

# LAB FILE

*Introduction to c programming*



Batch:2023-2027

BCA (Hons) AI&DS

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# Programs

## Program 1 . WAP to find the sum of two numbers

```
#include<stdio.h>

int main()
{
    int a,b,s;

    printf("Nanci Rawat ");
    printf("Enter the number:%d",a);
    scanf("%d",&a);

    printf("Enter the numbers:%d",b);
    scanf("%d",&b);

    s=a+b;

    printf("sum is:%d",s);

    return 0 ; }
```

```
C:\Users\hp\Documents\1.exe
Nanci Rawat Enter the number:64223527
Enter the numbers:08
sum is:15
Process returned 0 (0x0)    execution time : 12.934 s
Press any key to continue.
```

## Program.2 WAP to print Hello World

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

```
int main()
```

```
{
```

```
printf("Nanci Rawat");
```

```
printf("Hello World");
```

```
return 0;
```

```
}
```

```
C:\Users\hp\Documents\2.exe
Nanci RawatHello World
Process returned 0 (0x0)    execution time : 0.078 s
Press any key to continue.
```

Program.3WAP to find the area of the circle

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

```
int main()
```

```
{
```

```
int r;
```

```
float area;
```

```
printf("Enter the radius of circle\n");
```

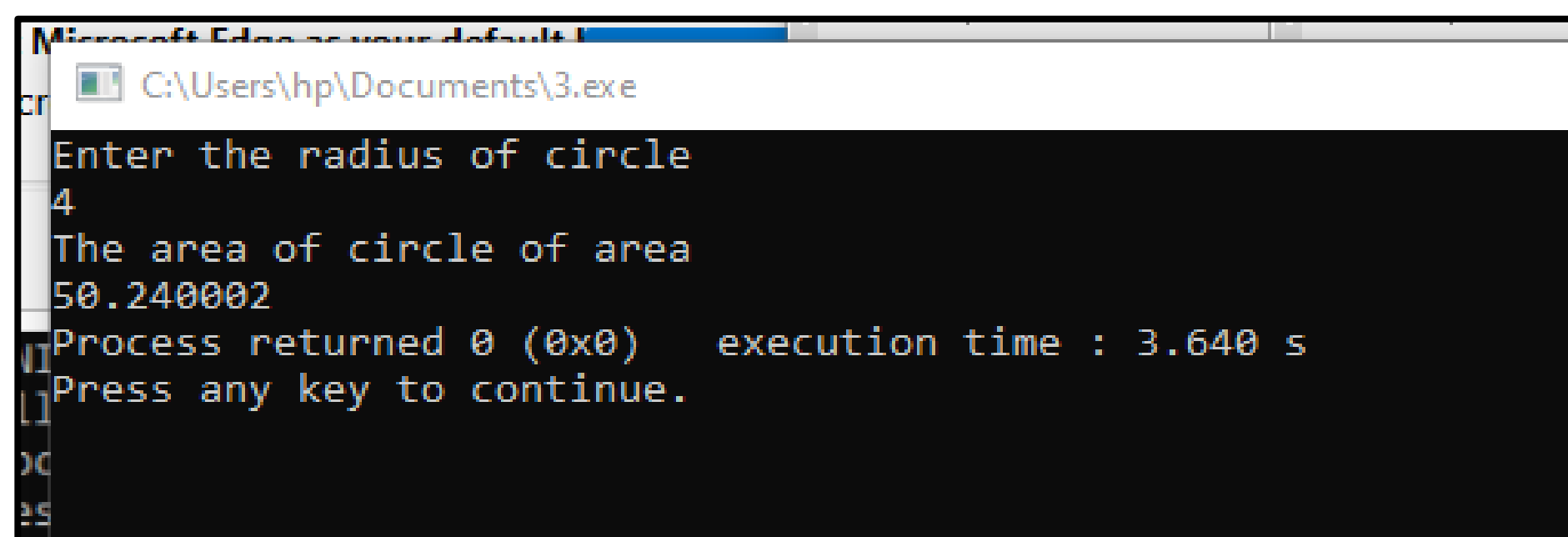
```
scanf("%d",&r);
```

```
printf("The area of circle of area\n");
```

```
area=3.14*r*r;
```

```
printf("%f",area);
```

```
}
```



The screenshot shows a Windows command prompt window titled "Microsoft Edge - your default". The address bar shows the file path "C:\Users\hp\Documents\3.exe". The command prompt displays the following text:

```
Enter the radius of circle
4
The area of circle of area
50.240002
Process returned 0 (0x0)   execution time : 3.640 s
Press any key to continue.
```

Program.4 WAP to divide two numbers

```
#include<stdio.h>

int main()
{
int a,b,d;

printf("Enter the number:%d",a);

scanf("%d",&a);

printf("Enter the number:%d",b);

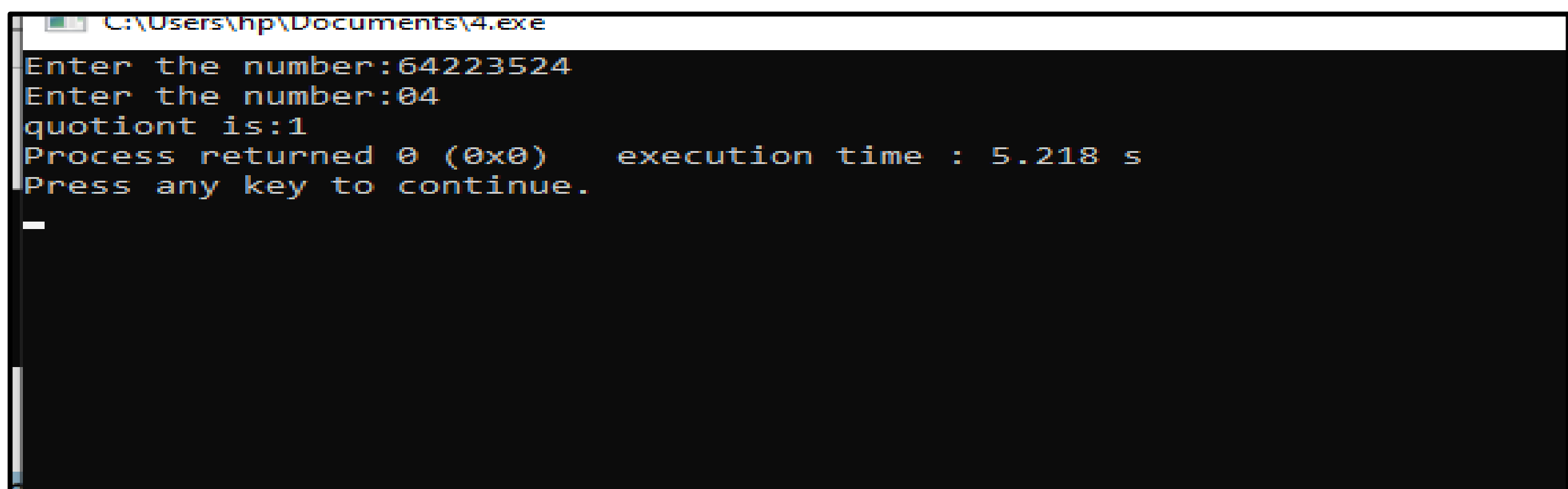
scanf("%d",&b);

d=a/b;

printf("quotient is:%d",d);

return 0;

}
```



```
C:\Users\hp\Documents\4.exe
Enter the number:64223524
Enter the number:04
quotient is:1
Process returned 0 (0x0)    execution time : 5.218 s
Press any key to continue.
```

Program.5 WAP to find ASCII value

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

```
int main()
```

```
{
```

```
char c;
```

```
printf("Nanci Rawat");
```

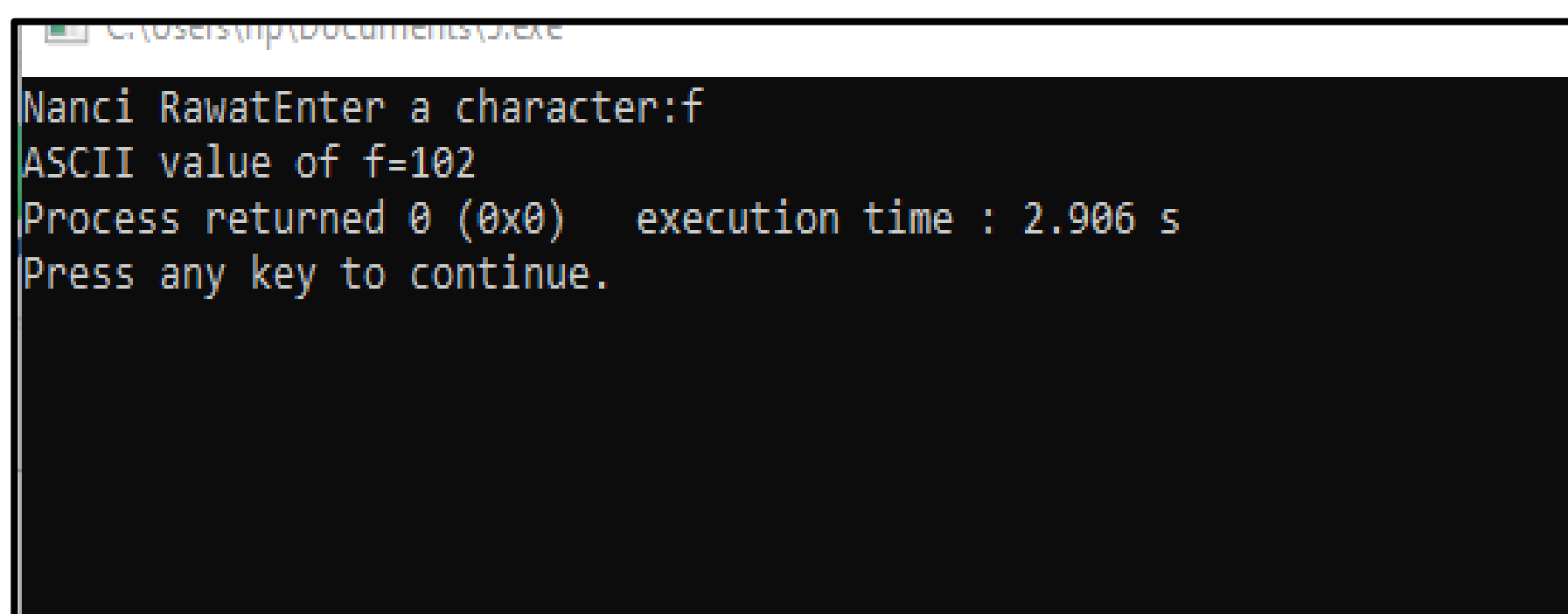
```
printf("Enter a character:");
```

```
scanf("%c",&c);
```

```
printf("ASCII value of %c=%d",c,c);
```

```
return 0;
```

```
}
```



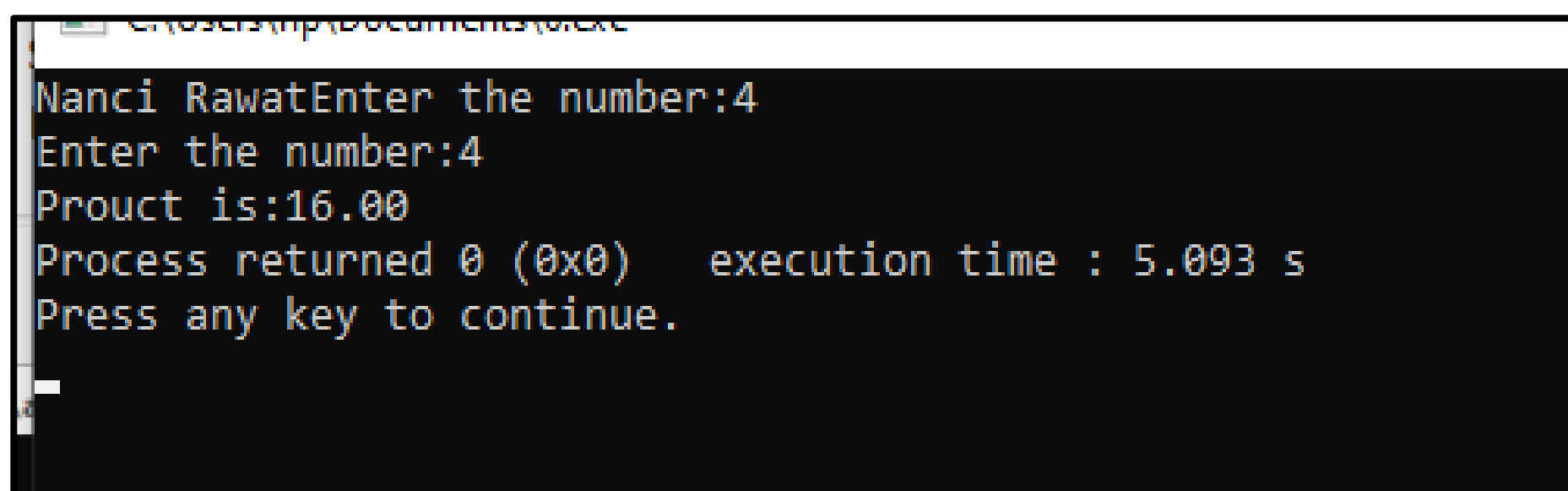
```
C:\Users\hp\Documents\J.exe
Nanci RawatEnter a character:f
ASCII value of f=102
Process returned 0 (0x0) execution time : 2.906 s
Press any key to continue.
```



## Program.6 WAP to multiply floating point numbers

```
#include<stdio.h>

int main()
{
    double a,b,p;
    printf("Nanci Rawat");
    printf("Enter the number:");
    scanf("%lf",&a);
    printf("Enter the number:");
    scanf("%lf",&b);
    p=a*b;
    printf("Prouct is:%0.2lf",p);
    return 0;
}
```



```
C:\Users\hp\Documents>gcc
Nanci RawatEnter the number:4
Enter the number:4
Prouct is:16.00
Process returned 0 (0x0)   execution time : 5.093 s
Press any key to continue.
```

Program.7 WAP to swap two variables number by using third variable

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

```
int main()
```

```
{
```

```
int n1,n2,temp;
```

```
printf("Enter n1:");
```

```
scanf("%d",&n1);
```

```
printf("Enter n2:");
```

```
scanf("%d",&n2);
```

```
temp=n1;
```

```
n1=n2;
```

```
n2=temp;
```

```
printf("\nAfter swapping,n1=%d\n",n1);
```

```
printf("After swapping,n2=%d",n2);
```

```
return 0;}
```

```
Enter n1:3
Enter n2:3

After swapping,n1=3
After swapping,n2=3
Process returned 0 (0x0)   execution time : 4.499 s
Press any key to continue.
```

Program.8 .WAP to swap two numbers without using third variable

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

```
int main()
```

```
{
```

```
int n1,n2;
```

```
printf("Enter n1:");
```

```
scanf("%d",&n1);
```

```
printf("Enter n2:");
```

```
scanf("%d",&n2);
```

```
n1=n1+n2;
```

```
n2=n1-n2;
```

```
n1=n1-n2;
```

```
printf("\nAfter swapping,n1=%d\n",n1);
```

```
printf("After swapping,n2=%d",n2);  
  
return 0;  
  
}
```

```
Enter n1:6  
Enter n2:8  
  
After swapping,n1=8  
After swapping,n2=6  
Process returned 0 (0x0)   execution time : 8.201 s  
Press any key to continue.
```

