



Assignment For CT-2

Submitted by :

Mohammad Nazmul Hossain

I'd:193902031

Department of CSE

Submitted To:

Ohiduzzaman Shuvo

Lecturer: Dept. of CSE

Green University of Bangladesh

01. Write a program in C to sort elements of an array in descending order.

```
#include <stdio.h>
```

```
int main ()
```

```
{  
    int num[100],n,i=0,temp,j;  
    printf("How many number you want : ");  
    scanf("%d", &n);  
    for(i=0; i<n; i++)  
    {  
        scanf("%d",&num[i]);  
    }  
    for (i=0; i<n; i++)  
    {  
        for(j=0; j<n-1; j++)  
        {  
            if(num[j]<num[j+1])  
            {  
                temp=num[j];  
                num[j]=num[j+1];  
                num[j+1]=temp;  
            }  
        }  
    }  
}
```

```
printf("Descending order array : ");
```

```
for (i=0; i<n; i++)  
{  
    printf("%d , ",num[i]);
```

```

}
return 0 ;

```

OUTPUT 01

The screenshot shows a code editor with a C program for sorting an array in descending order. The program prompts the user for the number of elements and the elements themselves, then sorts them in descending order and prints the result.

```

1 #include <stdio.h>
2 int main ()
3 {
4     int num[100],n,i=0,temp,j;
5     printf("How many number you want : ");
6     scanf("%d", &n);
7     for(i=0; i<n; i++)
8     {
9         scanf("%d",&num[i]);
10    }
11    for (i=0; i<n; i++)
12    {
13        for(j=0; j<n-1; j++)
14        {
15            if(num[i]<num[j+1])
16            {

```

The output window shows the execution of the program. The user enters 5 for the number of elements and 20 10 30 50 90 for the elements. The program sorts them in descending order and prints the result: 90, 50, 30, 20, 10. The process returned 0 (0x0) and the execution time was 20.671 s.

```

/home/nazmul365/Desktop/c programme/descendi...
How many number you want : 5
20 10 30 50 90
Descending order array : 90 , 50 , 30 , 20 , 10 ,
Process returned 0 (0x0)   execution time : 20.671 s
Press ENTER to continue.

```

The bottom panel shows the build messages, indicating that the build was successful with 0 errors and 0 warnings.

```

Code::Blocks Search results Debugger Build messages
File Line Message
== Build file: "no target" in "no project" (compiler: unknown) ==
== Build finished: 0 error(s), 0 warning(s) (0 minute(s), 2 second(s)) ==

```

02Write a program in C to separate odd and even integers in separate arrays.

```

#include<stdio.h>
int main()
{
    int i,number;
    printf("Enter number of array : ");

    scanf("%d",&number);

    int num[100];
    printf("Enter numbers to separate even and odd : ");

    for(i=0; i<number; i++)
    {
        scanf("%d",&num[i]);
    }
    printf("Even numbers are : ");

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

