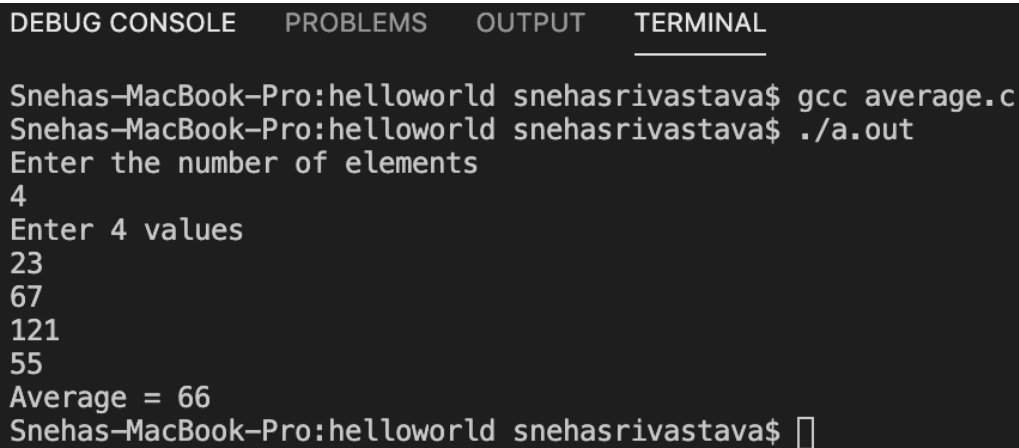


1. Develop a program to find average of n numbers.

```
#include <stdio.h>
int main()
{
    int marks[10],i,n,sum=0,average;
    printf("Enter the number of elements\n");
    scanf("%d",&n);
    printf("Enter %d values\n",n);
    for(i=0;i<n;i++)
    {
        scanf("%d",&marks[i]);
        sum=sum+marks[i];
    }
    average=sum/n;
    printf("Average = %d\n",average);
}
```



The screenshot shows a terminal window with the following content:

```
DEBUG CONSOLE  PROBLEMS  OUTPUT  TERMINAL

Snehas-MacBook-Pro:helloworld snehasrivastava$ gcc average.c
Snehas-MacBook-Pro:helloworld snehasrivastava$ ./a.out
Enter the number of elements
4
Enter 4 values
23
67
121
55
Average = 66
Snehas-MacBook-Pro:helloworld snehasrivastava$
```

TYPE TO ENTER A CAPTION.

2. Develop a program to print the transpose matrix.

```
#include <stdio.h>
int main()
{
    int a[10][10],transpose[10][10], r, c, i, j;
    printf("Enter rows and columns: ");
    scanf("%d %d", &r, &c);
    printf("\nEnter matrix elements:\n");
    for (i = 0; i < r; ++i)
    {
        for (j = 0; j < c; ++j)
        {
            printf("Enter element a%d%d: ", i + 1, j + 1);
            scanf("%d", &a[i][j]);
        }
    }
    printf("\nEnter matrix: \n");
    for (i = 0; i < r; ++i)
    {
        for (j = 0; j < c; ++j)
```

```

        { printf("%d ", a[i][j]);
          if (j == c - 1)
            printf("\n");
        }
    }
    for (i = 0; i < r; ++i)
    {
        for (j = 0; j < c; ++j)
        {
            transpose[j][i] = a[i][j];
        }
    }
    printf("\nTranspose of the matrix:\n");
    for (i = 0; i < c; ++i)
    {
        for (j = 0; j < r; ++j)
        {
            printf("%d ", transpose[i][j]);
            if (j == r - 1)
                printf("\n");
        }
    }
    return 0;
}

```

```

Snehas-MacBook-Pro:helloworld snehasrivastava$ ./a.out
Enter rows and columns: 2
3

Enter matrix elements:
Enter element a11: 4
Enter element a12: 6
Enter element a13: 7
Enter element a21: 8
Enter element a22: 1
Enter element a23: 4

Entered matrix:
4 6 7
8 1 4

```

TYPE TO ENTER A CAPTION.

```

Transpose of the matrix:
4 8
6 1
7 4

```

TYPE TO ENTER A CAPTION.

3. Develop a program to check the given string is palindrome or not.

```
#include<stdio.h>

int main(){
    char str[100];
    int i=0,j=-1,flag=0;

    printf("Enter a string: ");
    scanf("%s",str);

    while(str[++j]!='\0');
    j--;

    while(i<j)
        if(str[i++] != str[j--]){
            flag=1;
            break;
        }

    if(flag == 0)
        printf("The string is a palindrome");
    else
        printf("The string is not a palindrome");

    return 0;
}
```

```
Snehas-MacBook-Pro:helloworld snehasrivastava$ gcc palindrome.c
Snehas-MacBook-Pro:helloworld snehasrivastava$ ./a.out
Enter a string: madam
The string is a palindromeSnehas-MacBook-Pro:helloworld snehasrivastava$
```

TYPE TO ENTER A CAPTION.