Program.9 WAP to swap three numbers without using third variable

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

```
int main()
```

```
{
```

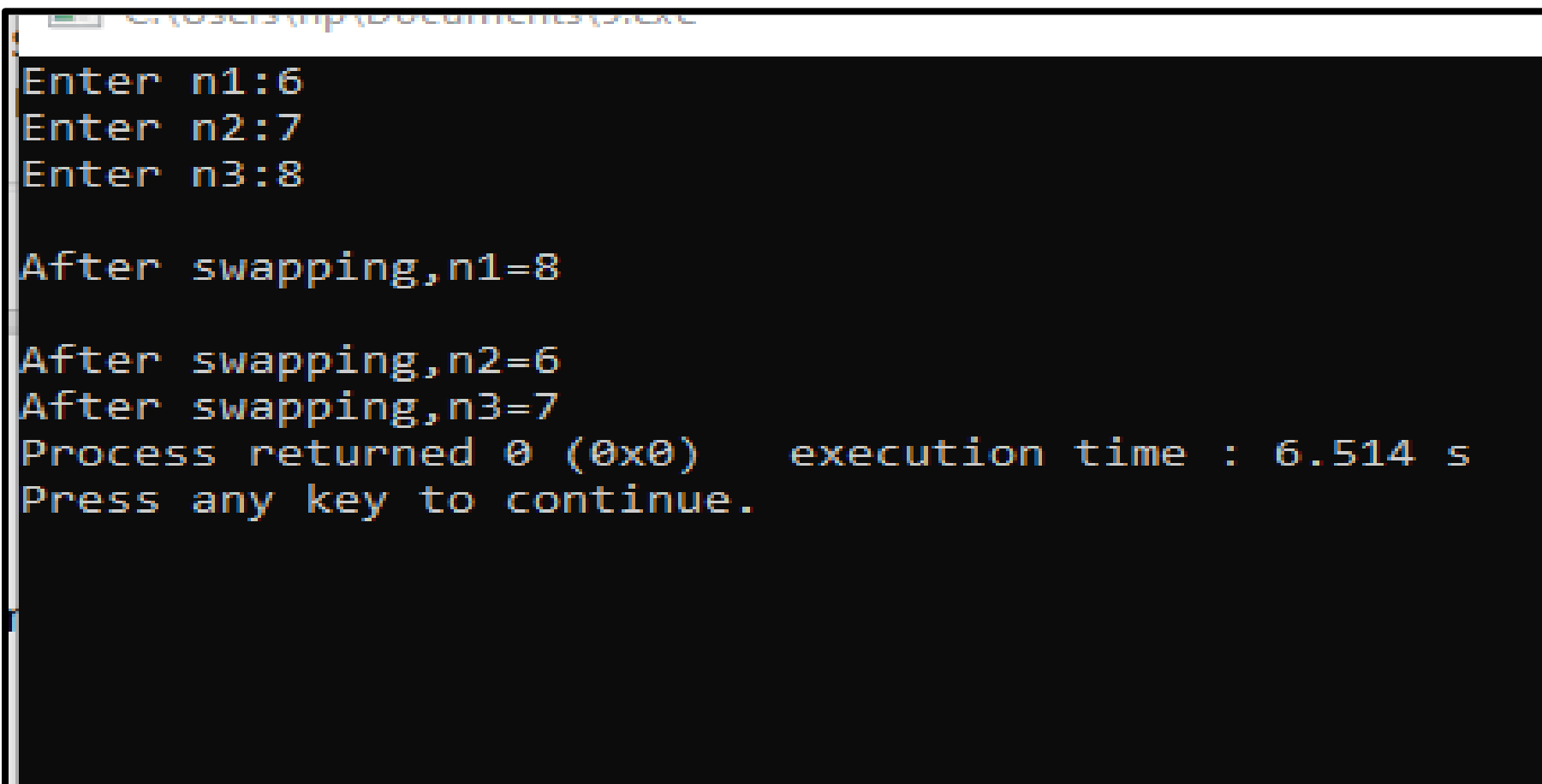
```
int n1,n2,n3;
```

```
printf("Enter n1:");
```

```
scanf("%d",&n1);
```

```
printf("Enter n2:");
```

```
scanf("%d",&n2);  
printf("Enter n3:");  
scanf("%d",&n3);  
n1=n1+n2+n3;  
n2=n1-(n2+n3);  
n3=n1-(n2+n3);  
n1=n1-(n2+n3);  
printf("\nAfter swapping,n1=%d\n",n1);  
printf("\nAfter swapping,n2=%d\n",n2);  
printf("After swapping,n3=%d",n3);  
return 0;}
```



```
Enter n1:6  
Enter n2:7  
Enter n3:8  
  
After swapping,n1=8  
After swapping,n2=6  
After swapping,n3=7  
Process returned 0 (0x0)   execution time : 6.514 s  
Press any key to continue.
```

program.10  
WAP to find  
area of  
rectangle

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

```

int main()
{
    int l,b;

    int area;

    printf("Nanci Rawat/n");

    printf("Enter the length of rectangle/n");

    scanf("%d",&l);

    printf("Enter the breadth of rectangle/n");

    scanf("%d",&b);

    area=l*b;

    printf("Area of rectangle=%d",area);

    return 0;}

```

```

C:\Users\hp\Documents\10.exe
Nanci Rawat/nEnter the length of rectangle/n3
Enter the breadth of rectangle/n3
Area of rectangle=99
Process returned 0 (0x0)   execution time : 9.342 s
Press any key to continue.

```

Program.11  
 WAP to find  
 area of square  
 #include<stdio.

h>

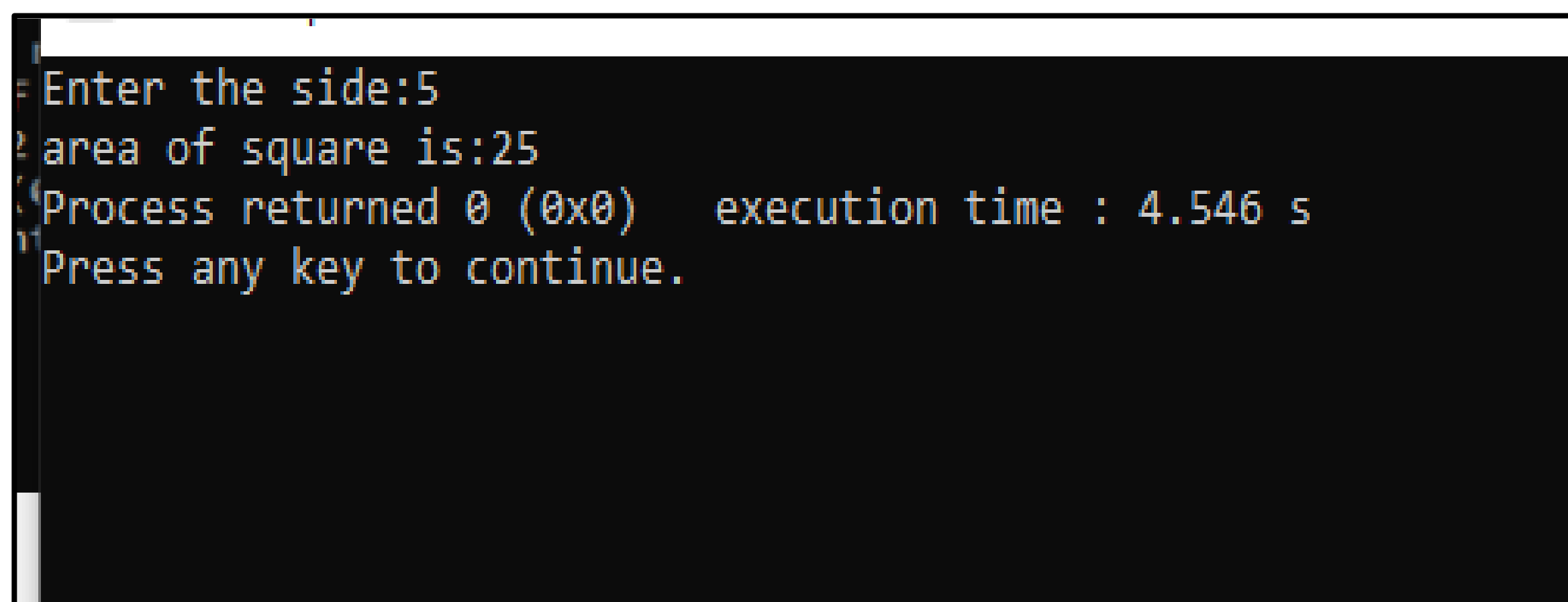
```
int main()
{
    int side,area;

    printf("Enter the side:");
    scanf("%d",&side);

    area=side*side;

    printf("area of square is:%d",area);

    return 0;
}
```

A screenshot of a terminal window with a black background and white text. The text shows the execution of a C program. It starts with a prompt 'Enter the side:' followed by the input '5'. Then it outputs 'area of square is:25'. Below that, it shows 'Process returned 0 (0x0) execution time : 4.546 s' and finally 'Press any key to continue.'.

```
1 Enter the side:5
2 area of square is:25
3 Process returned 0 (0x0) execution time : 4.546 s
4 Press any key to continue.
```

Program. 12 WAP to find the area of right angled triangle, isosceles triangle, equilateral triangle

```
#include<stdio.h>

#include<math.h>

int main()

{

int l,b;

double a,area2;

int area;

printf("Enter the length of triangle/n");

scanf("%d",&l);

printf("Enter the breadth of triangle/n");

scanf("%d",&b);

printf("Enter the side of triangle/n");

scanf("%lf",&a);

area=(l*b)/2;

area2=(sqrt(3)/4)*(a*a);

printf("\nArea of right angled triangle and isosceles
triangle=%d/n\n",area);
```



```

printf("Area of equilateral
triangle=%0.2lfsq.units",area2);

return 0;

}

```

```

C:\Users\hp\Documents\19.exe
Enter the length of triangle/n5
Enter the breadth of triangle/n6
Enter the side of triangle/n7
Area of right angled triangle and isosceles triangle=15/n
Area of equilateral triangle=21.22sq.units
Process returned 0 (0x0) execution time : 8.936 s
Press any key to continue.

```

Program . 13 WAP to find the area and volume of cube

```

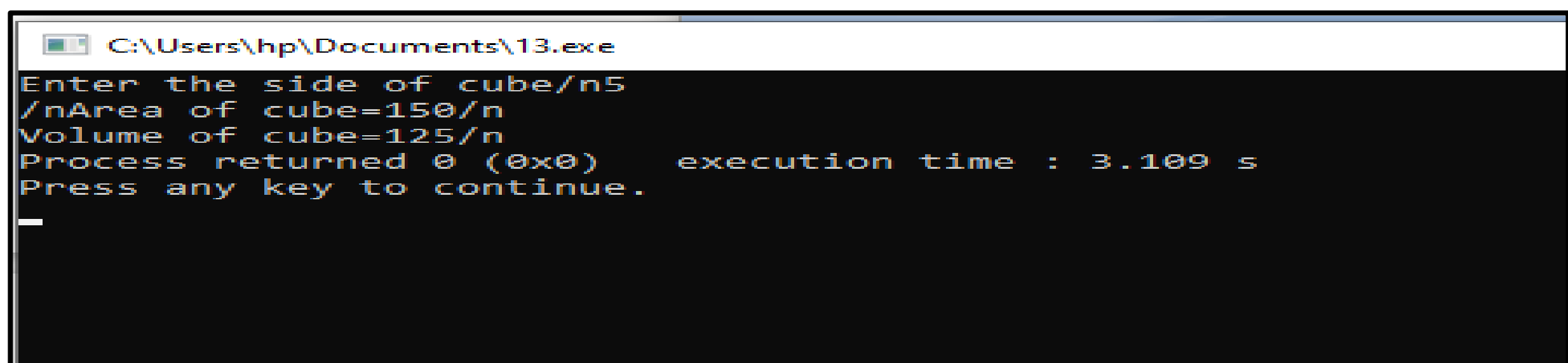
#include<stdio.h>

int main()
{
    int s;
    int area;
    int volume;

    printf("Enter the side of cube/n");

```

```
scanf("%d",&s);  
  
area=6*s*s;  
  
volume=s*s*s;  
  
printf("/nArea of cube=%d/n",area);  
  
printf("\nVolume of cube=%d/n",volume);  
  
return 0;  
  
}
```



```
C:\Users\hp\Documents\13.exe  
Enter the side of cube/n5  
/nArea of cube=150/n  
Volume of cube=125/n  
Process returned 0 (0x0) execution time : 3.109 s  
Press any key to continue.  
_
```

Program. 14 WAP to find area and volume of a cuboid

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

```
int main()
```

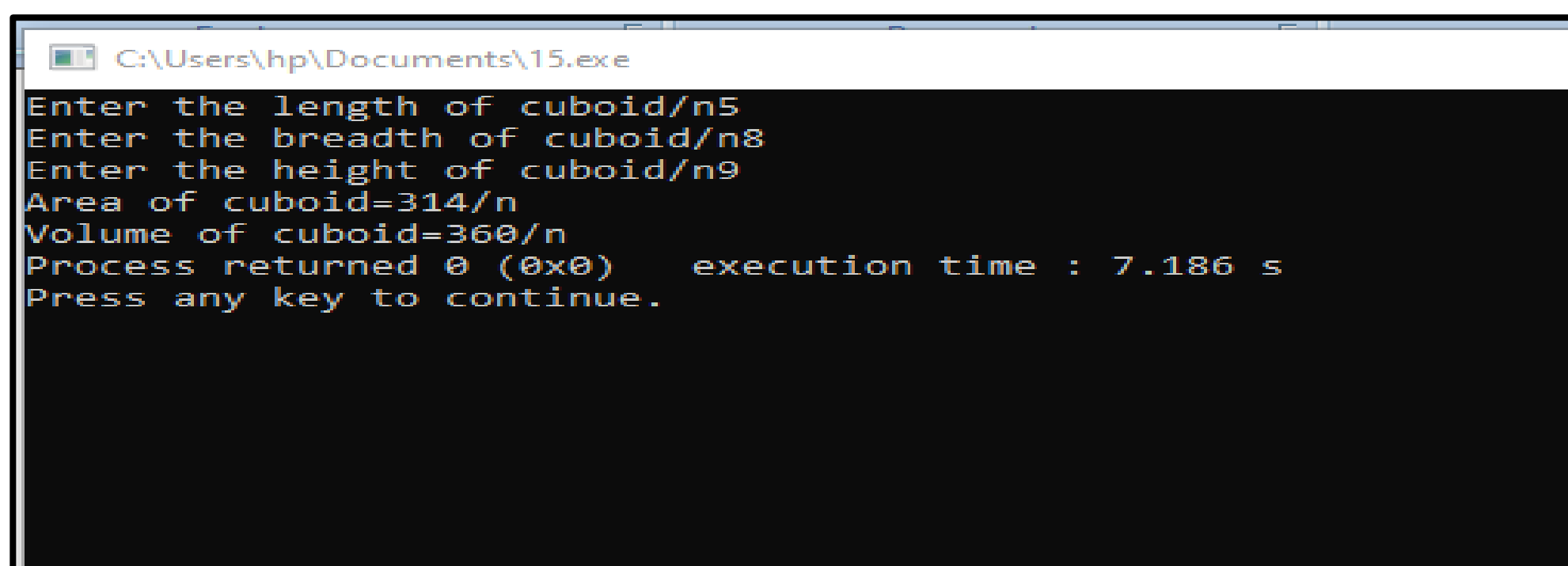
```
{
```

```
int l,b,h;
```

```
int area;
```

```
int volume;
```

```
printf("Enter the length of cuboid/n");  
scanf("%d",&l);  
printf("Enter the breadth of cuboid/n");  
scanf("%d",&b);  
printf("Enter the height of cuboid/n");  
scanf("%d",&h);  
area=2*(l*b+b*h+h*l);  
volume=l*b*h;  
printf("Area of cuboid=%d/n",area);  
printf("\nVolume of cuboid=%d/n",volume);  
return 0;  
}
```



```
C:\Users\hp\Documents\15.exe  
Enter the length of cuboid/n5  
Enter the breadth of cuboid/n8  
Enter the height of cuboid/n9  
Area of cuboid=314/n  
Volume of cuboid=360/n  
Process returned 0 (0x0)   execution time : 7.186 s  
Press any key to continue.
```