```

```

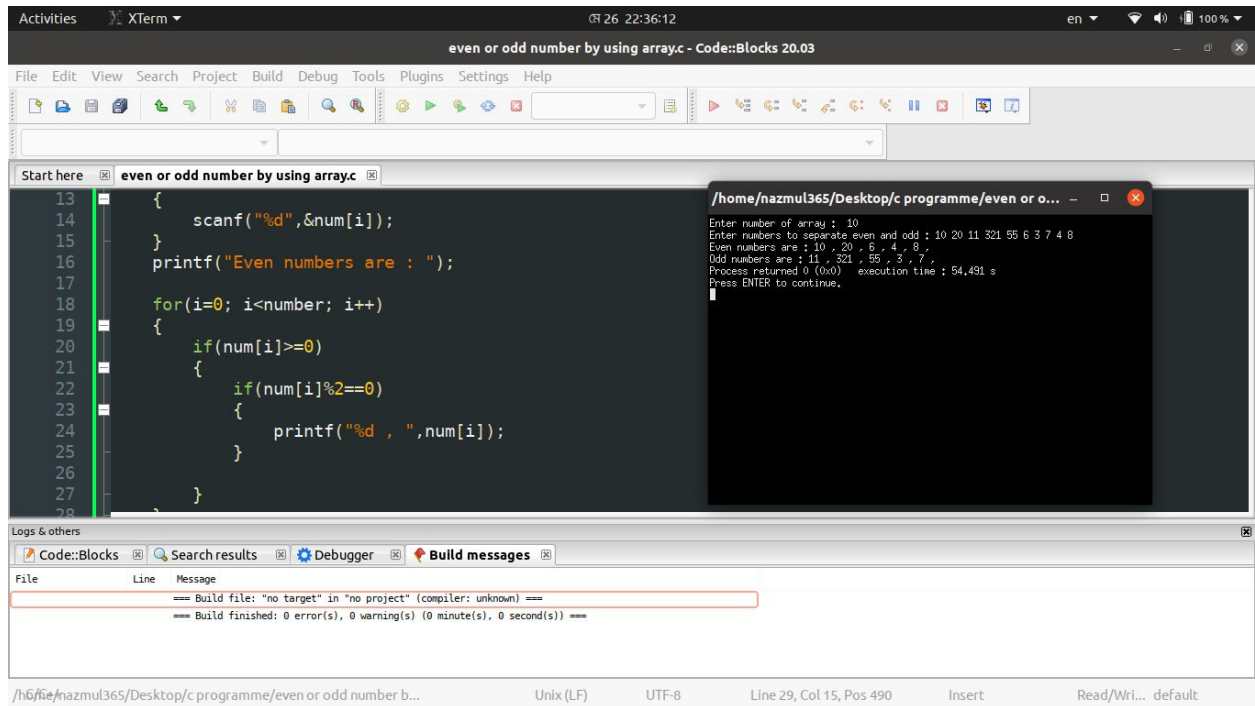
{
    if(num[i]>=0)
    {
        if(num[i]%2==0)
        {
            printf("%d , ",num[i]);
        }

    }
}
printf("\n");
printf("Odd numbers are : ");
for(i=0; i<number; i++)
{
    if(num[i]>=0)
    {
        if(num[i]%2==1)
        {
            printf("%d , ",num[i]);
        }

    }
}
return 0 ;
}

```

OUTPUT NO 2



03Write a program in C to find sum of rows an columns of a Matrix.

```
#include<stdio.h>
int main()
{
    int i,j,Raw,Col;
    int A[10][10],B[10][10],C[10][10];
    printf("Enter the number of rows and columns : ");
    scanf("%d %d",&Raw,&Col);

    printf("Enter the clements for A matix : ");
    for(i=0; i<Raw; i++)
    {
        for(j=0; j<Col; j++)
        {
            printf("A[%d][%d] = ",i,j);

            scanf("%d",&A[i][j]);
        }
        printf("\n");
    }
    printf("Enter the elements for B matix : ");
```

```

for(i=0; i<Raw; i++)
{
    for(j=0; j<Col; j++)
    {
        printf("B[%d][%d] = ",i,j);

        scanf("%d",&B[i][j]);
    }
    printf("\n");
}

```

```

printf("A = ");
for(i=0; i<Raw; i++)
{
    printf("\t");
    for(j=0; j<Col; j++)
    {
        printf("%d ",A[i][j]);
    }
    printf("\n");
}

```

```

printf("\n");
printf("B = ");
for(i=0; i<Raw; i++)
{
    printf("\t");
    for(j=0; j<Col; j++)
    {
        printf("%d ",B[i][j]);
    }
    printf("\n");
}
for(i=0; i<Raw; i++)
{
    for(j=0; j<Col; j++)
    {
        C[i][j]=A[i][j]+ B[i][j];
    }
}
}

```

```

printf("Sum:A + B = ");
for(i=0; i<Row; i++)
{

    for(j=0; j<Col; j++)
    {
        printf("%d ",C[i][j]);
    }
    printf("\n");
    printf("\t\t ");

}
}

```

OUTPUT NO 3

```

/home/nazmul365/Desktop/c programme/sumOfArray
Enter the number of rows and columns : 2 2
Enter the elements for A matrix : A[0][0] = 1
A[0][1] = 2
A[1][0] = 3
A[1][1] = 4
Enter the elements for B matrix : B[0][0] = 5
B[0][1] = 6
B[1][0] = 7
B[1][1] = 8
A =   1  2
      3  4
B =   5  6
      7  8
Sum:A + B = 6  8
          10 12
Process returned 0 (0x0)   execution time : 17.441 s
Press ENTER to continue.

