Process exited after 10.97 seconds with return value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: E:\justC\assignment5\q-2.exe
- Output Size: 149.837890625 KiB
- Compilation Time: 0.33s
```

3) Write a C program to find largest number in an array.

```c
#include <stdio.h>

int main()

{
 int a[10] = {65, 68, 14, 20, 99, 100, 56, 131, 47, 90};
 int i, largest;

 largest = a[0];

 for(i = 1; i < 10; i++)

{
   if( largest < a[i] )
   largest = a[i];
}

 printf("Largest number from the set is: %d", largest);


 return 0;

}
```


E:\justC\assignment5\q-3.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
64-bit Debug
(globals)
Project Classes Debug
q-1.cpp [*] q-2.cpp q-3.cpp
E:\justC\assignment5\q-3.exe
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Line: 12 Col: 17 Sel: 0 Lines: 17 Length: 339 Insert Done parsing in 0 seconds

```c
//Write a C program to find largest number in an array.
#include<stdio.h>
int main()
{

 int a[10] = {65, 68, 14, 20, 99, 100, 56, 131, 47, 90};
 int i, largest;
 largest = a[0];
 for(i = 1; i < 10; i++)
 {
 if( largest < a[i] )
 largest = a[i];
 }
 printf("Largest number from the set is: %d", largest);

return 0;
}
```

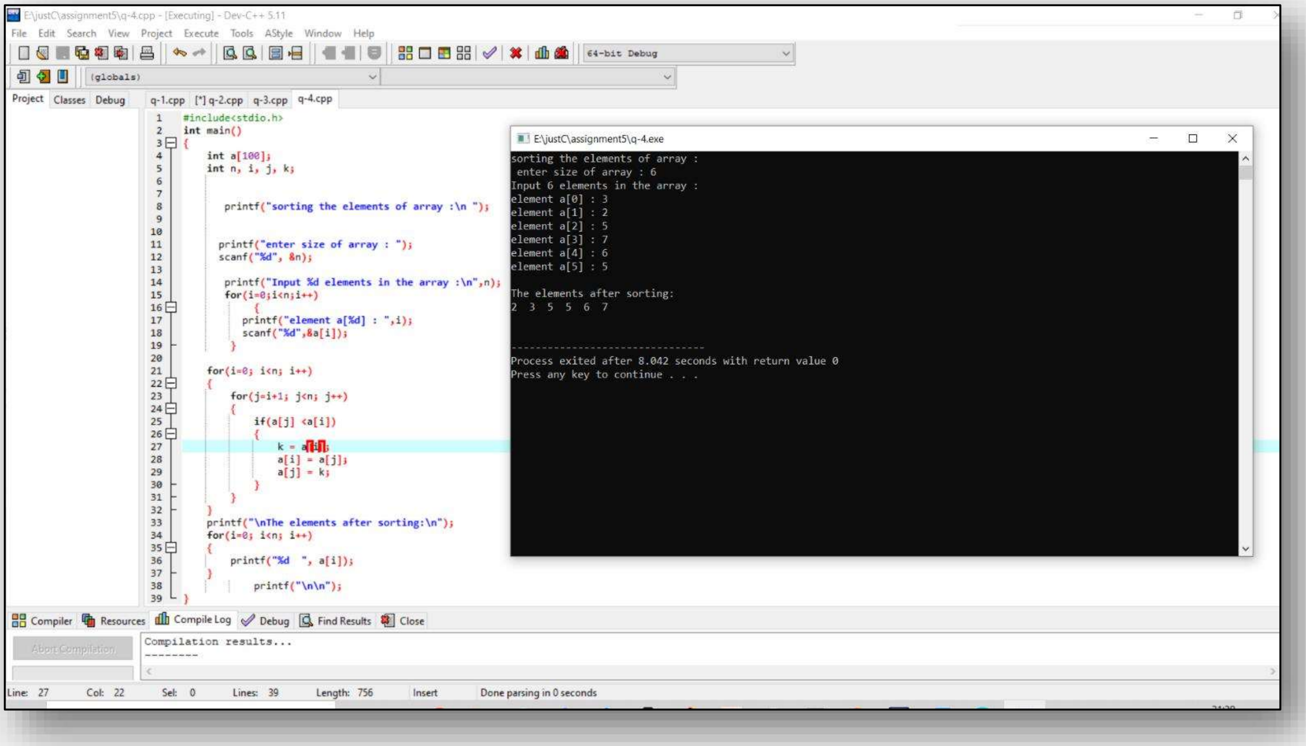
```
Largest number from the set is: 131
--------------------------------
Process exited after 3.745 seconds with return value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: E:\justC\assignment5\q-3.exe
- Output Size: 149.16796875 KiB
- Compilation Time: 0.58s
```

4) Write a C program to sort the elements of an array.