Prog 15 WAP to find largest number using the Logical AND operator

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

```
int main()
```

```
{
```

```
int m,n;
```

```
printf("Enter the numbers:");
```

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

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

```
if(m>n&& n<m)
```

```
{
```

```
printf("The largest number is=%d",m);
```

```
}
```

```
else
```

```
printf("The largest number is=%d",n);
```

```
return 0;
```

```
}
```

```
C:\Users\hp\Documents\152.exe
Enter the numbers:8
5
The largest number is=8
Process returned 0 (0x0)   execution time : 3.734 s
Press any key to continue.
```

Pro  
g.1  
6  
WA  
P to

validate username and password entered by the user is correct or not using the predefined username and password

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

```
#include<string.h>
```

```
int main()
```

```
{
```

```
char user[20];
```

```
char pass[20];
```

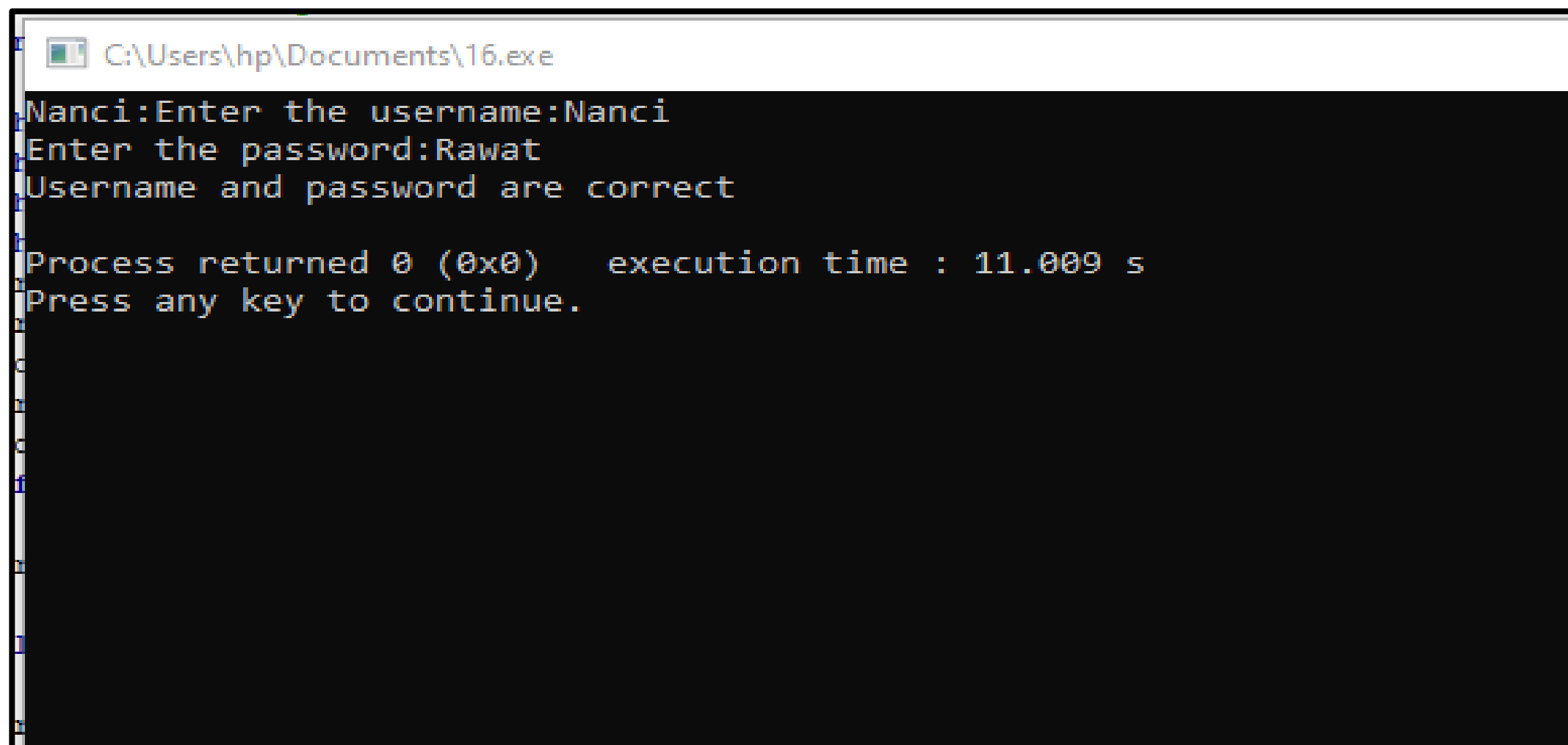
```
char user1[]="nanci";
```

```
char pass1[]="rawat";
```

```
printf("NANCI:");
```

```
printf("Enter the username:");
```

```
scanf("%s",&user);  
printf("Enter the password:");  
scanf("%s",&pass);  
if((strcmp(user,user1)==0)&&(strcmp(pass,pass1)==0))  
{  
    printf("Username and password are correct\n");  
}  
else  
{  
    printf("Invalid username and password\n");  
}  
return 0;  
}
```

A screenshot of a Windows command prompt window. The title bar shows the file path "C:\Users\hp\Documents\16.exe". The command prompt displays the following text: "Nanci:Enter the username:Nanci", "Enter the password:Rawat", "Username and password are correct", "Process returned 0 (0x0) execution time : 11.009 s", and "Press any key to continue.". The text is displayed in a monospaced font with a light blue background.

```
C:\Users\hp\Documents\16.exe
Nanci:Enter the username:Nanci
Enter the password:Rawat
Username and password are correct
Process returned 0 (0x0) execution time : 11.009 s
Press any key to continue.
```

Prog.17 WAP to input the positive number from the user to perform left shift operator.

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

```
int main()
```

```
{
```

```
int a,b;
```

```
printf("nanci:");
```

```
printf("Enter the numbers:");
```

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

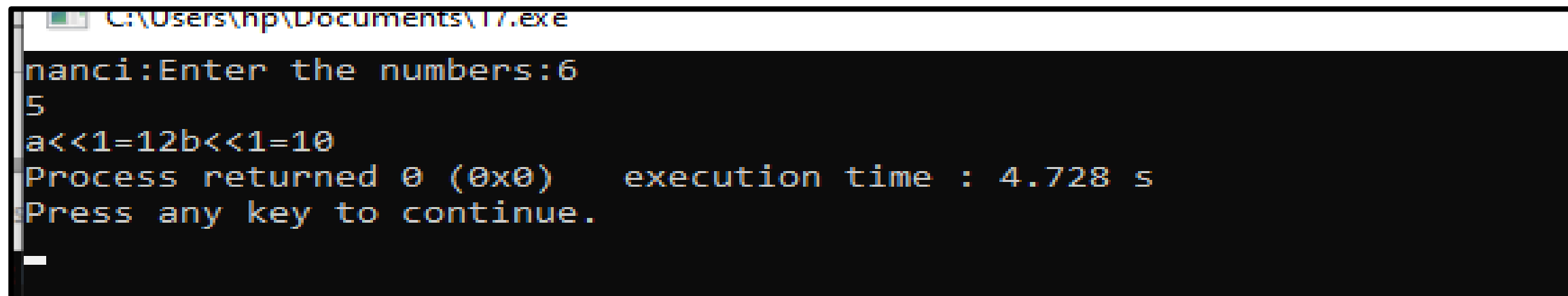
```
scanf("%d",&b);
```

```
printf("a<<1=%d",(a<<1));
```

```
printf("b<<1=%d",(b<<1));
```

```
return 0;
```

```
}
```



```
C:\Users\hp\Documents\17.exe
nanci:Enter the numbers:6
5
a<<1=12b<<1=10
Process returned 0 (0x0) execution time : 4.728 s
Press any key to continue.
```

Prog.18 WAP to input the positive number from the user to perform right shift operator

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

```
int main()
```

```
{
```

```
int a,b;
```

```
printf("NANCI:");
```

```
printf("\nEnter the numbers:");
```

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

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

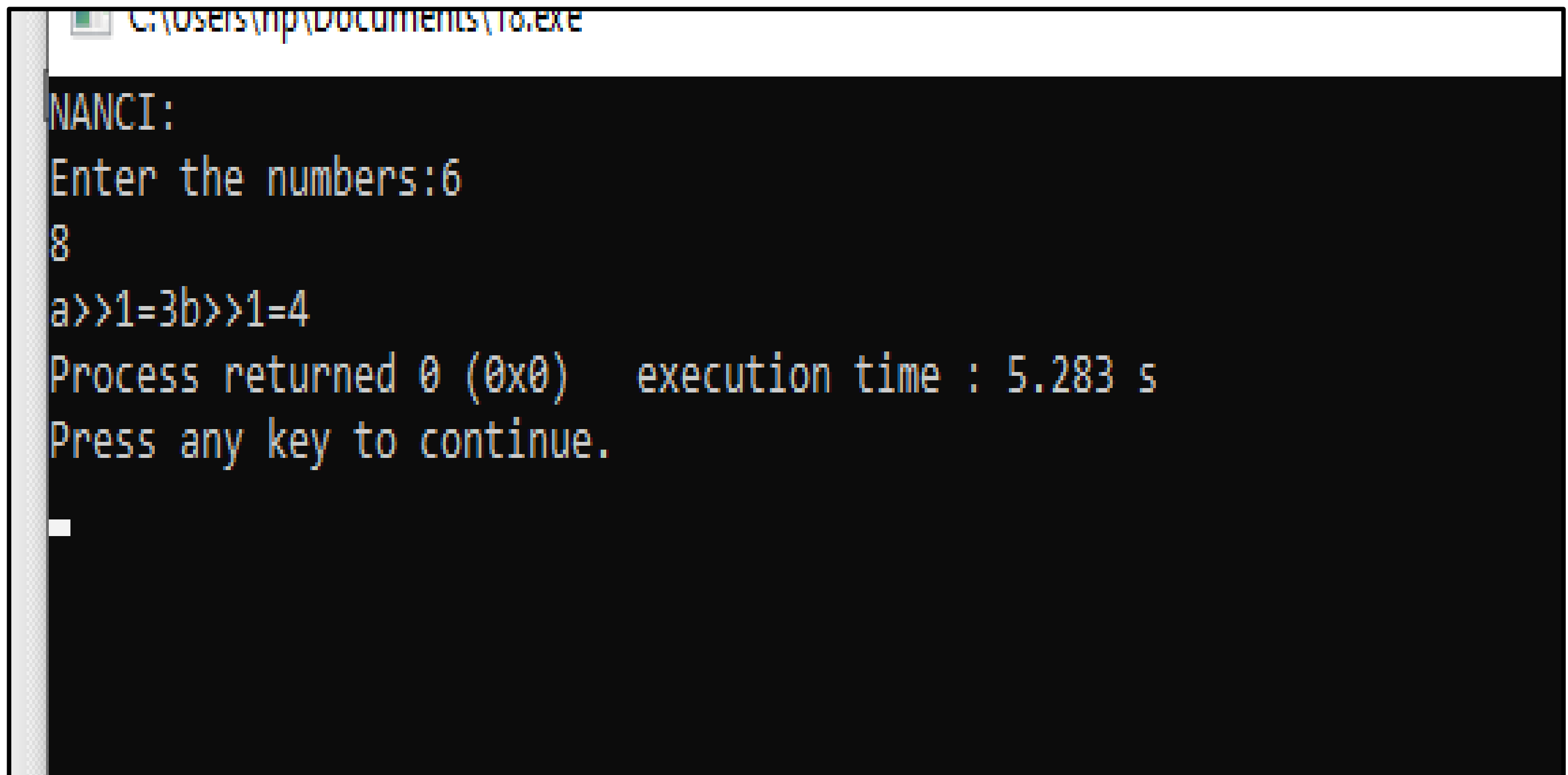
```
printf("a>>1=%d",(a>>1));
```

```
printf("b>>1=%d",(b>>1));
```

```
return 0;
```



}



```
C:\Users\vip\Documents\10.exe
NANCI:
Enter the numbers:6
8
a>>1=3b>>1=4
Process returned 0 (0x0)   execution time : 5.283 s
Press any key to continue.
_
```

Prog.19 WAP to perform preincrement and predecrement operator on two integers and print both original and updated value

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

```
int main()
```

```
{
```

```
int i=10,j,a=10,b;
```

```
printf("NANCI:");
```

```
printf("number before preincrement:");
```

```
printf("\ni :%d",i);
```

```
j=++i;
```

```
printf("\nnumber before prdecrement:");
```

```
printf("\na :%d",a);
```

```
b=-a;
```

```
printf("\nnumber after preincrement:");
```

```
printf("\nThe value of i is %d",i);
```

```
printf("\nThe value of j is%d",j);
```

```
printf("\nnumber after predecrement:");
```

```
printf("\nThe value of i is %d",a);
```

```
printf("\nThe value of j is %d",b);
```

```
return 0;}
```

```
C:\Users\hp\Documents\15.exe
nN1 Nanci: number before preincrement:
na i :10
number before prdecrement:
nna :10
nT number after preincrement:
nT The value of i is 11
nn The value of j is 11
nT number after predecrement:
nT The value of i is 9
} The value of j is 9
Process returned 0 (0x0)    execution time : 0.062 s
Press any key to continue.
```

Prog.20 WAP to perform postincrement and postdecrement operator on two integers and print both original and updated value

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

```
int main()
```

```
{
```

```
int i=10,j,a=10,b;
```

```
printf("KANIKA:");
```

```
printf("\nnumber before postincrement:");
```

```
printf("\ni :%d",i);
```

```
j=i++;
```

```
printf("\nnumber before postdecrement:");
```

```
printf("\na :%d",a);
```

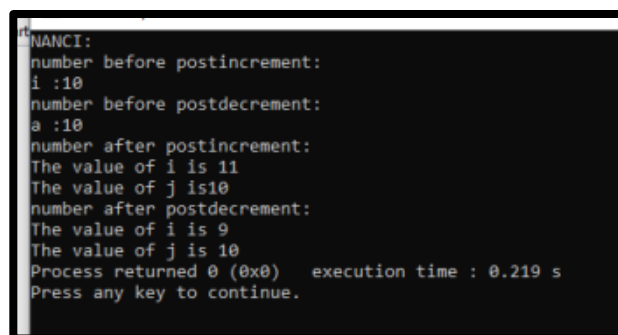
```
b=a--;
```

```
printf("\nnumber after postincrement:");
```

```
printf("\nThe value of i is %d",i);
```

```
printf("\nThe value of j is%d",j);
```

```
printf("\nnumber after postdecrement:");  
  
printf("\nThe value of i is %d",a);  
  
printf("\nThe value of j is %d",b);  
  
return 0;}
```



```
"NANCI:  
number before postincrement:  
i :10  
number before postdecrement:  
a :10  
number after postincrement:  
The value of i is 11  
The value of j is 10  
number after postdecrement:  
The value of i is 9  
The value of j is 10  
Process returned 0 (0x0)   execution time : 0.219 s  
Press any key to continue.
```

