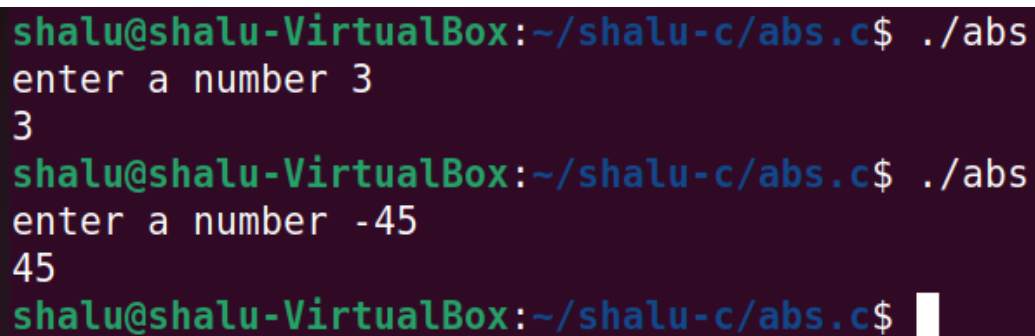


1. Write a C Program to calculate the absolute value of an integer. Ex - 1) Input = 100  
Expected Output = 100 2) Input = -200 Expected Output = 20

```
#include <stdio.h>
int main()
{
    int a;
    printf("enter a number");
    scanf("%d", &a);
    if (a < 0)
        printf("%d\n", a * (-1));
    else
        printf("%d\n", a);
}
```



A terminal window with a dark purple background and green text. It shows the execution of a C program to calculate the absolute value of an integer. The prompt is 'shalu@shalu-VirtualBox:~/shalu-c/abs.c\$'. The user enters './abs', followed by 'enter a number 3', and the output is '3'. Then the user enters 'enter a number -45', and the output is '45'. The prompt returns to 'shalu@shalu-VirtualBox:~/shalu-c/abs.c\$' with a white cursor.

```
shalu@shalu-VirtualBox:~/shalu-c/abs.c$ ./abs
enter a number 3
3
shalu@shalu-VirtualBox:~/shalu-c/abs.c$ ./abs
enter a number -45
45
shalu@shalu-VirtualBox:~/shalu-c/abs.c$
```

2. Write a C Program to Calculate the Average of a Set of Grades and Counting the Number of Failing Test Grades (Take Grade as fail if less than 65)
- A) Use for loop
  - B) Use While loop
  - C) Use Do-While

Ex - 1) Expected Output :