```

// 4. Write a program in C to count the total number of words in a string.

```

#include <stdio.h>
#include <string.h>

int main()
{
    char s[200];
    int count = 0, i;

    printf("Enter the string : ");
    scanf("%[^\\n]s", s);
    for (i = 0; s[i] != '\\0'; i++)
    {
        if (s[i] == ' ' && s[i+1] != ' ')

```

```

        count++;
    }
    printf("Total number of words in given string are: %d\n", count + 1);
}

```

OUTPUT NO 4

```

/home/nazmul365/Desktop/c programme/find word by string
Enter the string : Who am i
Number of words in given string are: 3
Process returned 0 (0x0) execution time : 15.873 s
Press ENTER to continue.

```

//Write a program in C to concate two strings without using string library function.

```

#include <stdio.h>
int main() {
    char s1[100] = "You need learn ", s2[] = "more and more";
    int i, j;

    for (i = 0; s1[i] != '\0'; ++i) {
        printf("i = %d\n", i);
    }

    for (j = 0; s2[j] != '\0'; ++j, ++i) {
        s1[i] = s2[j];
    }

    s1[i] = '\0';

    printf("After Unification : ");
    puts(s1);
}

```



```
return 0;
}
```

```
/home/nazmul365/Desktop/c programme/without string f
i = 0
i = 1
i = 2
i = 3
i = 4
i = 5
i = 6
i = 7
i = 8
i = 9
i = 10
i = 11
i = 12
i = 13
i = 14
After Unification ; You need learn more and more
Process returned 0 (0x0)   execution time : 0.001 s
Press ENTER to continue.
```

//Write a program in C to find the largest element using Dynamic Memory Allocation.

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
int main() {
```

```
    int num;
```

```
    float *data;
```

```
    printf("Enter the total number of elements : ");
```

```
    scanf("%d", &num);
```

```
    data = (float *)calloc(num, sizeof(float));
```

```
    if (data == NULL) {
```

```
        printf("Error!!! memory not allocated.");
```

```
        exit(0);
```

```
    }
```

```
    for (int i = 0; i < num; ++i) {
```

```
        printf("Enter Number %d: ", i + 1);
```

```
        scanf("%f", data + i);
```

```
    }
```

```

for (int i = 1; i < num; ++i) {
    if (*data < *(data + i))
        *data = *(data + i);
}
printf("Largest number = %.2f", *data);

return 0;
}

```

```

/home/nazmul365/Desktop/c programme/Find larg...
8
9
10 data = (float*)malloc(sizeof(float) * num);
11 if (data == NULL) {
12     printf("Memory allocation failed\n");
13     exit(0);
14 }
15
16
17 for (int i = 0; i < num; ++i) {
18     printf("Enter Number %d: ", i + 1);
19     scanf("%f", &data[i]);
20 }
21
22
23 for (int i = 1; i < num; ++i) {
24     if (*data < *(data + i))
25         *data = *(data + i);
26 }
27 printf("Largest number = %.2f", *data);
28
29 return 0;
30 }
31
Enter the total number of elements : 5
Enter Number 1: 111
Enter Number 2: 222
Enter Number 3: 333
Enter Number 4: 444
Enter Number 5: 555
Largest number = 555.00
Process returned 0 (0x0)   execution time : 18.409 s
Press ENTER to continue.

```

07

//Write a program in C to calculate the sum of numbers from 1 to n using recursion.

```

#include <stdio.h>
int addNumbers(int n);
int main()
{
    int num;
    printf("Enter a positive integer: ");
    scanf("%d", &num);
    printf("Sum = %d", addNumbers(num));
    return 0;
}

```

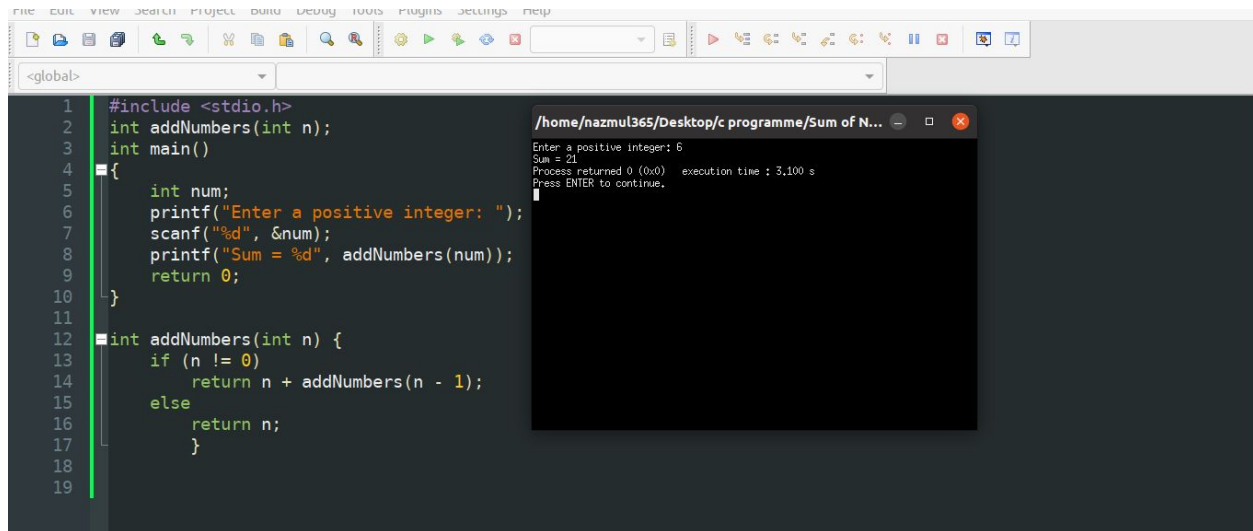
```