```
#include<stdio.h>
int main()
{
int a[100];
   int n, i, j, k;
    printf("sorting the elements of array :\n ");
    printf("enter size of array : ");
     scanf("%d", &n);
     printf("Input %d elements in the array :\n",n);
      for(i=0;i<n;i++)
         {
            printf("element a[%d] : ",i);
            scanf("%d",&a[i]);
          }

   for(i=0; i<n; i++)
   {
      for(j=i+1; j<n; j++)
      {
         if(a[j] <a[i])
         {
            k = a[i];
            a[i] = a[j];
            a[j] = k;
         }
      }
   }
   printf("\nThe elements after sorting:\n");
   for(i=0; i<n; i++)
   {
      printf("%d  ", a[i]);
   }
```

```
            printf("\n\n");
return 0;
}
```


E:\justC\assignment5\q-4.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
64-bit Debug
(globals)
Project Classes Debug
q-1.cpp [*] q-2.cpp q-3.cpp q-4.cpp
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Line: 27 Col: 22 Sel: 0 Lines: 39 Length: 756 Insert Done parsing in 0 seconds
E:\justC\assignment5\q-4.exe

```
#include<stdio.h>
int main()
{
    int a[100];
    int n, i, j, k;


     printf("sorting the elements of array :\n ");


    printf("enter size of array : ");
    scanf("%d", &n);

     printf("Input %d elements in the array :\n",n);
     for(i=0;i<n;i++)
        {
        printf("element a[%d] : ",i);
        scanf("%d",&a[i]);
        }

    for(i=0; i<n; i++)
    {
        for(j=i+1; j<n; j++)
        {
            if(a[j] <a[i])
            {
                k = a[i];
                a[i] = a[j];
                a[j] = k;
            }
        }
    }
    printf("\nThe elements after sorting:\n");
    for(i=0; i<n; i++)
    {
        printf("%d  ", a[i]);
    }
            printf("\n\n");
}
```