Enter the number of grades : 7

Enter grade #1 : 93

Enter grade #2 : 63

Enter grade #3 : 87

Enter grade #4 : 65

Enter grade #5 : 62

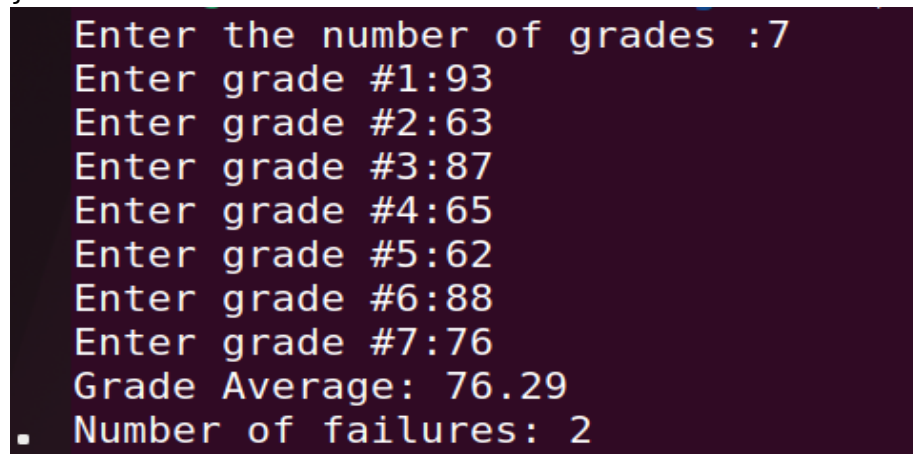
Enter grade #6 : 88

Enter grade #7 : 76

Grade Average = 76.29

Number of failures = 2

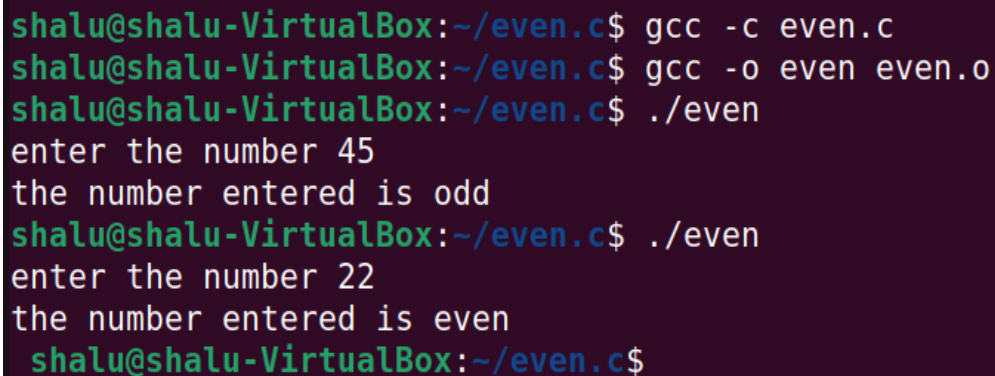
```
#include <stdio.h>
int main()
{
    int i, n, total = 0, fail = 0;
    printf("Enter the number of grades :");
    scanf("%d", &n);
    for (i = 1; i <= n; i++)
    {
        int grade;
        printf("Enter grade #%d:", i);
        scanf("%d", &grade);
        total = total + grade;
        if (grade < 65)
            fail++;
    }
    printf("Grade Average: %d\n", total / n);
    printf("Number of failures: %d\n", fail);
    return 0;
}
```



```
Enter the number of grades :7
Enter grade #1:93
Enter grade #2:63
Enter grade #3:87
Enter grade #4:65
Enter grade #5:62
Enter grade #6:88
Enter grade #7:76
Grade Average: 76.29
Number of failures: 2
```

**3. Write a C Program to determine if a Number is Even or Odd****Ex - 1) Expected Output :****Enter the number : 25****The number entered is Odd****2) Expected Output :****Enter the number : 54****The number entered is Even**

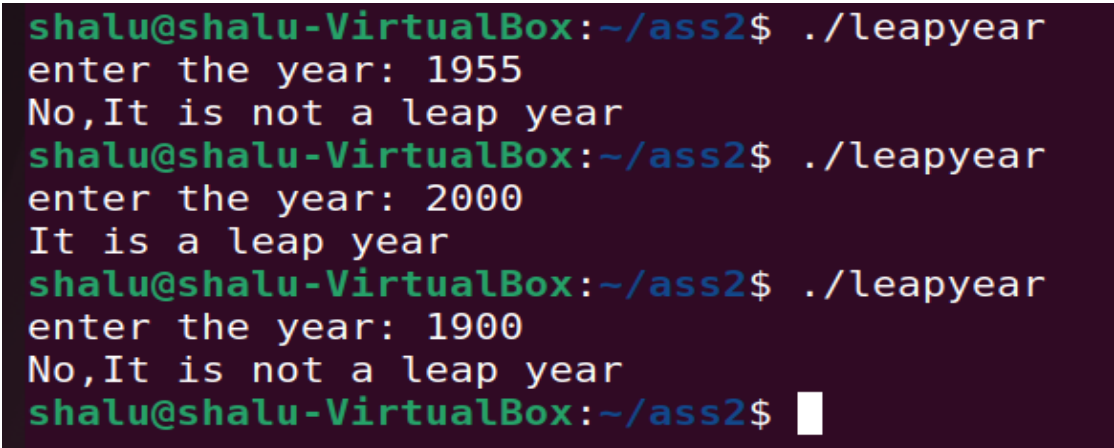
```
#include <stdio.h>
int main()
{
    int a;
    printf("enter the number ");
    scanf("%d", &a);
    if ((a % 2) == 0)
        printf("the number entered is even ");
    else
        printf("the number entered is odd ");
    return 0;
}
```



```
shalu@shalu-VirtualBox:~/even.c$ gcc -c even.c
shalu@shalu-VirtualBox:~/even.c$ gcc -o even even.o
shalu@shalu-VirtualBox:~/even.c$ ./even
enter the number 45
the number entered is odd
shalu@shalu-VirtualBox:~/even.c$ ./even
enter the number 22
the number entered is even
shalu@shalu-VirtualBox:~/even.c$
```

**4. Write a C Program to check the year entered is a Leap Year or not****Ex - 1) Expected Output :****Enter the year : 1955****No, it's not a Leap Year****Expected Output :****Enter the year : 2000 It's a Leap Year**

```
#include <stdio.h>
int main()
{
    int year;
    printf("enter the year: ");
    scanf("%d", &year);
    if ((year % 4) == 0 && (year % 100) != 0)
    {
        printf("It is a leap year\n");
    }
    else if ((year % 100) == 0 && (year % 400) == 0)
    {
        printf("It is a leap year\n");
    }
    else
    {
        printf("No,It is not a leap year\n");
    }
    return 0;
}
```



```
shalu@shalu-VirtualBox:~/ass2$ ./leapyear
enter the year: 1955
No,It is not a leap year
shalu@shalu-VirtualBox:~/ass2$ ./leapyear
enter the year: 2000
It is a leap year
shalu@shalu-VirtualBox:~/ass2$ ./leapyear
enter the year: 1900
No,It is not a leap year
shalu@shalu-VirtualBox:~/ass2$
```

