

LAB FILE

INTRODUCTION TO C PROGRAMMING



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BCA HONS. (AI & DS)

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PROGRAMS

Program 1: WAP to find sum of 2 No.

```
#include<stdio.h>
int main(){ int
a,b; int sum;
printf("Enter the two numbers separated by comma:");
scanf("%d,%d",&a,&b);
sum=a+b;
printf("The sum of %d and %d is:%d",a,b,sum); return
0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the two values of a and b:6,5
The sum of 6 and 5 is:11
```

Program 2: WAP to print Hello World

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

```
int main(){  
printf("Hello World");
```

```
return 0;
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

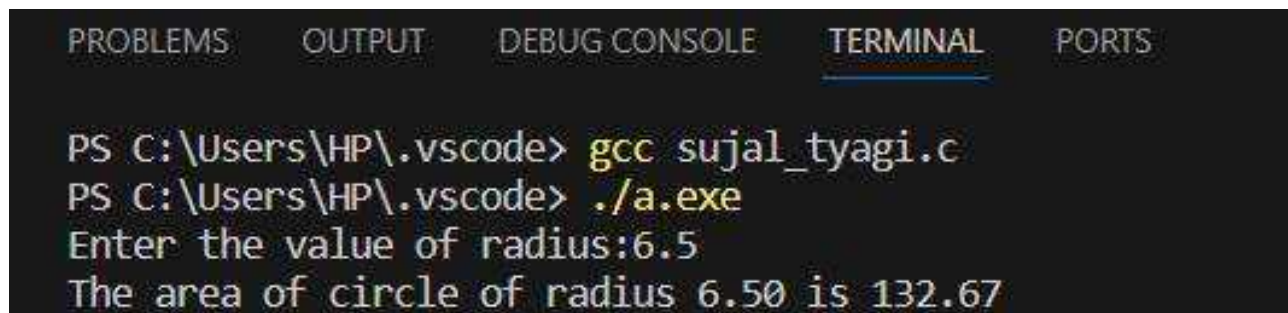
```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
```

```
PS C:\Users\HP\.vscode> ./a.exe
```

```
Hello World
```

Program 3: WAP to find the Area of Circle.

```
#include<stdio.h>
int main(){ float
r,area; float
pi=3.14;
printf("Enter the value of radius:");
scanf("%f",&r); area= pi*r*r;
printf("The area of circle of radius %0.2f is: %0.2f",r,area);
return 0;
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The commands and output are as follows:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the value of radius:6.5
The area of circle of radius 6.50 is 132.67
```

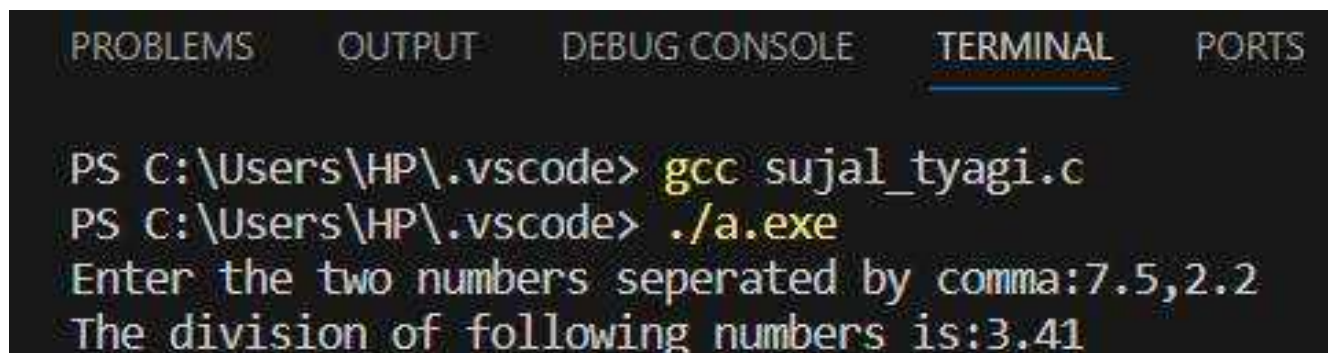
Program 4: WAP to divide two numbers.