```
Compilation results...
--------
```

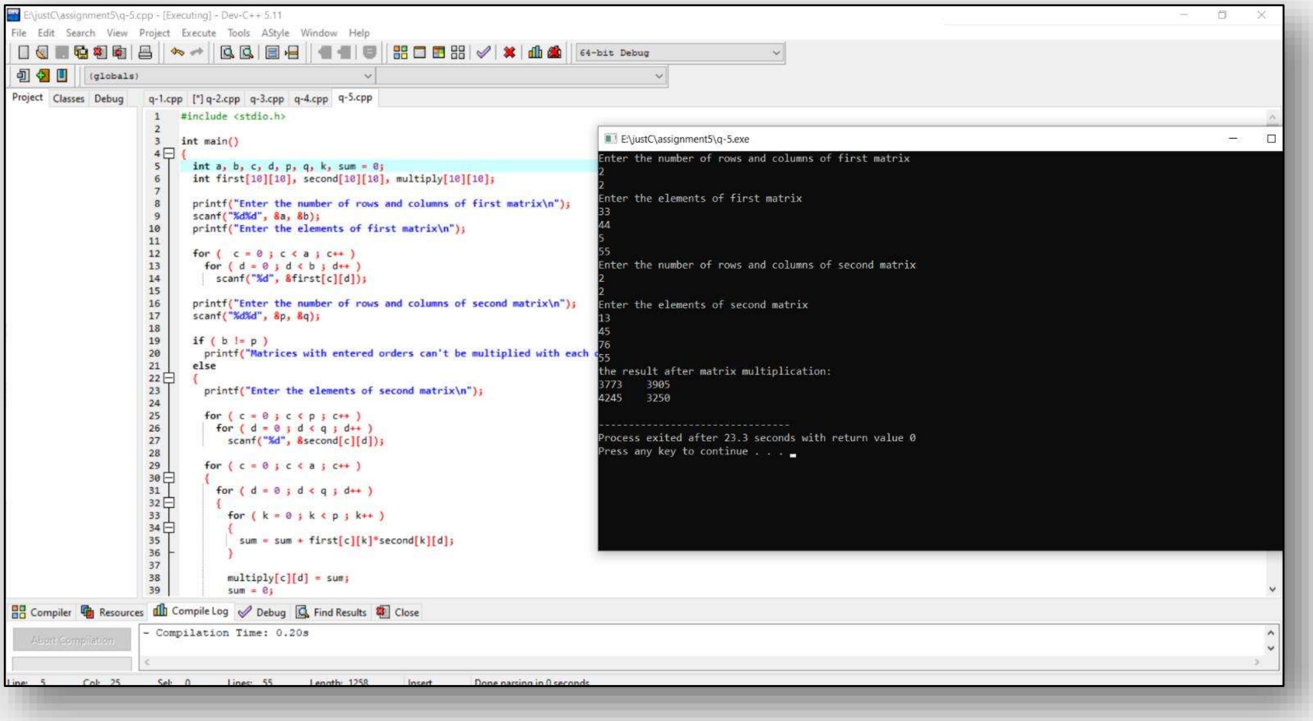
```
sorting the elements of array :
 enter size of array : 6
Input 6 elements in the array :
element a[0] : 3
element a[1] : 2
element a[2] : 5
element a[3] : 7
element a[4] : 6
element a[5] : 5

The elements after sorting:
2  3  5  5  6  7


--------------------------------
Process exited after 8.042 seconds with return value 0
Press any key to continue . . .
```

5) Write a C program to perform Matrix multiplication on two 2-D arrays.

```
#include <stdio.h>

int main()

{

  int a, b, c, d, p, q, k, sum = 0;

  int first[10][10], second[10][10], multiply[10][10];


  printf("Enter the number of rows and columns of first matrix\n");

  scanf("%d%d", &a, &b);

  printf("Enter the elements of first matrix\n");


  for (  c = 0 ; c < a ; c++ )

    for ( d = 0 ; d < b ; d++ )

      scanf("%d", &first[c][d]);
```

```
printf("Enter the number of rows and columns of second matrix\n");
scanf("%d%d", &p, &q);

if ( b != p )
  printf("Matrices with entered orders can't be multiplied with each other.\n");
else
{
  printf("Enter the elements of second matrix\n");

  for ( c = 0 ; c < p ; c++ )
    for ( d = 0 ; d < q ; d++ )
      scanf("%d", &second[c][d]);

  for ( c = 0 ; c < a ; c++ )
  {
    for ( d = 0 ; d < q ; d++ )
    {
      for ( k = 0 ; k < p ; k++ )
      {
        sum = sum + first[c][k]*second[k][d];
      }

      multiply[c][d] = sum;
      sum = 0;
    }
  }

  printf("the result after matrix multiplication:\n");

  for ( c = 0 ; c < a ; c++ )
```

```
    {
      for ( d = 0 ; d < q ; d++ )
        printf("%d\t", multiply[c][d]);


      printf("\n");
    }
  }
  return 0;
}
```



E:\justC\assignment5\q-5.cpp - [Executing] - Dev-C++ 5.11

```
#include <stdio.h>

int main()
{
  int a, b, c, d, p, q, k, sum = 0;
  int first[10][10], second[10][10], multiply[10][10];

  printf("Enter the number of rows and columns of first matrix\n");
  scanf("%d%d", &a, &b);
  printf("Enter the elements of first matrix\n");

  for (  c = 0 ; c < a ; c++ )
    for ( d = 0 ; d < b ; d++ )
      scanf("%d", &first[c][d]);

  printf("Enter the number of rows and columns of second matrix\n");
  scanf("%d%d", &p, &q);

  if ( b != p )
    printf("Matrices with entered orders can't be multiplied with each o
  else
  {
    printf("Enter the elements of second matrix\n");