Prog 21. WAP for an integer no. and to check whether it is divisible by 7 or 9 using OR logical

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

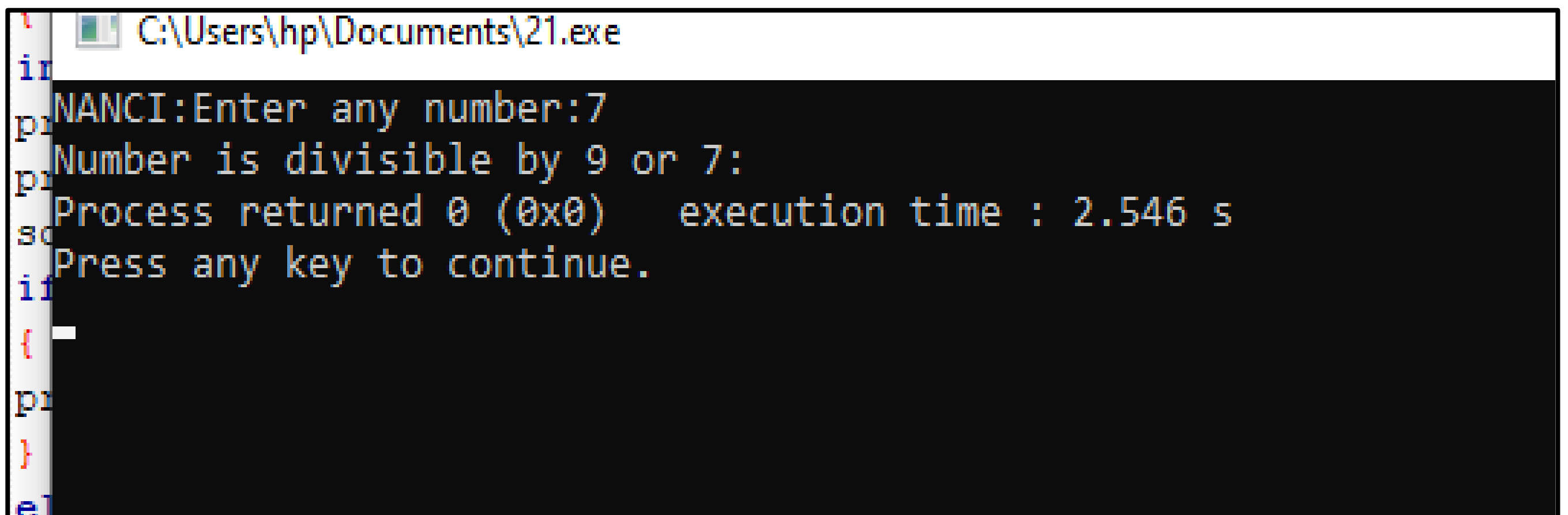
```
int main()
```

```
{
```

```
int n;
```

```
printf("NANCI:");
```

```
printf("Enter any number:");  
  
scanf("%d",&n);  
  
if((n%9==0)||(n%7==0))  
{  
    printf("Number is divisible by 9 or 7:");  
}  
  
else  
{  
    printf("Number is not divisible by 9 or 7:");  
}  
}
```



```
C:\Users\hp\Documents\21.exe  
NANCI:Enter any number:7  
Number is divisible by 9 or 7:  
Process returned 0 (0x0)   execution time : 2.546 s  
Press any key to continue.  
_
```

Prog.22 WAP to identify gender in single character and print full gender (Eg.if input is 'M' or 'm' ,print male

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

```
int main()
```

```
{
```

```
char c;
```

```
printf("Enter F for female:");
```

```
printf("Enter M for male:");
```

```
scanf("%c",&c);
```

```
if(c=='F' || c=='f')
```

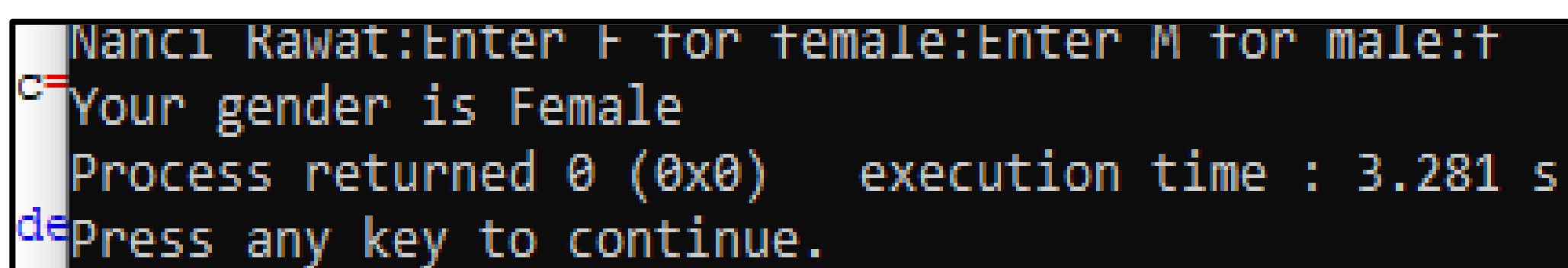
```
{
```

```
printf("Your gender is Female");
```

```
}
```

```
else if(c=='M' || c=='m')
```

```
{  
printf("Your gender is Male");  
}  
  
else  
  
{  
printf("Invalid:");  
}  
  
return 0;  
}
```



```
Nanci Rawat:Enter F for female:Enter M for male:f  
Your gender is Female  
Process returned 0 (0x0) execution time : 3.281 s  
Press any key to continue.
```



Prog.23 WAP to grade according to marks ,range

Between 85-100 - Grade 10

Between 75-85 - Grade 9

Between 65-75 - Grade 8

Between 55-65 - Grade 7

Between 50-55 - Grade 6

Between 40-50 - Grade 5

Rest fail

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

```
int main()
```

```
{
```

```
int m;
```

```
printf("NANCI:");
```

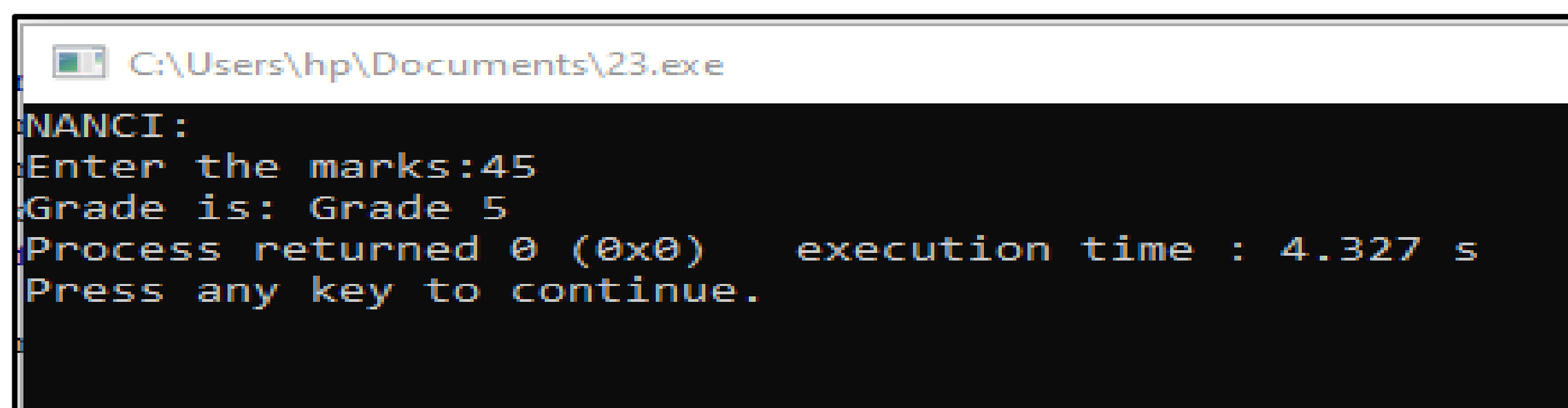
```
printf("\nEnter the marks:");
```

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

```
if(m<=100&&m>85)
```

```
{  
printf("Grade is :Grade 10");  
}  
else if(m<=85&&m>75)  
{  
printf("Grade is : Grade 9");  
}  
else if(m<=75&&m>65)  
{  
printf("Grade is: Grade 8");  
}  
else if(m<=65&&m>55)  
{  
printf("Grade is: Grade 7");  
}  
else if(m<=55&&m>50)  
{
```

```
printf("Grade is: Grade 6");  
}  
else if(m<=50&& m>40)  
{  
printf("Grade is: Grade 5");  
}  
else  
{  
printf("Fail:");  
}  
return 0;  
}
```



A screenshot of a Windows command prompt window. The title bar shows the file path "C:\Users\hp\Documents\23.exe". The command prompt displays the following text: "NANCI:", "Enter the marks:45", "Grade is: Grade 5", "Process returned 0 (0x0) execution time : 4.327 s", and "Press any key to continue.".

Prog24: Wap to print natural number in reverse from 1 to n.

```
#include<stdio.h>

int main()
{
    int i,start;

    printf("nanci rawat\n");
    printf("enter the value:");
    scanf("%d",&start);
    for(i=start;i>=1;i--)
    {
        printf("%d\n",i);
    }

    return 0;
}
```

#### Output

```
/tmp/xwItCxZhyx.o
nanci rawat
enter the value:6
6
5
4
3
2
1
|
```

Prog24: wap to print all alphabets from a to z.

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

```

int main()
{
    char ch; printf("alphabets from a-z are:\n");
    for(ch='a';ch<='z';ch++)
    {
        printf("%c\n",ch);
    }
    return 0;
}

```

```

alphabets from a-z are:
a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
p
q
r
s
t
u
v
w
x
y
z

```

Prog25: wap to print all natural number from 1 to n.

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

```
int main()
```

```
{
```

```
int i,n;
```

```
printf("nanci rawat\n");  
printf("enter the number:");  
scanf("%d",&n);  
printf("Natural no.from 1 to %d:1n",n);  
for(i=1;i<=n;i++)  
{  
    printf("%d\n",i);  
}  
return 0;  
}
```

```
/tmp/xwItCxZhyx.o  
nanci rawat  
enter the number:5  
Natural no.from 1 to 5:1n1  
2  
3  
4  
5  
|
```

Prog26:print all odd numbers btw 1 to 100

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

```
int main()
```

```
{  
int i;  
printf("nanci rawat\n");  
printf("odd numbers between 1 to100 are:\n");  
for(i=1;i<=100;++i)  
{if(i%2!=0)  
{  
printf("%d\n",i);  
}  
}  
return 0;  
}
```

```
nanci rawat
```

```
odd numbers between 1 to100 are:
```

```
1
```

```
3
```

```
5
```

```
7
```

```
9
```

```
11
```

```
13
```

```
15
```

```
17
```

```
19
```

```
21
```

```
23
```

```
25
```

```
27
```

```
29
```

```
31
```

```
33
```

```
35
```

```
37
```

```
39
```

```
41
```

```
43
```

```
45
```

```
47
```

```
49
```

```
51
```

```
53
```

```
55
```

```
57
```

```
59
```

```
61
```

```
63
```

```
65
```

```
67
```

```
69
```

```
71
```

```
73
```

```
75
```

```
77
```

```
79
```

```
81
```

```
83
```

```
85
```

```
87
```

```
89
```

```
91
```

```
93
```

```
95
```

```
97
```

```
99
```

PROG27:WAP to print all even numbers from 1 to 100

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

```
int main()
```



```
{  
int i;  
printf("nanci rawat\n");  
printf("even numbers between 1 to 100 are:\n");  
for(i=1;i<=100;i++)  
{if(i%2==0)  
{  
printf("%d\n",i);  
}  
}  
return 0;  
}
```

```
/tmp/xwItCxZhyx.o
```

```
nanci rawat
```

```
even numbers between 1 to 100 are:
```

```
2
```

```
4
```

```
6
```

```
8
```

```
10
```

```
12
```

```
14
```

```
16
```

```
18
```

```
20
```

```
22
```

```
24
```

```
26
```

```
28
```

```
30
```

```
32
```

```
34
```

```
36
```

```
38
```

```
40
```

```
42
```

```
44
```

```
46
```

```
48
```

```
50
```

```
52
```

```
54
```

```
56
```

```
58
```

```
60
```

```
62
```

```
64
```

```
66
```

```
68
```

```
70
```

```
72
```

```
74
```

```
76
```

```
78
```

```
80
```

```
82
```

```
84
```

```
86
```

```
88
```

```
90
```

```
92
```

```
94
```

```
96
```

```
98
```

```
100
```

Prog28 : wap to print find sum of all natural n numbers

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

```
int main()
```

```
{  
int num ,i,sum=0;  
printf("nanci rawat\n");  
printf("enter the numbers:");  
scanf("%d", & num);  
for(i=0;i<=num;i++)  
{  
sum=sum+i;  
}  
printf("\n sum of the first %d number is:%d",num,sum);  
return 0;  
}
```

```
/tmp/xwItCxZhyx.o  
nanci rawat  
enter the numbers:4  
sum of the first 4 number is:10
```

Prog29 : wap to find sum of all even numbers 1 to n

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

```
int main()
```

```
{
```

```
    int i, n, sum=0;
```

```
    printf("Enter the number: ");
```

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

```
    for(i=2; i<=n; i+=2)
```

```
    {
```

```
        sum += i;
```

```
    }
```

```
    printf("Sum of all even number between 1 to %d = %d",  
n, sum);
```

```
    return 0;
```

```
}
```

```
/tmp/ZZI1HoKl8t.o
```

```
Enter the number: 6
```

```
Sum of all even number between 1 to 6 = 12
```

Prog30: wap to find sum of all odd numbers 1 to n

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

```
int main()
```

```
{
```

```
    int i, n, sum=0;
```

```
    printf("Enter number: ");
```

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

```
    for(i=1; i<=n; i+=2)
```

```
    {
```

```
        sum += i;
```

```
    }
```

```
    printf("Sum of odd numbers = %d", sum);
```

```
    return 0;
```

```
}
```

```
/tmp/ZZI1HoK18t.o
```

```
Enter number: 9
```

```
Sum of odd numbers = 25
```

Prog30: wap to multiplication table of any number

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

```
int main() {
```

```
    int n;
```

```
    printf("Enter an integer: ");
```

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

```
    for (int i = 1; i <= 10; ++i) {
```

```
        printf("%d * %d = %d \n", n, i, n * i);
```

```
    }
```

```
    return 0;
```

```
}
```

```
Enter an integer: 3
```

```
3 * 1 = 3
```

```
3 * 2 = 6
```

```
3 * 3 = 9
```

```
3 * 4 = 12
```

```
3 * 5 = 15
```

```
3 * 6 = 18
```

```
3 * 7 = 21
```

```
3 * 8 = 24
```

```
3 * 9 = 27
```

```
3 * 10 = 30
```