```
#include<stdio.h>
int main(){ float
n1,n2; float div;
printf("Enter the two numbers separated by comma:");
scanf("%f,%f",&n1,&n2);

div=n1/n2;

printf("The division of following numbers is:%0.2f",div);

return 0;
}
```



The screenshot shows a VS Code terminal window with the following content:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the two numbers seperated by comma:7.5,2.2
The division of following numbers is:3.41
```

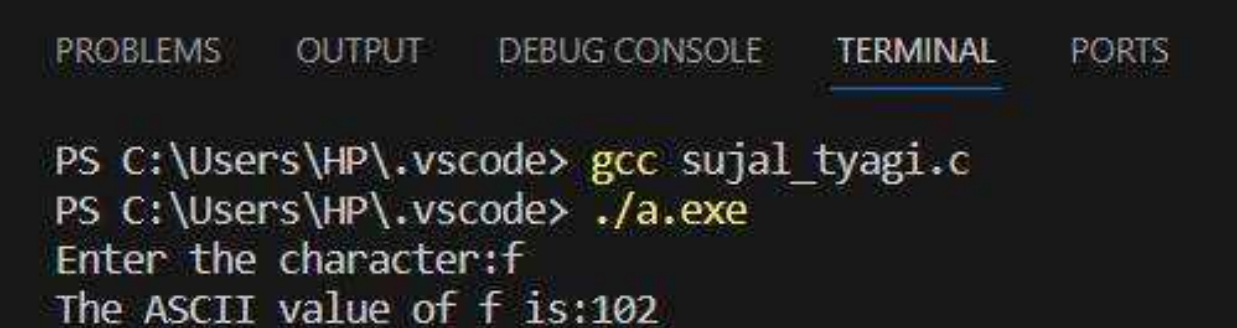
Program 5: WAP to print the ASCII value of a character

```
#include<stdio.h> int
main(){

char c;
printf("Enter the character:"); scanf("%c",c);

printf("The ASCII value of %c is: %d",c,c);

return 0;
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The commands and output are as follows:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the character:f
The ASCII value of f is:102
```

Program 6: WAP to show the product of two floating numbers.

```
#include<stdio.h>
Int main(){

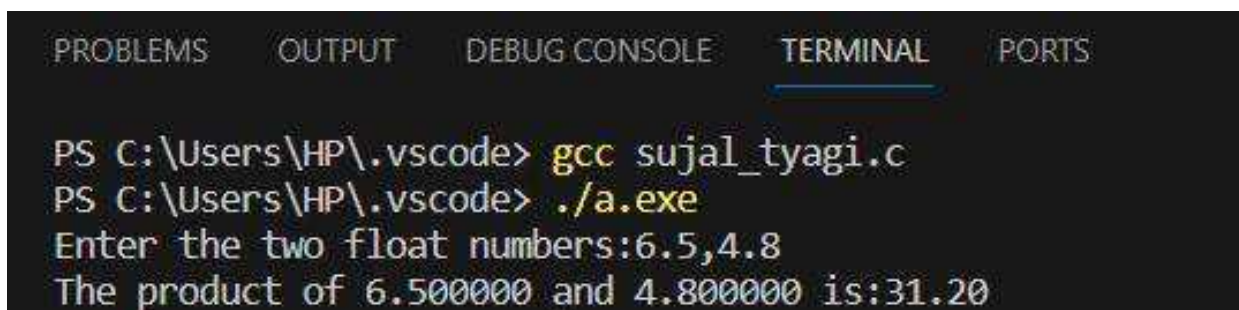
float n1,n2;
float prod;

printf("Enter the two float numbers:");
scanf("%f,%f",&n1,&n2);

prod=n1*n2;

printf("The product of %f and %f is :%0.2f\n",n1,n2,prod);

return 0;
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The commands and output are as follows:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the two float numbers:6.5,4.8
The product of 6.500000 and 4.800000 is:31.20
```