    for ( c = 0 ; c < p ; c++ )
      for ( d = 0 ; d < q ; d++ )
        scanf("%d", &second[c][d]);

    for ( c = 0 ; c < a ; c++ )
    {
      for ( d = 0 ; d < q ; d++ )
      {
        for ( k = 0 ; k < p ; k++ )
        {
          sum = sum + first[c][k]*second[k][d];
        }

        multiply[c][d] = sum;
        sum = 0;
```

E:\justC\assignment5\q-5.exe

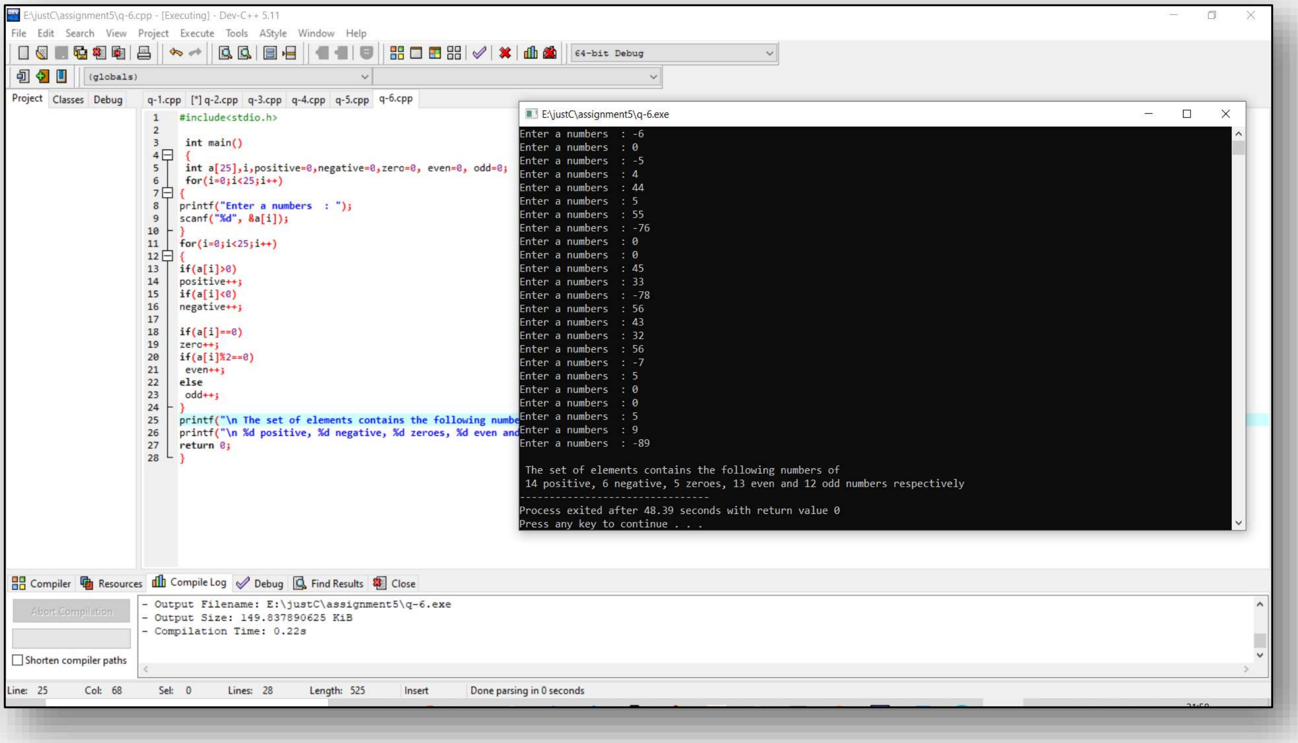
```
Enter the number of rows and columns of first matrix
2
2
Enter the elements of first matrix
33
44
5
55
Enter the number of rows and columns of second matrix
2
2
Enter the elements of second matrix
13
45
76
55
the result after matrix multiplication:
3773    3905
4245    3250

--------------------------------
Process exited after 23.3 seconds with return value 0
Press any key to continue . . .
```

```
- Compilation Time: 0.20s
```

Line: 5   Col: 25   Sel: 0   Lines: 55   Length: 1258   Insert   Done parsing in 0 seconds

6) Twenty-five numbers are entered from the keyboard into an array. Write a c program to find out how many of them are positive, how many are negative, how many are even and how many are odd.