Prog31: wap to count number of digits in a num

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

```
int main() {
```

```
    long long n;
```

```
    int count = 0;
```

```
    printf("Enter an integer: ");
```

```
    scanf("%lld", &n);
```

```
    do {
```

```
        n /= 10;
```

```
        ++count;
```

```
    } while (n != 0);
```

```
    printf("Number of digits: %d", count);
```

```
}
```

```
/tmp/ZZI1HoKl8t.o
```

```
Enter an integer: 567
```

```
Number of digits: 3
```

Prog32: wap to find first and last digit of a no

```
int main()
{
    int n, sum=0, firstDigit, lastDigit;
    printf("Enter number = ");
    scanf("%d", &n);
    lastDigit = n % 10;
    while(n >= 10)
    {
        n = n / 10;
    }
    firstDigit = n;
    printf("first digit = %d and last digit = %d\n\n",
firstDigit,lastDigit);
    return 0;
```

```
/tmp/ZZI1HoK18t.o
Enter number = 456
first digit = 4 and last digit = 6
}
```



Prog33:wap to find sum of first and last digit number

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

```
int main()
```

```
{
```

```
    int n, sum=0, firstDigit, lastDigit;
```

```
    printf("Enter number to find sum of first and last digit  
= ");
```

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

```
    lastDigit = n % 10;
```

```
    while(n >= 10)
```

```
    {
```

```
        n = n / 10;
```

```
    }
```

```
    firstDigit = n;
```

```
    sum = firstDigit + lastDigit;
```

```
    printf("Sum of first and last digit = %d", sum);
```

```
    return 0;
```

```
}
```

```
/tmp/ZZI1HoK18t.o  
Enter number to find sum of first and last digit = 345  
Sum of first and last digit = 8
```

Prog34: wap to calculate sum of digits of a number

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

```
int main()
```

```
{
```

```
    int num, sum = 0, rem;
```

```
    printf("Enter a number: ");
```

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

```
    while (num != 0)
```

```
    {
```

```
        rem = num % 10;
```

```
        sum = sum + rem;
```

```
        num = num / 10;
```

```
    }
```

```
printf("Sum of digits of the number is %d", sum);  
  
return 0;  
  
}
```

```
/tmp/ZZI1HoK18t.o  
Enter a number: 834  
Sum of digits of the number is 15
```

Prog35: wap to calculate product of digits of a number

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

```
int main()
```

```
{
```

```
    int num;
```

```
    long long product=1ll;
```

```
    printf("Enter any number to calculate product of digit:  
");
```

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

```
    product = (num == 0 ? 0 : 1ll);
```

```
    while(num != 0)
```

```
{  
    product = product * (num % 10);  
    num = num / 10;  
}  
printf("Product of digits = %lld", product);  
return 0;  
}
```

```
/tmp/ZZI1HoK18t.o  
Enter any number to calculate product of digit: 65  
Product of digits = 30
```

Prog36: wap to enter a number and print its reverse

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

```
int main()
```

```
{
```

```
    int num, reverse = 0;
```

```
    printf("Enter any number to find reverse: ");
```

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

```
while(num != 0)
{
reverse = (reverse * 10) + (num % 10);
num /= 10;
}

printf("Reverse = %d", reverse);

return 0;}
```

#### Output

```
/tmp/ZZIlHoKl8t.o
Enter any number to find reverse: 347
Reverse = 743
```

Prog36: wap to check whether a number is palindrome or not

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

```
int main() {
```

```
int n, reversed = 0, remainder, original;
```

```
printf("Enter an integer: ");
```

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

```
original = n;
while (n != 0) {
    remainder = n % 10;
    reversed = reversed * 10 + remainder;
    n /= 10;
}
if (original == reversed)
    printf("%d is a palindrome.", original);
else
    printf("%d is not a palindrome.", original);

return 0;
```

```
}
/tmp/ZZI1HoKl8t.o
Enter an integer: 204
204 is not a palindrome.
```

Prog38: wap to find frequency of each digit in a given integer

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

```
int main() {
```

```
    int num, d, r, t, count = 0;
```

```
    printf("Enter the integer = ");
```

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

```
    printf("Enter the digit = ");
```

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

```
    t = num;
```

```
    if (num == 0 && d == 0) {
```

```
        count++;
```

```
    }
```

```
    while (num > 0) {
```

```
        r = num % 10;
```

```
        if (r == d)
```

```
            count++;
```

```
        num = num / 10;
```

```
}  
  
printf("Frequency of %d in %d = %d", d, t, count);  
  
return 0;  
  
}
```

```
/tmp/ZZIlHoKl8t.o  
Enter the integer = 6  
Enter the digit = 1  
Frequency of 1 in 6 = 0
```

Prog39: wap to enter a number and print it in words

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

```
int main()
```

```
{
```

```
    int n, num = 0;
```

```
    printf("Enter any number to print in words: ");
```

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

```
    while(n != 0)
```

```
    {
```

```
        num = (num * 10) + (n % 10);
```



```
    n /= 10;
}
while(num != 0)
{
    switch(num % 10)
    {
        case 0:
            printf("Zero ");
            break;

        case 1:
            printf("One ");
            break;

        case 2:
            printf("Two ");
            break;

        case 3:
            printf("Three ");
```

break;

case 4:

printf("Four ");

break;

case 5:

printf("Five ");

break;

case 6:

printf("Six ");

break;

case 7:

printf("Seven ");

break;

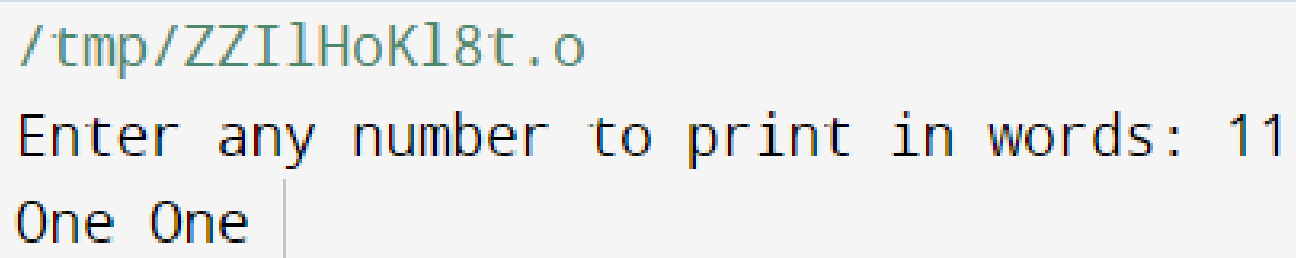
case 8:

printf("Eight ");

break;

case 9:

```
        printf("Nine ");  
        break;  
    }  
    num = num / 10;  
}  
return 0;  
}
```



```
/tmp/ZZIlHoKl8t.o  
Enter any number to print in words: 11  
One One
```

Prog40: wap to print all ASCII character with their values

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

```
int main()
```

```
{
```

```
    int i;
```

```
    for(i=0; i<=255; i++)
```

```
    {
```

```

    printf("ASCII value of character %c = %d\n", i, i);

}

return 0;

}

```

```

/tmp/ZZI1HoKl8t.o
ASCII value of character . = 0
ASCII value of character . = 1
ASCII value of character . = 2
ASCII value of character . = 3
ASCII value of character . = 4
ASCII value of character . = 5
ASCII value of character . = 6
ASCII value of character . = 7
ASCII value of character . = 8
ASCII value of character = 9
ASCII value of character
= 10
ASCII value of character . = 11
ASCII value of character . = 12
ASCII value of character
= 13

```

Prog41: wap to find all factors of a number

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

```
int main()
```

```
{
```

```
    int i, num;
```

```
printf("Enter any number to find its factor: ");  
scanf("%d", &num);  
printf("All factors of %d are: \n", num);  
for(i=1; i<=num; i++)  
{  
    if(num % i == 0)  
    {  
        printf("%d, ",i);  
    }  
}  
return 0;  
}
```

#### Output

```
/tmp/ZZIlHoK18t.o  
Enter any number to find its factor: 5  
All factors of 5 are:  
1, 5, |
```

Prog42: wap to calculate factorial of a number

```
#include <stdio.h>

int main()
{
    int i, num;
    unsigned long long fact=1LL;
    printf("Enter any number to calculate factorial: ");
    scanf("%d", &num);
    for(i=1; i<=num; i++)
    {
        fact = fact * i;
    }
    printf("Factorial of %d = %llu", num, fact);
    return 0;}
```

#### Output

```
/tmp/ZZI1HoKl8t.o
Enter any number to calculate factorial: 4
Factorial of 4 = 24
```

Prog43: wap to find HCF[GCD] of two numbers

```
#include <stdio.h>

int main()
{
    int n1, n2, i, gcd;
    printf("Enter two integers: ");
    scanf("%d %d", &n1, &n2);
    for(i=1; i <= n1 && i <= n2; ++i)
    {
        if(n1%i==0 && n2%i==0)
            gcd = i;
    }
    printf("G.C.D of %d and %d is %d", n1, n2, gcd);
    return 0;
}
```

#### Output

```
/tmp/ZZI1HoK18t.o
Enter two integers: 4 6
G.C.D of 4 and 6 is 2
```

Prog44: wap to find LCM of two numbers

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

```
int main() {
```

```
    int n1, n2, max;
```

```
    printf("Enter two positive integers: ");
```

```
    scanf("%d %d", &n1, &n2);
```

```
    max = (n1 > n2) ? n1 : n2;
```

```
    while (1) {
```

```
        if ((max % n1 == 0) && (max % n2 == 0)) {
```

```
            printf("The LCM of %d and %d is %d.", n1, n2,  
max);
```

```
            break;
```

```
        }
```

```
        ++max;
```

```
    }
```

```
    return 0;
```



```
}
```

#### Output

```
/tmp/ZZIlHoK18t.o  
Enter two positive integers: 34  
44  
The LCM of 34 and 44 is 748.
```

Prog45: wap to check, whether a number is prime or not

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

```
int main() {
```

```
    int n, i, flag = 0;
```

```
    printf("Enter a positive integer: ");
```

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

```
    if (n == 0 || n == 1)
```

```
        flag = 1;
```

```
    for (i = 2; i <= n / 2; ++i) {
```

```
        if (n % i == 0) {
```

```
            flag = 1;
```

```
            break;
```

```
        }
```

```
}  
  
if (flag == 0)  
    printf("%d is a prime number.", n);  
  
else  
    printf("%d is not a prime number.", n);  
  
return 0;  
}
```

#### Output

```
/tmp/ZZIlHoKl8t.o  
Enter a positive integer: 48  
48 is not a prime number.
```

Prog46: wap to print all prime all numbers between 1 to n

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

```
int main(){
```

```
    int i, num, n, count;
```

```
    printf("Enter the range: ");
```

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

```
printf("The prime numbers in between the range 1  
to %d:",n);  
  
for(num = 1;num<=n;num++)  
{  
    count = 0;  
    for(i=2;i<=num/2;i++){  
        if(num%i==0){  
            count++;  
            break;  
        }  
    }  
    if(count==0 && num!= 1)  
        printf("%d ",num);  
}  
}
```

Output

Clear

```
/tmp/ZZIlHoKl8t.o
```

```
Enter the range: 99
```

```
The prime numbers in between the range 1 to 99:2 3 5 7 11 13 17 19 23 29 31 37 41 43  
47 53 59 61 67 71 73 79 83 89 97 |
```

Prog47: wap to find sum of all prime numbers between 1 to n

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

```
int main()
```

```
{
```

```
    int i, j, end, isPrime, sum=0;
```

```
    printf("Find sum of all prime between 1 to : ");
```

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

```
    for(i=2; i<=end; i++)
```

```
    {
```

```
        isPrime = 1;
```

```
        for(j=2; j<=i/2 ;j++)
```

```
        {
```

```
            if(i%j==0)
```

```

        {
            isPrime = 0;
            break;
        }
    }
    if(isPrime==1)
    {
        sum += i;
    }
}

printf("Sum of all prime numbers between 1 to %d
= %d", end, sum);

return 0;}

```

#### Output

```

/tmp/ZZI1HoK18t.o
Find sum of all prime between 1 to : 10
Sum of all prime numbers between 1 to 10 = 17

```

Prog48: wap to find all prime factors of a number

```
#include <stdio.h>

int main()
{
    int i, j, num, isPrime;

    printf("Enter any number to print Prime factors: ");
    scanf("%d", &num);

    printf("All Prime Factors of %d are: \n", num);
    for(i=2; i<=num; i++)
    {
        if(num%i==0)
        {
            isPrime = 1;
            for(j=2; j<=i/2; j++)
            {
                if(i%j==0)
                {
```

```

        isPrime = 0;

        break;
    }

}

if(isPrime==1)
{
    printf("%d, ", i);
}

}

}

return 0;
}

```

#### Output

```

/tmp/ZZI1HoKl8t.o
Enter any number to print Prime factors: 46
All Prime Factors of 46 are:
2, 23, |

```

Prog49: wap to check whether a number is armstrong or not

```
#include <stdio.h>

int main() {
    int num, originalNum, remainder, result = 0;
    printf("Enter a three-digit integer: ");
    scanf("%d", &num);
    originalNum = num;
    while (originalNum != 0) {
        remainder = originalNum % 10;
        result += remainder * remainder * remainder;
        originalNum /= 10;
    }
    if (result == num)
        printf("%d is an Armstrong number.", num);
    else
        printf("%d is not an Armstrong number.", num);
    return 0;
}
```



### Output

```
/tmp/ZZI1HoK18t.o  
Enter a three-digit integer: 346  
346 is not an Armstrong number.
```

Prog50: wap to print all Armstrong numbers between 1 to n

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

```
int main()
```

```
{
```

```
    int num, lastDigit, digits, sum, i, end;
```

```
    printf("Enter upper limit: ");
```

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

```
    printf("Armstrong number between 1 to %d are: \n",  
end);
```

```
    for(i=1; i<=end; i++)
```

```
    {
```

```
        sum = 0;
```

```
        num = i;
```

```

digits = (int) log10(num) + 1;
while(num > 0)
{
    lastDigit = num % 10;
    sum = sum + ceil(pow(lastDigit, digits));
    num = num / 10;
}
if(i == sum)
{
    printf("%d, ", i);
}
}

return 0;
}

```

```
/tmp/ZZIlHoKl8t.o
```

```
Enter upper limit: 153
```

```
Armstrong number between 1 to 153 are:
```

```
1, 2, 3, 4, 5, 6, 7, 8, 9, 153, |
```

Prog51: wap to check whether a number is perfect number or not

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

```
int main()
```

```
{
```

```
    int i, num, sum = 0;
```

```
    printf("Enter any number to check perfect number: ");
```

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

```
    for(i = 1; i <= num / 2; i++)
```

```
    {
```

```
        if(num%i == 0)
```

```
        {
```

```
            sum += i;
```

```
        }
```

```
    }
```

```
    if(sum == num && num > 0)
```

```
    {
```

```

        printf("%d is PERFECT NUMBER", num);
    }
    else
    {
        printf("%d is NOT PERFECT NUMBER", num);
    }
    return 0;
}

```

#### Output

```

/tmp/ZZIlHoKl8t.o
Nanci rawatEnter any number to check perfect number: 4
4 is NOT PERFECT NUMBER

```

Prog52: wap to print all perfect numbers between 1 to n

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

```
int main()
```

```
{
```

```
    int i, j, end, sum;
```

```
    printf("Enter upper limit: ");
```

```
scanf("%d", &end);  
printf("All Perfect numbers between 1 to %d:\n", end);  
for(i=1; i<=end; i++)  
{  
    sum = 0;  
    for(j=1; j<i; j++)  
    {  
        if(i % j == 0)  
        {  
            sum += j;  
        }  
    }  
    if(sum == i)  
    {  
        printf("%d, ", i);  
    }  
}
```

```
    return 0;
}
```