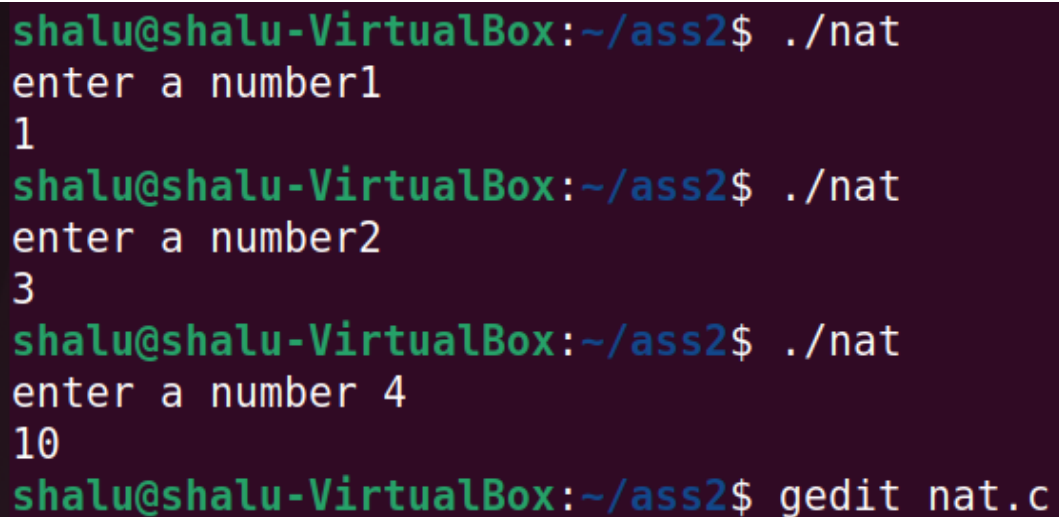
5. Write a program to create a simple calculator to perform Addition, Subtraction, Multiplication and Division using switch statement. Take the required operation as input from the user.

```
#include <stdio.h>
int main()
{
    int a, b;
    int oper;
    printf("Enter two Numbers: ");
    scanf("%d%d", &a, &b);
    printf("Choose the operation \n");
    printf("1 : Addition \n");
    printf("2 : Substraction \n");
    printf("3 : Multiplication \n");
    printf("4 : Division \n Enter your choice: ");
    scanf("%d", &oper);
    switch (oper)
    {
        case 1:
            printf("%d+%d=%d", a, b, a + b);
            break;
        case 2:
            printf("%d-%d=%d", a, b, a - b);
            break;
        case 3:
            printf("%dx%d=%d", a, b, a * b);
            break;
        case 4:
            printf("%d/%d=%d", a, b, a / b);
            break;
        default:
            printf("Wrong Choice %c \n", oper);
    }
    printf("\n");
    return 0;
}
```

```
shalu@shalu-VirtualBox:~/C_Program/ass2$ ./calc
Enter two Numbers: 8 5
Choose the operation
1 : Addition
2 : Substraction
3 : Multiplication
4 : Division
Enter your choice: 2
8-5=3
shalu@shalu-VirtualBox:~/C_Program/ass2$ ./calc
Enter two Numbers: 9 4
Choose the operation
1 : Addition
2 : Substraction
3 : Multiplication
4 : Division
Enter your choice: 3
9x4=36
shalu@shalu-VirtualBox:~/C_Program/ass2$ █
```

6. Write a program to find out the sum of first n natural numbers. Take n as input from the user

```
#include <stdio.h>
int main()
{
    int i, n, total = 0;
    printf("enter a number");
    scanf("%d", &n);
    for (i = 0; i <= n; i++)
    {
        total = total + i;
    }
    printf("%d\n", total);
    return 0;
}
```

A terminal window with a dark purple background and green text. It shows the execution of a program named 'nat'. The prompt is 'shalu@shalu-VirtualBox:~/ass2\$'. The user enters '1', and the program outputs 'enter a number1' followed by '1'. The user enters '2', and the program outputs 'enter a number2' followed by '3'. The user enters '4', and the program outputs 'enter a number 4' followed by '10'. Finally, the user enters 'gedit nat.c' at the prompt.

```
shalu@shalu-VirtualBox:~/ass2$ ./nat
enter a number1
1
shalu@shalu-VirtualBox:~/ass2$ ./nat
enter a number2
3
shalu@shalu-VirtualBox:~/ass2$ ./nat
enter a number 4
10
shalu@shalu-VirtualBox:~/ass2$ gedit nat.c
```