int addNumbers(int n) {
    if (n != 0)
        return n + addNumbers(n - 1);
    else
        return n;
}

```

}

OUTPUT NO 07



The screenshot shows a C program in a code editor on the left and its execution output in a terminal window on the right. The code is a recursive function to calculate the sum of the first n natural numbers. The terminal window shows the user entering '6', the program calculating the sum as 21, and then returning 0.

```
1 #include <stdio.h>
2 int addNumbers(int n);
3 int main()
4 {
5     int num;
6     printf("Enter a positive integer: ");
7     scanf("%d", &num);
8     printf("Sum = %d", addNumbers(num));
9     return 0;
10 }
11
12 int addNumbers(int n) {
13     if (n != 0)
14         return n + addNumbers(n - 1);
15     else
16         return n;
17 }
18
19
```

Terminal Output:

```
/home/nazmul365/Desktop/c programme/Sum of N...
Enter a positive integer: 6
Sum = 21
Process returned 0 (0x0)   execution time : 3.100 s
Press ENTER to continue.
```

8. Write a C program to enter the marks of 5 students in Chemistry, Mathematics and Physics (each out of 100) using a structure named Marks having elements roll no., name, chem_marks, maths_marks and phy_marks and then display the percentage of each student.(store the output in a file).

```
float chem_marks, math_marks, phy_marks;
};
```

```
int main()
{
    // Take 5 copy of Data Struct
    struct Data data[5];
    char file[150];
    FILE *fp;

    printf("Enter 5 students details: \n");

    for (int i = 0; i < 5; i++)
    {
        printf("Student no: %d \n", i + 1);
        printf("Enter student's first name: \n");
        scanf("%s", data[i].name);
        printf("Enter student's id number: \n");
        scanf("%d", &data[i].id);
        printf("Enter Math marks: \n");
```

```

scanf("%f", &data[i].math_marks);
printf("Enter Chemistry marks: \n");
scanf("%f", &data[i].chem_marks);
printf("Enter Physics marks: \n");
scanf("%f", &data[i].phy_marks);
}

printf("Enter a filename to save data: \n");
scanf("%s", file);

char *filename = strcat(file, ".csv");

fp = fopen(filename, "w+");
fprintf(fp, "Student Id, Student Name, Math, Chemistry, Physics, Percentage");

for (int i = 0; i < 5; i++)
{
    float percentage = (data[i].math_marks + data[i].chem_marks + data[i].phy_marks) / 300.0 *
100;
    fprintf(fp, "\n %d, %s, %f, %f, %f, %f", data[i].id, data[i].name, data[i].math_marks,
data[i].chem_marks, data[i].phy_marks, percentage);
}

fclose(fp);

printf("\n Student's marksheet %s file created \n", filename);
}

```

OUTPUT NO 8

The screenshot shows the LibreOffice Calc application window titled 'marksheet.csv - LibreOffice Calc'. The spreadsheet contains the following data:

	A	B	C	D	E	F	G	H	I	J	K	L
1	Student Id, Student Name, Math, Chemistry, Physics, Percentage											
2	31. Nazmul, 99.000000, 100.000000, 100.000000, 99.666664											
3	22. Fahim, 33.000000, 34.000000, 33.000000, 33.333332											
4	29. Jonaid, 60.000000, 65.000000, 75.000000, 66.666664											
5	30. Sadman, 70.000000, 65.000000, 70.000000, 68.333336											
6	24. Shawn, 80.000000, 70.000000, 60.000000, 70.000000											
7												
8												
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