#### Output

```
/tmp/ZZIlHoKl8t.o
Enter upper limit: 34
All Perfect numbers between 1 to 34:
6, 28, |
```

Prog53: wap to check whether a number is strong number or not

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

```
int main()
```

```
{
```

```
    int i, originalNum, num, lastDigit, sum;
```

```
    long fact;
```

```
    printf("Enter any number to check Strong number: ");
```

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

```
    originalNum = num;
```

```
    sum = 0;
```

```
    while(num > 0)
```

```
{  
    lastDigit = num % 10;  
    fact = 1;  
    for(i=1; i<=lastDigit; i++)  
    {  
        fact = fact * i;  
    }  
    sum = sum + fact;  
    num = num / 10;  
}  
if(sum == originalNum)  
{  
    printf("%d is STRONG NUMBER", originalNum);  
}  
else  
{  
    printf("%d is NOT STRONG NUMBER", originalNum);  
}
```

```
}  
  
return 0;  
  
}
```

#### Output

```
/tmp/ZZIlHoKl8t.o  
Enter any number to check Strong number: 34  
34 is NOT STRONG NUMBER
```

Prog54:wap to print all strong numbers between 1 to n

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

```
int main()
```

```
{
```

```
    int i, j, cur, lastDigit, end;
```

```
    long long fact, sum;
```

```
    printf("Enter upper limit: ");
```

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

```
    printf("All Strong numbers between 1 to %d are:\n",  
end);
```

```
    for(i=1; i<=end; i++)
```



```
{  
cur = i;  
    sum = 0;  
    while(cur > 0)  
    {  
        fact = 1ll;  
        lastDigit = cur % 10;  
        for( j=1; j<=lastDigit; j++)  
        {  
            fact = fact * j;  
        }  
        sum += fact;  
        cur /= 10;  
    }  
    if(sum == i)  
    {  
        printf("%d, ", i);  
    }  
}
```

```
    }  
}  
  
return 0;  
  
}
```

```
^ /tmp/ZZIlHoK18t.o  
Enter upper limit: 9  
All Strong numbers between 1 to 9 are:  
1, 2, |
```

Prog55: wap to print fabonacci series up to n terms

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

```
int main()
```

```
{
```

```
    int a, b, c, i, terms;
```

```
    printf("Enter number of terms: ");
```

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

```
    a = 0;
```

```
    b = 1;
```

```
    c = 0;
```

```
printf("Fibonacci terms: \n");  
for(i=1; i<=terms; i++)  
{  
    printf("%d, ", c);  
    a = b;  
    b = c;  
    c = a + b;  
}  
return 0;  
}
```

#### Output

```
/tmp/wzQE5nc7tB.o  
Enter number of terms: 9  
Fibonacci terms:  
0, 1, 1, 2, 3, 5, 8, 13, 21,
```

Prog56. Write a C program to find one's complement of a binary number.

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

```
int main()
```

```
{  
    char binary[SIZE + 1], onesComp[SIZE + 1];  
    int i, error=0;  
    printf("Enter %d bit binary value: ", SIZE);  
    gets(binary);  
    for(i=0; i<SIZE; i++)  
    {  
        if(binary[i] == '1')  
        {  
            onesComp[i] = '0';  
        }  
        else if(binary[i] == '0')  
        {  
            onesComp[i] = '1';  
        }  
        else  
        {  
            error=1;  
            break;  
        }  
    }  
    if(error == 1)  
        printf("Invalid binary value entered\n");  
    else  
        printf("The complement of the binary value is: ");  
    for(i=0; i<SIZE; i++)  
        printf("%c", onesComp[i]);  
    printf("\n");  
}
```

```

        printf("Invalid Input");
error = 1;

        break;
    }
}

onesComp[SIZE] = '\0';
if(error == 0)
{
    printf("Original binary = %s\n", binary);
    printf("Ones complement = %s", onesComp);
}

return 0;

```

```

Enter any 8 bit binary value: 00001111
Original binary = 00001111
Ones complement = 11110000

```

60. Write a C program to find two's complement of a binary number.

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

```
#define SIZE 8
```

```
int main()
```

```
{
```

```
    char binary[SIZE + 1], onesComp[SIZE + 1],  
    twosComp[SIZE + 1];
```

```
    int i, carry=1;
```

```
    printf("Enter %d bit binary value: ", SIZE);
```

```
    gets(binary);
```

```
    for(i=0; i<SIZE; i++)
```

```
    {
```

```
        if(binary[i] == '1')
```

```
        {
```

```
            onesComp[i] = '0';
```

```
        }
```

```
        else if(binary[i] == '0')
```

```
        {
```

```
            onesComp[i] = '1';
```

```
    }  
}  
onesComp[SIZE] = '\0';  
for(i=SIZE-1; i>=0; i--)  
{  
    if(onesComp[i] == '1' && carry == 1)  
    {  
        twosComp[i] = '0';  
    }  
    else if(onesComp[i] == '0' && carry == 1)  
    {  
        twosComp[i] = '1';  
        carry = 0;  
    }  
    else  
    {  
        twosComp[i] = onesComp[i];  
    }  
}
```

```

    }
}

twosComp[SIZE] = '\0';

printf("Original binary = %s\n", binary);
printf("Ones complement = %s\n", onesComp);
printf("Twos complement = %s\n", twosComp);

return 0;
}

```

```

/tmp/rATWqhvyct.o
Enter 8 bit binary value: 10101010
Original binary = 10101010
Ones complement = 01010101
Twos complement = 01010110

```

61. Write a C program to convert Binary to Octal number system.

```

#include <math.h>

#include <stdio.h>

int convert(long long bin);

int main() {

```



```
long long bin;

printf("Enter a binary number: ");

scanf("%lld", &bin);

printf("%lld in binary = %d in octal", bin, convert(bin));

return 0;

}
```

```
int convert(long long bin) {

    int oct = 0, dec = 0, i = 0;


    // converting binary to decimal

    while (bin != 0) {

        dec += (bin % 10) * pow(2, i);

        ++i;

        bin /= 10;

    }

    i = 1;
```

```

// converting to decimal to octal
while (dec != 0) {
    oct += (dec % 8) * i;
    dec /= 8;
    i *= 10;
}
return oct;
}

```

```

Enter a binary number: 101001
101001 in binary = 51 in octal

```

62. Write a C program to convert Binary to Decimal number system.

```

#include <stdio.h>

#include <math.h>

int convert(long long);

int main() {
    long long n;

```

```
printf("Enter a binary number: ");  
scanf("%lld", &n);  
printf("%lld in binary = %d in decimal", n, convert(n));  
return 0;  
}  
  
int convert(long long n) {  
    int dec = 0, i = 0, rem;  
    while (n != 0) {  
        rem = n % 10;  
        n /= 10;  
        dec += rem * pow(2, i);  
        ++i;  
    }  
  
    return 0;  
}
```

```
Enter a binary number: 1101
1101 in binary = 13 in decimal
```

63. Write a C program to convert Binary to Hexadecimal number system.

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

```
int main()
```

```
{
```

```
    long int binaryval, hexadecimalval = 0, i = 1, remainder;
```

```
    printf("Enter the binary number: ");
```

```
    scanf("%ld", &binaryval);
```

```
    while (binaryval != 0)
```

```
    {
```

```
        remainder = binaryval % 10;
```

```
        hexadecimalval = hexadecimalval + remainder * i;
```

```
        i = i * 2;
```

```

        binaryval = binaryval / 10;
    }

    printf("Equivalent hexadecimal value: %lX",
hexadecimalval);

    return 0;

}

```

```

/tmp/im7BYngknw.o
Enter the binary number: 1000
Equivalent hexadecimal value: 8

```

64. Write a C program to convert Octal to Binary number system.

```

#include <stdio.h>

#define MAX 100

int main()
{
    char octalnum[MAX];

    long i = 0;

```

```
printf("Enter any octal number: ");
scanf("%s", octalnum);
printf("Equivalent binary value: ");
while (octalnum[i])
{
    switch (octalnum[i])
    {
        case '0':
            printf("000"); break;
        case '1':
            printf("001"); break;
        case '2':
            printf("010"); break;
        case '3':
            printf("011"); break;
        case '4':
            printf("100"); break;
```

case '5':

printf("101"); break;

case '6':

printf("110"); break;

case '7':

printf("111"); break;

default:

printf("\n Invalid octal digit %c ", octalnum[i]);

return 0;

}

i++;

}

return 0;

}

```
/tmp/im7BYngknw.o
```

```
Enter any octal number: 16
```

```
Equivalent binary value: 001110
```

65. Write a C program to convert Octal to Decimal number system.

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

```
#include <math.h>
```

```
int main()
```

```
{
```

```
    long int octal, decimal = 0;
```

```
    int i = 0;
```

```
    printf("Enter any octal number: ");
```

```
    scanf("%ld", &octal);
```

```
    while (octal != 0)
```

```
    {
```

```
        decimal = decimal +(octal % 10)* pow(8, i++);
```

```
        octal = octal / 10;
```

```
    }
```

```
    printf("Equivalent decimal value: %ld",decimal);
```

```
    return 0;
```



```
}
```

```
/tmp/im7BYngknw.o  
Enter any octal number: 16  
Equivalent decimal value: 14
```

66. Write a C program to convert Octal to Hexadecimal number system.

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

```
#include <math.h>
```

```
int main()
```

```
{
```

```
    int n, sum = 0;
```

```
    printf("Nanci Rawat\n");
```

```
    printf("Enter the Octal Number :--> ");
```

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

```
    int i = 0;
```

```
    while(n != 0)
```

```
    {
```

```
        int digit = n % 10;
```

```
    sum = sum + (digit * pow(8,i));  
    n = n / 10;  
    i++;  
}  
printf("\nThe Decimal Number is :-> %d",sum);  
int ans = 0,j = 0;  
while(sum != 0)  
{  
    int digit = sum % 16;  
    ans = ans + (digit * pow(10, j));  
    sum = sum / 16;  
    j++;  
}  
printf("\nThe Hexadecimal Number is :-> %d",ans);  
return 0;  
}
```

```
/tmp/im7BYngknw.o
Nanci Rawat
Enter the Octal Number :--> 128
The Decimal Number is :--> 88
The Hexadecimal Number is :--> 58
```

67. Write a C program to convert Decimal to Binary number system.

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

```
int main()
```

```
{
```

```
    long long decimal, tempDecimal, binary;
```

```
    int rem, place = 1;
```

```
    binary = 0;
```

```
    printf("Enter any decimal number: ");
```

```
    scanf("%lld", &decimal);
```

```
    tempDecimal = decimal;
```

```
    while(tempDecimal > 0)
```

```
    {
```

```
        rem = tempDecimal % 2;
```

```

        binary = (rem * place) + binary;

        tempDecimal /= 2;

        place *= 10;
    }

    printf("Decimal number = %lld\n", decimal);
    printf("Binary number = %lld", binary);

    return 0;
}

```

```

/tmp/gt1NtpNUFj.o
Enter any decimal number: 112
Decimal number = 112
Binary number = 1110000

```

68. Write a C program to convert Decimal to Octal number system.

```

#include <stdio.h>

int main()
{
    long decimalnum, remainder, quotient, octalnum=0;
    int octalNumber[100], i = 1, j;

```

```
printf("Enter the decimal number: ");  
scanf("%ld", &decimalnum);  
quotient = decimalnum;  
while (quotient != 0)  
{  
    octalNumber[i++] = quotient % 8;  
    quotient = quotient / 8;  
}  
  
//Converting stored remainder values in  
corresponding octal number  
for (j = i - 1; j > 0; j--)  
    octalnum = octalnum*10 + octalNumber[j];  
  
printf("Equivalent octal value of decimal no %d is: %d",  
decimalnum,octalnum);  
  
return 0;  
}
```

```
/tmp/gt1NtpNUFj.o
Enter the decimal number: 127
Equivalent octal value of decimal no 127 is: 177
```

69. Write a C program to convert Decimal to Hexadecimal number system.

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

```
int main()
```

```
{
```

```
    long decimalnum, quotient, remainder;
```

```
    int i, j = 0;
```

```
    char hexadecimalnum[100];
```

```
    printf("Enter decimal number: ");
```

```
    scanf("%ld", &decimalnum);
```

```
    quotient = decimalnum;
```

```
    while (quotient != 0)
```

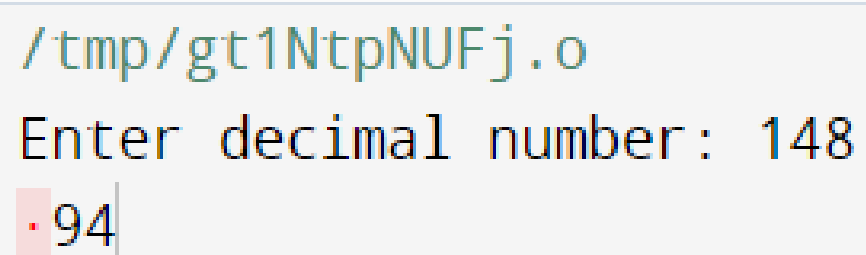
```
    {
```

```
        remainder = quotient % 16;
```

```

    if (remainder < 10)
        hexadecimalnum[j++] = 48 + remainder;
    else
        hexadecimalnum[j++] = 55 + remainder;
    quotient = quotient / 16;
}
for (i = j; i >= 0; i--)
    printf("%c", hexadecimalnum[i]);
return 0;
}

```



```

/tmp/gt1NtpNUFj.o
Enter decimal number: 148
94

```

70. Write a C program to convert Hexadecimal to Binary number system.

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

```
#include <string.h>
```

```
int main()
{
    char hex[17], bin[65] = "";
    int i = 0;
    printf("Enter any hexadecimal number: ");
    gets(hex);
    for(i=0; hex[i]!='\0'; i++)
    {
        switch(hex[i])
        {
            case '0':
                strcat(bin, "0000");
                break;
            case '1':
                strcat(bin, "0001");
                break;
            case '2':
```



```
    strcat(bin, "0010");
```

```
    break;
```

```
case '3':
```

```
    strcat(bin, "0011");
```

```
    break;
```

```
case '4':
```

```
    strcat(bin, "0100");
```

```
    break;
```

```
case '5':
```

```
    strcat(bin, "0101");
```

```
    break;
```

```
case '6':
```

```
    strcat(bin, "0110");
```

```
    break;
```

```
case '7':
```

```
    strcat(bin, "0111");
```

```
    break;
```

case '8':

    strcat(bin, "1000");

    break;

case '9':

    strcat(bin, "1001");

    break;

case 'a':

case 'A':

    strcat(bin, "1010");

    break;

case 'b':

case 'B':

    strcat(bin, "1011");

    break;

case 'c':

case 'C':

    strcat(bin, "1100");

```
        break;
    case 'd':
    case 'D':
        strcat(bin, "1101");
        break;
    case 'e':
    case 'E':
        strcat(bin, "1110");
        break;
    case 'f':
    case 'F':
        strcat(bin, "1111");
        break;
    default:
        printf("Invalid hexadecimal input.");
}
}
```

```
printf("Hexademial number = %s\n", hex);  
printf("Binary number = %s", bin);  
return 0;  
}
```

```
/tmp/gt1NtpNUFj.o  
Enter any hexadecimal number: 1A5  
Hexademial number = 1A5  
Binary number = 000110100101|
```