```
#include<stdio.h>
 int main()
 {
 int a[25],i,positive=0,negative=0,zero=0, even=0, odd=0;
 for(i=0;i<25;i++)
{
printf("Enter a numbers  : ");
scanf("%d", &a[i]);
}
for(i=0;i<25;i++)
{
if(a[i]>0)
positive++;
if(a[i]<0)
negative++;

if(a[i]==0)
zero++;
if(a[i]%2==0)
 even++;
else
 odd++;
}
printf("\n The set of elements contains the following numbers of");
printf("\n %d positive, %d negative, %d zeroes, %d even and %d odd numbers respectively"
,positive,negative,zero, even, odd);
return 0;

}
```



E:\justC\assignment5\q-6.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
64-bit Debug
(globals)
Project Classes Debug
q-1.cpp [*] q-2.cpp q-3.cpp q-4.cpp q-5.cpp q-6.cpp
E:\justC\assignment5\q-6.exe
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Line: 25 Col: 68 Sel: 0 Lines: 28 Length: 525 Insert Done parsing in 0 seconds

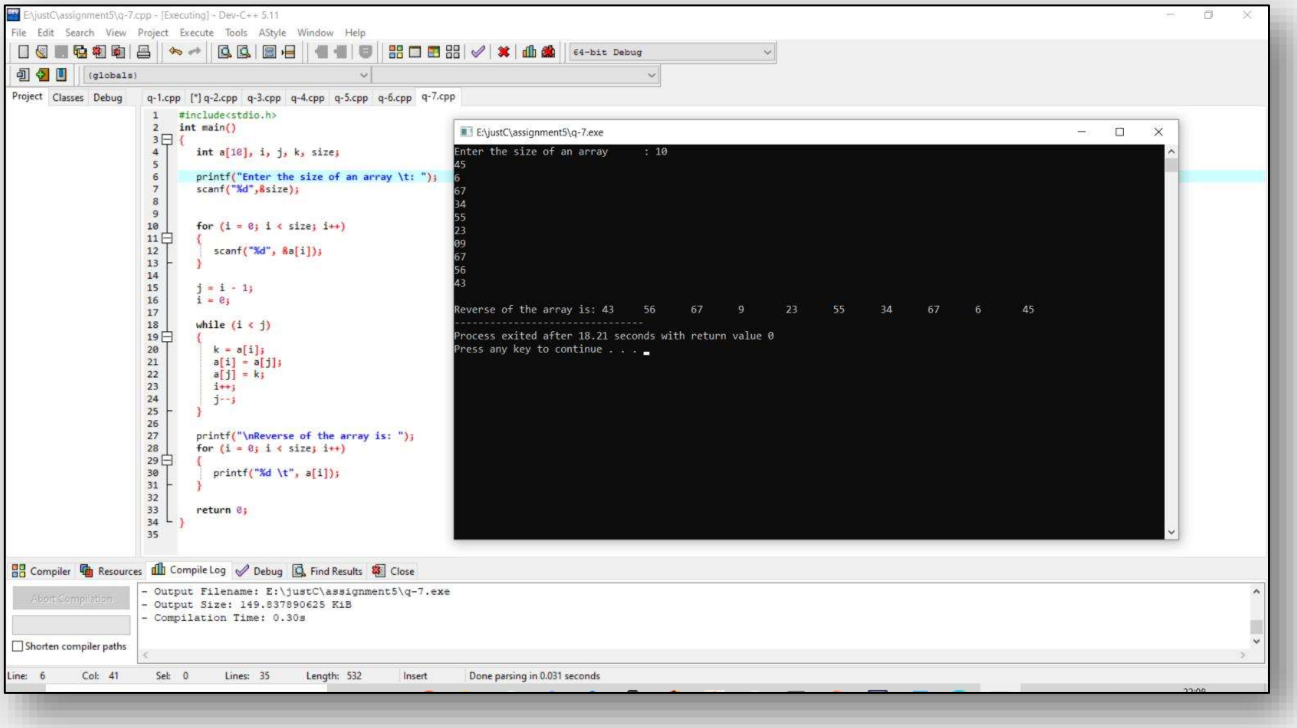
```
#include<stdio.h>