4. Implement a program to interchange the largest and smallest numbers in the given array.

```
#include <stdio.h>
int main()
{
    int i,j,marks[5][3];
    for(i=0;i<5;i++)
    {
        printf("Enter marks of student %d in three subjects\n ",(i+1));
        for(j=0;j<3;j++)
        {
            scanf("\n%d",&marks[i][j]);
        }
    }
    int high=0;
    for(i=0;i<5;i++)
    {
        printf("Highest marks of student %d= ",(i+1));
        for(j=0;j<3;j++)
        {
            if(high<=marks[i][j])
            {
                high=marks[i][j];
            }
        }
        printf("%d\n",high);
    }
}
```

```
Snehas-MacBook-Pro:hellworld snehasrivastava$ gcc interchange.c
Snehas-MacBook-Pro:hellworld snehasrivastava$ ./a.out
Enter the num of elements : 5
Enter the elements :
23
67
14
90
77

Largest element is 90 and Smallest element is 14

Array after interchange of smallest and largest :
23 67 90 14 77 Snehas-MacBook-Pro:hellworld snehasrivastava$
```

TYPE TO ENTER A CAPTION.

5. Program to read two dimensional array marks which stores marks of 5 students in three subjects and display the highest marks in each subject.

```
#include <stdio.h>
int main()
{
    int i,j,marks[5][3];
    for(i=0;i<5;i++)
    {
        printf("Enter marks of student %d in three subjects\n ",(i+1));
        for(j=0;j<3;j++)
        {
            scanf("\n%d",&marks[i][j]);
        }
    }
    int high=0;
    for(i=0;i<5;i++)
    {
        printf("Highest marks of student %d= ",(i+1));
        for(j=0;j<3;j++)
        {
            if(high<=marks[i][j])
            {
                high=marks[i][j];
            }
        }
    }
}
```

```
printf("%d\n",high);
    }
}
```

```
Enter element a[2][0]
Snehas-MacBook-Pro:helloworld snehasrivastava$
Snehas-MacBook-Pro:helloworld snehasrivastava$
Snehas-MacBook-Pro:helloworld snehasrivastava$
Enter marks of student 1 in three subjects
23
67
45
```

TYPE TO ENTER A CAPTION.

```
Enter marks of student 2 in three subjects
78
90
33
Enter marks of student 3 in three subjects
60
51
14
Enter marks of student 4 in three subjects
77
89
99
Enter marks of student 5 in three subjects
45
22
```

TYPE TO ENTER A CAPTION.

```
Enter marks of student 5 in three subjects
45
22
75
Highest marks of student 1= 67
Highest marks of student 2= 90
Highest marks of student 3= 90
Highest marks of student 4= 99
Highest marks of student 5= 99
Snehas-MacBook-Pro:helloworld snehasrivastava$
```

TYPE TO ENTER A CAPTION.

6. Implement a program to concatenate two strings without using built in functions.

```
#include<stdio.h>
int main()
{
    char str1[50],str2[50];
    static int i=0;
    int j=0;
    printf("\nEnter First String\n");
    gets(str1);
    printf("\nEnter Second String\n");
    gets(str2);
    while(str1[i]!='\0')
    {
        i++;
    }

    while(str2[j]!='\0')
    {
        str1[i]=str2[j];
        j++;
        i++;
    }
    str1[i]='\0';
    printf("\nConcatenated String is %s",str1);
    return 0;
}
```

```
Snehas-MacBook-Pro:helloworld snehasrivastava$ gcc concatenate.c
Snehas-MacBook-Pro:helloworld snehasrivastava$ ./a.out

Enter First String
warning: this program uses gets(), which is unsafe.
hello

Enter Second String
world

Concatenated String is helloworldSnehas-MacBook-Pro:helloworld snehasrivastava$
```

TYPE TO ENTER A CAPTION.

7. Develop a C program to read and print employee details using structures.

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

typedef struct{

    char name[30];
    int id;
    int salary;

} Employee;

int main()
{
    int i, n=2;

    Employee employees[n];

    //Taking each employee detail as input

    printf("Enter %d Employee Details \n \n",n);
    for(i=0; i<n; i++){

        printf("Employee %d:- \n",i+1);
        //Name
        printf("Name: ");
        scanf("%s",employees[i].name);
        //ID
        printf("Id: ");
        scanf("%d",&employees[i].id);
        //Salary
        printf("Salary: ");
        scanf("%d",&employees[i].salary);

        printf("\n");
    }

    //Displaying Employee details

    printf("----- All Employees Details ----- \n");

    for(i=0; i<n; i++){

        printf("Name \t: ");
        printf("%s \n",employees[i].name);

        printf("Id \t: ");
        printf("%d \n",employees[i].id);

        printf("Salary \t: ");
        printf("%d \n",employees[i].salary);

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

```
return 0;  
}
```

```
Enter 2 Employee Details  
  
Employee 1:-  
Name: Rahul  
Id: 45321  
Salary: 67000  
  
Employee 2:-  
Name: Pratik  
Id: 89765  
Salary: 80000
```

TYPE TO ENTER A CAPTION.

```
----- All Employees Details -----  
Name      : Rahul  
Id        : 45321  
Salary    : 67000  
  
Name      : Pratik  
Id        : 89765  
Salary    : 80000  
  
Snehas-MacBook-Pro:helloworld snehasrivastava$
```

TYPE TO ENTER A CAPTION.