71. Write a C program to convert Hexadecimal to Octal number system.

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

```
#include <math.h>
```

```
int main()
```

```
{
```

```
    int n, ans = 0;
```

```
    printf("Enter the Hexadecimal number :-> ");
```

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

```
    int i = 0;
```

```
while(n != 0)
{
    int digit = n % 10;
    ans = ans + (digit * pow(16, i));
    n = n / 10;
    i++;
}

printf("\nThe Decimal Number is :--> %d", ans);

int j = 0, ans2 = 0;
while(ans != 0)
{
    int digit = ans%8;
    ans2 = ans2 + (digit * pow(10, j));
    ans = ans / 8;
    j++;
}

printf("\nThe Octal Number is :--> %d", ans2);
```

```
    return 0;
}
```

```
/tmp/gt1NtpNUFj.o
Enter the Hexadecimal number :--> 1A4
The Decimal Number is :--> 1
The Octal Number is :--> 1
```

72. Write a C program to convert Hexadecimal to Decimal number system.

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

```
#include <math.h>
```

```
#include <string.h>
```

```
int main()
```

```
{
```

```
    char hex[17];
```

```
    long long decimal, place;
```

```
    int i = 0, val, len;
```

```
    decimal = 0;
```

```
    place = 1;
```

```
printf("Enter any hexadecimal number: ");  
gets(hex);  
len = strlen(hex);  
len--;  
for(i=0; hex[i]!='\0'; i++)  
{  
    if(hex[i]>='0' && hex[i]<='9')  
    {  
        val = hex[i] - 48;  
    }  
    else if(hex[i]>='a' && hex[i]<='f')  
    {  
        val = hex[i] - 97 + 10;  
    }  
    else if(hex[i]>='A' && hex[i]<='F')  
    {  
        val = hex[i] - 65 + 10;
```

```

    }

    decimal += val * pow(16, len);

    len--;

}

printf("Hexadecimal number = %s\n", hex);
printf("Decimal number = %lld", decimal);

return 0;

}

```

```

^ /tmp/gt1NtpNUFj.o
Enter any hexadecimal number:1C8
Hexadecimal number = C8
Decimal number = 3208

```

## Pattern Exercises

1. Star pattern programs - Write a C program to print the given star patterns.

- Pyramid Star Pattern

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

```
int main() {
```



```

int i, j, rows;

printf("Enter the number of rows: ");

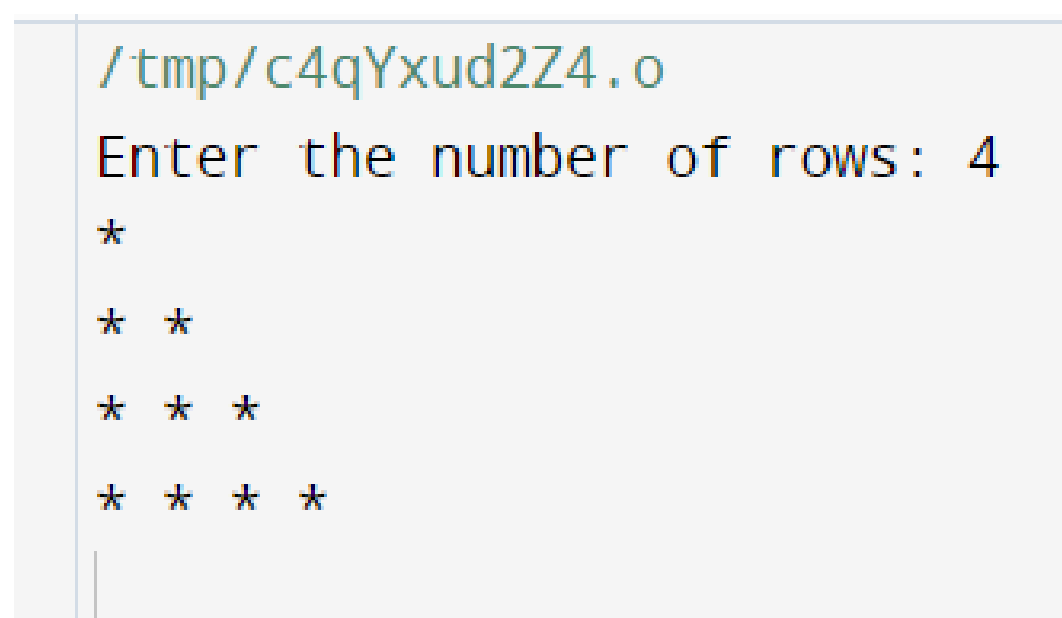
scanf("%d", &rows);

for (i = 1; i <= rows; ++i) {
    for (j = 1; j <= i; ++j) {
        printf("* ");
    }

    printf("\n");
}

return 0;
}

```



```

/tmp/c4qYxud2Z4.o
Enter the number of rows: 4
*
* *
* * *
* * * *

```

- Hollow Pyramid Star Pattern

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

```
int main()
```

```
{
    int i, j, rows;
    printf("Enter number of rows : ");
    scanf("%d", &rows);

    for(i=1; i<=rows; i++)
    {
        for(j=i; j<rows; j++)
        {
            printf(" ");
        }
        for(j=1; j<=(2*i-1); j++)
        {
            if(i==rows || j==1 || j==(2*i-1))
            {
                printf("*");
            }
            else
            {
                printf(" ");
            }
        }
        printf("\n");
    }
}
```

```

    }
    return 0;
}

```

```

/tmp/gt1NtpNUFj.o
Enter number of rows : 4
  *
 * *
*   *
*****

```

- Inverted Pyramid Star Pattern

```

#include <stdio.h>
int main()
{
    int rows = 8, i, j, space;
    for (i = rows; i >= 1; --i)
    {
        for (space = 0;
              space < rows - i; ++space)
            printf(" ");
        for (j = i; j <= 2 * i - 1; ++j)
            printf("* ");
        for (j = 0; j < i - 1; ++j)
            printf("* ");
        printf("\n");
    }
}

```

```

}
return 0;
}

```

```

/tmp/gt1NtpNUFj.o
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *

```

- Hollow Inverted Pyramid Star Pattern

```

#include <stdio.h>
void pattern_fun(int row)
{
    for (int j = 1; j <= row; j++)
    {
        for (int sp = 1; sp <= j - 1; sp++)
        {
            printf(" ");
        }
        int last_col = (row * 2 - (2 * j - 1));
        for (int k = 1; k <= last_col; k++)
        {
            if (j == 1 || k == 1)

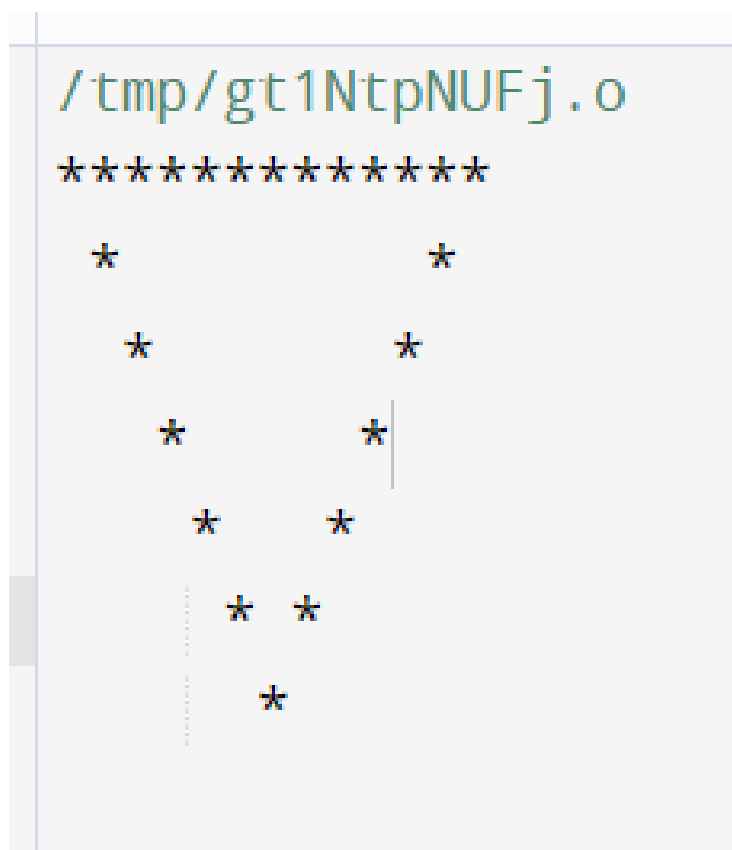
```

```

        printf("*");
    else if (k == last_col)
        printf("*");
    else
        printf(" ");
    }
    printf("\n");
}

int main()
{
    int row = 7;
    pattern_fun(row);
    return 0;
}

```



- Half Diamond Star Pattern
- ```
#include<stdio.h>
```

```
int main()
{
    int i, j, N, columns;
    printf("Enter number of columns:");
    scanf("%d",&N);
    columns=1;
    for(i=1;i<N*2;i++)
    {
        for(j=1; j<=columns; j++)
        {
            printf("*");
        }
        if(i < N)
        {
            columns++;
        }
        else
        {
            columns--;
        }
        printf("\n");
    }
    return 0;
```

}

```
/tmp/gt1NtpNUFj.o
Enter number of columns:6
*
**
***
****
*****
*****
*****
****
***
**
*
```

- Mirrored Half Diamond Star Pattern

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

```
int main()
```

```
{
```

```
    int i, j, N;
```

```
    int star, spaces;
```

```
    printf("Enter number of columns : ");
```

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

```
    spaces = N-1;
```

```
    star = 1;
```

```
    for(i=1; i<N*2; i++)
```

```
{
    for(j=1; j<=spaces; j++)
        printf(" ");
    for(j=1; j<=star; j++)
        printf("*");
    printf("\n");

    if(i < N)
    {
        star++;
        spaces--;
    }
    else
    {
        star--;
        spaces++;
    }
}
return 0;
}
```



## Output

```
/tmp/gt1NtpNUFj.o
Enter number of columns : 5
  *
 **
***
****
*****
****
 ***
  **
   *
```

2. Number pattern programs - Write a C program to print the given number patterns Square number patterns

- Number pattern 1

```
#include<stdio.h>
int main()
{
    int rows, cols, i, j;
    printf("Enter number of rows: ");
    scanf("%d", &rows);
    printf("Enter number of columns: ");
    scanf("%d", &cols);
```

```

/* Iterate through rows */
for(i=1; i<=rows; i++)
{
    for(j=1; j<=cols; j++)
    {
        printf("1");
    }

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

```

#### Output

```

/tmp/c4qYxud2Z4.o
Enter number of rows: 4
Enter number of columns: 4
1111
1111
1111
1111

```

## Number pattern 2

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

```
int main()
```

```

{
    int rows, cols, i, j;
    printf("Enter number of rows: ");
    scanf("%d", &rows);
    printf("Enter number of columns: ");
    scanf("%d", &cols);
    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=cols; j++)
        {
            printf("%d", (i%2));
        }

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

```

```

/tmp/c4qYxud2Z4.o
Enter number of rows: 5
Enter number of columns: 5
11111
00000
11111
00000
11111

```

- Number pattern 3

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

```
int main()
{
    int rows, cols, i, j;
    printf("Enter number of rows: ");
    scanf("%d", &rows);
    printf("Enter number of columns: ");
    scanf("%d", &cols);
    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=cols; j++)
        {
            if(i==1 || i==rows || j==1 || j==cols)
            {
                printf("1");
            }
            else
            {
                printf("0");
            }
        }
        printf("\n");
    }
    return 0;
}
```

## Output

```
/tmp/c4qYxud2Z4.o
Enter number of rows: 4
Enter number of columns: 4
1111
1001
1001
1111
|
```

- Number pattern 5

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

```
int main()
```

```
{
```

```
    int rows, cols, i, j, k;
```

```
    /* Input rows and columns from user */
```

```
    printf("Enter number of rows: ");
```

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

```
    printf("Enter number of columns: ");
```

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

```
    k = 1;
```

```
for(i=1; i<=rows; i++)
{
    for(j=1; j<=cols; j++)
    {
        if(k == 1)
        {
            printf("1");
        }
        else
        {
            printf("0");
        }
        k *= -1;
    }
    if(cols % 2 == 0)
    {
```

```
        k *= -1;
    }

    printf("\n");
}

return 0;
}
```

```
/tmp/gt1NtpNUFj.o
Enter number of rows: 4
Enter number of columns: 4
1010
0101
1010
0101
|
```

## If...Else Exercises

1. Write a C program to find maximum between two numbers.

```
#include <stdio.h>
int main()
{
    int num1, num2;
    printf("Enter two numbers: ");
```

```

scanf("%d%d", &num1, &num2);
if(num1 > num2)
{
    printf("%d is maximum", num1);
}
if(num2 > num1)
{
    printf("%d is maximum", num2);
}
if(num1 == num2)
{
    printf("Both are equal");
}
return 0;
}

```

```

/tmp/c4qYxud2Z4.o
Enter two numbers: 4 7
7 is maximum

```

2. Write a C program to find maximum between three numbers.

```

#include <stdio.h>
int main() {
    double n1, n2, n3;

```



```

printf("Enter three different numbers: ");
scanf("%lf %lf %lf", &n1, &n2, &n3);
if (n1 >= n2 && n1 >= n3)
    printf("%.2f is the largest number.", n1);
if (n2 >= n1 && n2 >= n3)
    printf("%.2f is the largest number.", n2);
if (n3 >= n1 && n3 >= n2)
    printf("%.2f is the largest number.", n3);
return 0;
}

```

#### Output

```

/tmp/c4qYxud2Z4.o
Enter three different numbers: 3 5 7
7.00 is the largest number.

```

3. Write a C program to check whether a number is negative, positive or zero.

```

#include <stdio.h>
int main()
{
    int A;
    printf("Enter the number A: ");
    scanf("%d", &A);
    if (A > 0)

```

```
        printf("%d is positive.", A);
else if (A < 0)
        printf("%d is negative.", A);
else if (A == 0)
        printf("%d is zero.", A);
return 0;
}
```

Output

```
/tmp/gt1NtpNUFj.o
Enter the number A: 3
3 is positive.
```

4. Write a C program to check whether a number is divisible by 5 and 11 or not.

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

```
int main()
```

```
{
```

```
    int num;
```

```
    printf("Enter any number: ");
```

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

```
    if((num % 5 == 0) && (num % 11 == 0))
```

```
    {
```

```
        printf("Number is divisible by 5 and 11");
```

```
    }
```

```
else
{
    printf("Number is not divisible by 5 and 11");
}
return 0;
}
```

#### Output

```
/tmp/gt1NtpNUFj.o
Enter any number: 55
Number is divisible by 5 and 11|
```

5. Write a C program to check whether a number is even or odd.

```
#include <stdio.h>
int main() {
    int num;
    printf("Enter an integer: ");
    scanf("%d", &num);
    if(num % 2 == 0)
        printf("%d is even.", num);
    else
        printf("%d is odd.", num);
}
```

```
    return 0;
}
```

#### Output

```
/tmp/LkhiiGQ5C0.o
Enter an integer: 5
5 is odd.
```

6. Write a C program to check whether a year is leap year or not.

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

```
int main() {
```

```
    int year;
```

```
    printf("Enter a year: ");
```