Program 7: WAP to swap two variable numbers using third variable.

```
#include<stdio.h> int
main(){

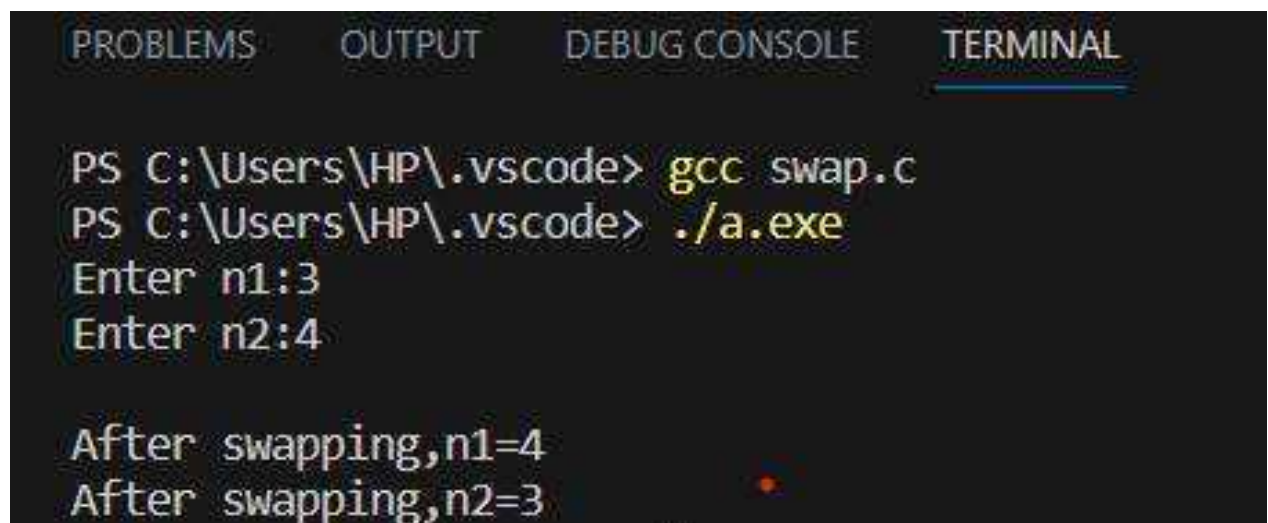
int n1,n2,temp;
printf("Enter n1:");
scanf("%d",&n1);

printf("Enter n2:");
scanf("%d",&n2);

temp=n1; n1=n2;
n2=temp;

printf("\nAfter swapping,n1=%d\n",n1); printf("\nAfter
swapping,n2=%d\n",n2);

return 0;
}
```



The screenshot shows a terminal window with a dark background and light-colored text. At the top, there are four tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', and 'TERMINAL', with 'TERMINAL' being the active tab. The terminal content shows the following sequence of commands and output:

```
PS C:\Users\HP\.vscode> gcc swap.c
PS C:\Users\HP\.vscode> ./a.exe
Enter n1:3
Enter n2:4

After swapping,n1=4
After swapping,n2=3
```

Program 8: WAP to swap the two variable numbers without using third variable

```
#include<stdio.h> int
main(){

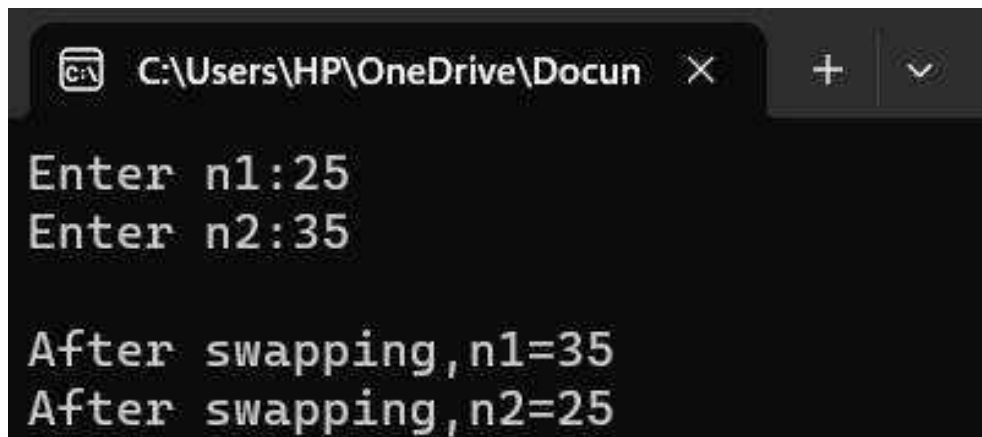
int n1,n2;

printf("Enter n1:"); scanf("%d",&n1);

printf("Enter n2:"); scanf("%d",&n2);

n2=n1-n2;
n1=n1+n2;

printf("\nAfter swapping, n1=%d\n",n1);
printf("After swapping ,n2=%d\n",n2); return
0;
}
```