 int main()
 {
 int a[25],i,positive=0,negative=0,zero=0, even=0, odd=0;
 for(i=0;i<25;i++)
{
printf("Enter a numbers  : ");
scanf("%d", &a[i]);
}
for(i=0;i<25;i++)
{
if(a[i]>0)
positive++;
if(a[i]<0)
negative++;

if(a[i]==0)
zero++;
if(a[i]%2==0)
 even++;
else
 odd++;
}
printf("\n The set of elements contains the following numbe
printf("\n %d positive, %d negative, %d zeroes, %d even and
return 0;
}
```

```
Enter a numbers  : -6
Enter a numbers  : 0
Enter a numbers  : -5
Enter a numbers  : 4
Enter a numbers  : 44
Enter a numbers  : 5
Enter a numbers  : 55
Enter a numbers  : -76
Enter a numbers  : 0
Enter a numbers  : 0
Enter a numbers  : 45
Enter a numbers  : 33
Enter a numbers  : -78
Enter a numbers  : 56
Enter a numbers  : 43
Enter a numbers  : 32
Enter a numbers  : 56
Enter a numbers  : -7
Enter a numbers  : 5
Enter a numbers  : 0
Enter a numbers  : 0
Enter a numbers  : 5
Enter a numbers  : 9
Enter a numbers  : -89

 The set of elements contains the following numbers of
 14 positive, 6 negative, 5 zeroes, 13 even and 12 odd numbers respectively
--------------------------------
Process exited after 48.39 seconds with return value 0
Press any key to continue . . .
```

```
- Output Filename: E:\justC\assignment5\q-6.exe
- Output Size: 149.837890625 KiB
- Compilation Time: 0.22s
```

7) Write a program to reverse the sequence of elements of a 1D array(size 10).

```
#include<stdio.h>

int main()

{

   int a[10], i, j, k, size;

  printf("Enter the size of an array \t: ");

   scanf("%d",&size);

  for (i = 0; i < size; i++)

   {

      scanf("%d", &a[i]);

   }


   j = i - 1;
  i = 0;


  while (i < j)
  {
    k = a[i];
    a[i] = a[j];
    a[j] = k;
    i++;
    j--;
  }
  printf("\nReverse of the array is: ");
  for (i = 0; i < size; i++)
  {
    printf("%d \t", a[i]);
  }
return 0;
}
```


E:\justC\assignment5\q-7.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
64-bit Debug
(globals)
Project Classes Debug
q-1.cpp [*] q-2.cpp q-3.cpp q-4.cpp q-5.cpp q-6.cpp q-7.cpp
E:\justC\assignment5\q-7.exe
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
□ Shorten compiler paths

```
#include<stdio.h>
int main()
{
   int a[10], i, j, k, size;

   printf("Enter the size of an array \t: ");
   scanf("%d",&size);


   for (i = 0; i < size; i++)
   {
      scanf("%d", &a[i]);
   }

   j = i - 1;
   i = 0;

   while (i < j)
   {
      k = a[i];
      a[i] = a[j];
      a[j] = k;
      i++;
      j--;
   }

   printf("\nReverse of the array is: ");
   for (i = 0; i < size; i++)
   {
      printf("%d \t", a[i]);
   }

   return 0;
}
```

```
Enter the size of an array      : 10
45
6
67
34
55
23
09
67
56
43

Reverse of the array is: 43     56      67      9       23      55      34      67      6       45
--------------------------------
Process exited after 18.21 seconds with return value 0
Press any key to continue . . .
```

```
- Output Filename: E:\justC\assignment5\q-7.exe
- Output Size: 149.837890625 KiB
- Compilation Time: 0.30s
```

Line: 6   Col: 41   Sel: 0   Lines: 35   Length: 532   Insert   Done parsing in 0.031 seconds

Codes are uploaded on my GitHub account :
https://github.com/prachi237/justC

Submitted by: Prachi Nandi 120CS0196

THANK YOU