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

```
    if (year % 400 == 0) {
```

```
        printf("%d is a leap year.", year);
```

```
    }
```

```
    else if (year % 100 == 0) {
```

```
        printf("%d is not a leap year.", year);
```

```
    }
```

```
    else if (year % 4 == 0) {
```

```
        printf("%d is a leap year.", year);
```

```
    }
```

```
    else {
```

```
    printf("%d is not a leap year.", year);  
}  
return 0;  
}
```

#### Output

```
/tmp/c0ZEAINadi.o  
Enter a year: 2016  
2016 is a leap year.
```

7. Write a C program to check whether a character is alphabet or not.

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

```
int main() {  
    char c;  
    printf("Nanci Rawat\n");  
    printf("Enter a character: ");  
    scanf("%c", &c);  
    if ((c >= 'a' && c <= 'z') || (c >= 'A' && c <= 'Z'))  
        printf("%c is an alphabet.", c);  
    else  
        printf("%c is not an alphabet.", c);  
    return 0;  
}
```

### Output

```
/tmp/VGWH1FSYDe.o  
Nanci Rawat  
Enter a character: n  
n is an alphabet.
```

9. Write a C program to input any alphabet and check whether it is vowel or consonant.

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

```
int main() {
```

```
    char c;
```

```
    printf("Nanci rawat\n");
```

```
    int lowercase_vowel, uppercase_vowel;
```

```
    printf("Enter an alphabet: ");
```

```
    scanf("%c", &c);
```

```
    lowercase_vowel = (c == 'a' || c == 'e' || c == 'i' || c == 'o'  
|| c == 'u');
```

```
    uppercase_vowel = (c == 'A' || c == 'E' || c == 'I' || c == 'O'  
|| c == 'U');
```

```
    if (lowercase_vowel || uppercase_vowel)
```

```

    printf("%c is a vowel.", c);

else

    printf("%c is a consonant.", c);

return 0;

}

```

| Output                                                                        |
|-------------------------------------------------------------------------------|
| <pre> /tmp/mn0eTqn3I5.o Nanci rawat Enter an alphabet: a a is a vowel. </pre> |

10. Write a C program to input any character and check whether it is alphabet, digit or special character.

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

```
int main()
```

```
{
```

```
    char ch;
```

```
    printf("Enter any character: ");
```

```
    scanf("%c", &ch);
```

```
    if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
```

```
{  
    printf("%c' is alphabet.", ch);  
}  
else if(ch >= '0' && ch <= '9')  
{  
    printf("%c' is digit.", ch);  
}  
else  
{  
    printf("%c' is special character.", ch);  
}  
return 0;  
}
```

#### Output

```
/tmp/mn0eTqn3I5.o  
Enter any character: d  
'd' is alphabet.
```



11. Write a C program to check whether a character is uppercase or lowercase alphabet.

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

```
int main()
```

```
{
```

```
    char ch;
```

```
    printf("Enter any character: ");
```

```
    scanf("%c", &ch);
```

```
    if(ch >= 'A' && ch <= 'Z')
```

```
    {
```

```
        printf("'%c' is uppercase alphabet.", ch);
```

```
    }
```

```
    else if(ch >= 'a' && ch <= 'z')
```

```
    {
```

```
        printf("'%c' is lowercase alphabet.", ch);
```

```
    }
```

```
else
{
    printf("%c' is not an alphabet.", ch);
}

return 0;
}
```

#### Output

```
/tmp/mn0eTqn3I5.o
Enter any character: d
'd' is lowercase alphabet.
```

12. Write a C program to input week number and print week day.

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

```
int main()
```

```
{
```

```
    int week;
```

```
    printf("Enter week number (1-7): ");
```

```
scanf("%d", &week);  
if(week == 1)  
{  
    printf("Monday");  
}  
else if(week == 2)  
{  
    printf("Tuesday");  
}  
else if(week == 3)  
{  
    printf("Wednesday");  
}  
else if(week == 4)  
{  
    printf("Thursday");  
}
```

```
else if(week == 5)
{
    printf("Friday");
}
else if(week == 6)
{
    printf("Saturday");
}
else if(week == 7)
{
    printf("Sunday");
}
else
{
    printf("Invalid Input! Please enter week number
between 1-7.");
}
```

```
return 0;  
}
```

```
Output  
/tmp/mn0eTqn3I5.o  
Enter week number (1-7): 4  
Thursday
```

13. Write a C program to input month number and print number of days in that month.

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

```
int main()
```

```
{
```

```
    int month;
```

```
    printf("Enter month number (1-12): ");
```

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

```
    if(month == 1)
```

```
    {
```

```
        printf("31 days");
```

```
    }
```

```
else if(month == 2)
{
    printf("28 or 29 days");
}
else if(month == 3)
{
    printf("31 days");
}
else if(month == 4)
{
    printf("30 days");
}
else if(month == 5)
{
    printf("31 days");
}
else if(month == 6)
```

```
{  
    printf("30 days");  
}  
else if(month == 7)  
{  
    printf("31 days");  
}  
else if(month == 8)  
{  
    printf("31 days");  
}  
else if(month == 9)  
{  
    printf("30 days");  
}  
else if(month == 10)  
{
```

```
        printf("31 days");
    }
    else if(month == 11)
    {
        printf("30 days");
    }
    else if(month == 12)
    {
        printf("31 days");
    }
    else
    {
        printf("Invalid input! Please enter month number
between (1-12).");
    }
    return 0;
}
```



### Output

```
/tmp/mn0eTqn3I5.o
Nanci rawat
Enter month number (1-12): 9
30 days
```

14. Write a C program to count total number of notes in given amount.

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

```
int main()
```

```
{
```

```
    int amount;
```

```
    int note500, note100, note50, note20, note10, note5,
    note2, note1;
```

```
    note500 = note100 = note50 = note20 = note10 =
    note5 = note2 = note1 = 0;
```

```
    printf("Nanci rawat\n");
```

```
    printf("Enter amount: ");
```

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

```
if(amount >= 500)
{
    note500 = amount/500;
    amount -= note500 * 500;
}
```

```
if(amount >= 100)
{
    note100 = amount/100;
    amount -= note100 * 100;
}
```

```
if(amount >= 50)
{
    note50 = amount/50;
    amount -= note50 * 50;
}
```

```
if(amount >= 20)
```

```
{  
    note20 = amount/20;  
    amount -= note20 * 20;  
}
```

```
if(amount >= 10)
```

```
{  
    note10 = amount/10;  
    amount -= note10 * 10;  
}
```

```
if(amount >= 5)
```

```
{  
    note5 = amount/5;  
    amount -= note5 * 5;  
}
```

```
if(amount >= 2)
```

```
{  
    note2 = amount /2;
```

```
        amount -= note2 * 2;
    }
    if(amount >= 1)
    {
        note1 = amount;
    }
    printf("Total number of notes = \n");
    printf("500 = %d\n", note500);
    printf("100 = %d\n", note100);
    printf("50 = %d\n", note50);
    printf("20 = %d\n", note20);
    printf("10 = %d\n", note10);
    printf("5 = %d\n", note5);
    printf("2 = %d\n", note2);
    printf("1 = %d\n", note1);
    return 0;
}
```

### Output

```
/tmp/mn0eTqn3I5.o
Nanci rawat
Enter amount: 58
Total number of notes =
500 = 0
100 = 0
50 = 1
20 = 0
10 = 0
5 = 1
2 = 1
1 = 1
|
```

15. Write a C program to input month number and print number of days in that month.

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

```
void printNumberOfDays(int N)
```

```
{
```

```
    if (N == 1 || N == 3 || N == 5
```

```
        || N == 7 || N == 8 || N == 10
```

```
        || N == 12) {
```

```
        printf("31 Days.");
```

```
}  
  
else if (N == 4 || N == 6  
        || N == 9 || N == 11) {  
    printf("30 Days.");  
}  
  
else if (N == 2) {  
    printf("28/29 Days.");  
}  
  
else {  
    printf("Invalid Month.");  
}  
  
}  
  
int main()  
{  
  
    int N = 4;  
  
    printNumberOfDays(N);
```

```
    return 0;
}
```

| Output                        |
|-------------------------------|
| /tmp/mn0eTqn3I5.o<br>30 Days. |

16. Write a C program to input angles of a triangle and check whether triangle is valid or not.

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

```
int main()
```

```
{
```

```
    int angle1, angle2, angle3, sum;
```

```
    printf("Enter three angles of triangle: \n");
```

```
    scanf("%d%d%d", &angle1, &angle2, &angle3);
```

```
    sum = angle1 + angle2 + angle3;
```

```
    if(sum == 180 && angle1 > 0 && angle2 > 0 && angle3 > 0)
```

```
    {
```

```
        printf("Triangle is valid.");
```

```

    }
    else
    {
        printf("Triangle is not valid.");
    }
    return 0;
}

```

| Output                                                                                     |
|--------------------------------------------------------------------------------------------|
| <pre> /tmp/mn0eTqn3I5.o Enter three angles of triangle: 90 45 45 Triangle is valid. </pre> |

17. Write a C program to check whether the triangle is equilateral, isosceles or scalene triangle.

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

```
int main()
```

```
{
```

```
    int side1, side2, side3;
```



```
printf("Enter three sides of triangle: ");
scanf("%d%d%d", &side1, &side2, &side3);
if(side1==side2 && side2==side3)
{
    printf("Equilateral triangle.");
}
else if(side1==side2 || side1==side3 || side2==side3)
{
    printf("Isosceles triangle.");
}
else
{
    printf("Scalene triangle.");
}
return 0;
}
```

Output

```
/tmp/VGWHlFSYDe.o  
Enter three sides of triangle: 45 45 90  
Isosceles triangle.
```

19. Write a C program to find all roots of a quadratic equation.

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

```
# include<math.h>
```

```
int main () {
```

```
    float a,b,c,r1,r2,d;
```

```
    printf("Nanci rawat\n");
```

```
    printf ("Enter the values of a b c: ");
```

```
    scanf (" %f %f %f", &a, &b, &c);
```

```
    d= b*b - 4*a*c;
```

```
    if (d>0) {
```

```
        r1 = -b+sqrt (d) / (2*a);
```

```

    r2 = -b-sqrt (d) / (2*a);

    printf ("The real roots = %f %f", r1, r2);
}

else if (d==0) {
    r1 = -b/(2*a);
    r2 = -b/(2*a);

    printf ("Roots are equal =%f %f", r1, r2);
}

else

    printf("Roots are imaginary");

return 0;
}

```

#### Output

```

/tmp/mn0eTqn3I5.o
Nanci rawat
Enter the values of a b c: 2 6 9
Roots are imaginary|

```

20. Write a C program to calculate profit or loss.

```
#include <stdio.h>

int main()
{
    int cp,sp, amt;
    printf("Enter cost price: ");
    scanf("%d", &cp);
    printf("Enter selling price: ");
    scanf("%d", &sp);
    if(sp > cp)
    {
        amt = sp - cp;
        printf("Profit = %d", amt);
    }
    else if(cp > sp)
    {
        amt = cp - sp;
```

```
    printf("Loss = %d", amt);  
}  
else  
{  
    printf("No Profit No Loss.");  
}  
return 0;  
}
```

#### Output

```
/tmp/mn0eTqn3I5.o  
Enter cost price: 45  
Enter selling price: 86  
Profit = 41|
```

21. Write a C program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following:

Percentage  $\geq$  90% : Grade A

Percentage  $\geq$  80% : Grade B

Percentage  $\geq$  70% : Grade C

Percentage  $\geq 60\%$  : Grade D

Percentage  $\geq 40\%$  : Grade E

Percentage  $< 40\%$  : Grade F

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

```
int main()
```

```
{
```

```
    int phy, chem, bio, math, comp;
```

```
    float per;
```

```
    printf("Enter five subjects marks: ");
```

```
    scanf("%d%d%d%d%d", &phy, &chem, &bio, &math,
    &comp);
```

```
    per = (phy + chem + bio + math + comp) / 5.0;
```

```
    printf("Percentage = %.2f\n", per);
```

```
    if(per  $\geq 90$ )
```

```
    {
```

```
        printf("Grade A");
```

```
    }
```

```
else if(per >= 80)
{
    printf("Grade B");
}
else if(per >= 70)
{
    printf("Grade C");
}
else if(per >= 60)
{
    printf("Grade D");
}
else if(per >= 40)
{
    printf("Grade E");
}
else
```

```
{  
    printf("Grade F");  
}  
  
return 0;  
}
```

#### Output

```
/tmp/mn0eTqn3I5.o  
Enter five subjects marks: 54 65 45 39 50  
Percentage = 50.60  
Grade E
```

22. Write a C program to input basic salary of an employee and calculate its Gross salary according to following:

Basic Salary  $\leq$  10000 : HRA = 20%,

DA = 80% Basic Salary  $\leq$  20000 : HRA = 25%,

DA = 90% Basic Salary  $>$  20000 : HRA = 30%,

DA = 95%

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



```
int main()
{
    float basic, gross, da, hra;
    printf("Enter basic salary of an employee: ");
    scanf("%f", &basic);
    if(basic <= 10000)
    {
        da = basic * 0.8;
        hra = basic * 0.2;
    }
    else if(basic <= 20000)
    {
        da = basic * 0.9;
        hra = basic * 0.25;
    }
    else
    {
```

```
    da = basic * 0.95;

    hra = basic * 0.3;
}

gross = basic + hra + da;

printf("GROSS SALARY OF EMPLOYEE = %.2f", gross);

return 0;
}
```

#### Output

```
/tmp/mn0eTqn3I5.o
Enter basic salary of an employee: 4500
GROSS SALARY OF EMPLOYEE = 9000.00
```

**22.** Write a C program to input electricity unit charge and calculate the total electricity bill according to the given condition:

For first 50 units Rs. 0.50/unit

For next 100 units Rs. 0.75/unit

For next 100 units Rs. 1.20/unit

For unit above 250 Rs. 1.50/unit

An additional surcharge of 20% is added to the bill.

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

```
int main()
```

```
{
```

```
int unit;

float amt, total_amt, sur_charge;

printf("Enter total units consumed: ");

scanf("%d", &unit);

if(unit <= 50)
{
    amt = unit * 0.50;
}

else if(unit <= 150)
{
    amt = 25 + ((unit-50) * 0.75);
}

else if(unit <= 250)
{
    amt = 100 + ((unit-150) * 1.20);
}

else
```

```

{
    amt = 220 + ((unit-250) * 1.50);
}

sur_charge = amt * 0.20;

total_amt = amt + sur_charge;

printf("Electricity Bill = Rs. %.2f", total_amt);

return 0;
}

```

```

/tmp/mn0eTqn3I5.o
Enter total units consumed: 48
Electricity Bill = Rs. 28.80

```

23. Write a C program to convert specified days into years, weeks and days.

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

```
int main()
```

```
{
```

```
    int days, years, weeks;
```

```
printf("Enter days: ");  
  
scanf("%d", &days);  
  
years = (days / 365);  
  
weeks = (days % 365) / 7;  
  
days = days - ((years * 365) + (weeks * 7));  
  
printf("YEARS: %d\n", years);  
  
printf("WEEKS: %d\n", weeks);  
  
printf("DAYS: %d", days);  
  
return 0;  
  
}
```

#### Output

```
/tmp/mn0eTqn3I5.o  
Enter days: 30  
YEARS: 0  
WEEKS: 4  
DAYS: 2
```