The screenshot shows a Windows command prompt window with the title bar 'C:\Users\HP\OneDrive\Docun'. The program's output is displayed as follows:

```
Enter n1:25
Enter n2:35

After swapping, n1=35
After swapping, n2=25
```

Program 9: WAP to swap three numbers without using any 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); n2=n1-(n2+n3);
n3=n1-(n2+n3); n1=n1-(n2+n3);
printf("\nAfter swapping,n1=%d\n",n1);
printf("After swapping,n2=%d\n",n2);
printf("After swapping,n3=%d",n3);}
```



The screenshot shows a Windows command prompt window titled "C:\Users\hp\Documents\swap using.exe". The program prompts the user to enter three numbers: n1, n2, and n3. The user enters 25, 50, and 75 respectively. The program then outputs the values after swapping: n1=75, n2=25, and n3=50. The process returned 0 (0x0) and the execution time was 8.795 s. The prompt asks the user to press any key to continue.

```
"C:\Users\hp\Documents\swap using.exe"
Enter n1:25
Enter n2:50
Enter n3:75

After swapping,n1=75
After swapping,n2=25
After swapping,n3=50
Process returned 0 (0x0)   execution time : 8.795 s
Press any key to continue.
_
```

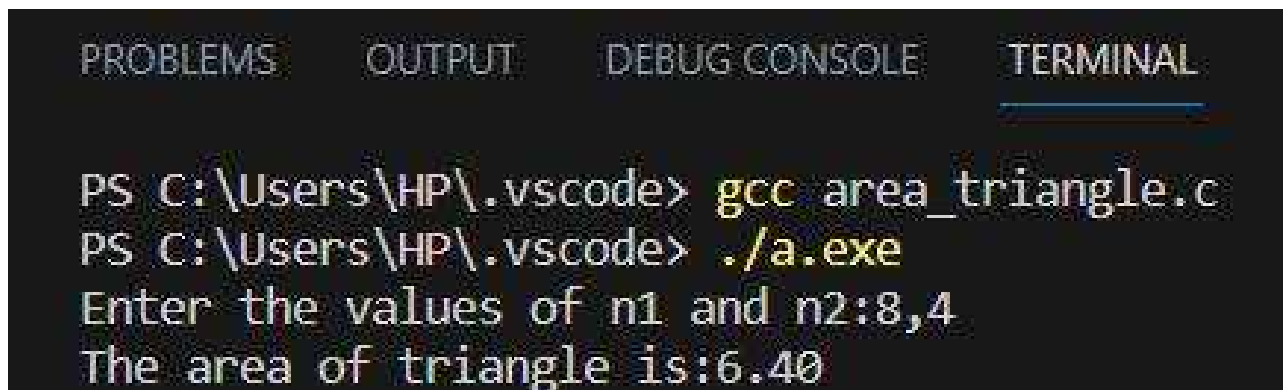
Program 10: WAP to find the Area of Triangle.

```
#include<stdio.h>
int main(){ float
b,h; double area;

printf("Enter the base and height:"); scanf("%f,%f",&b,&h);

area=0.2*b*h;

printf("The area of right angled triangle is: %f\n",b,h,area);
return 0;
}
```



The screenshot shows a terminal window with a dark background and light-colored text. At the top, there are four tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', and 'TERMINAL'. The 'TERMINAL' tab is selected and underlined. The terminal content shows the following sequence of commands and output:

```
PS C:\Users\HP\.vscode> gcc area_triangle.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the values of n1 and n2:8,4
The area of triangle is:6.40
```

Program 11: WAP to find the area of rectangle.

```
#include<stdio.h>
int
main(){

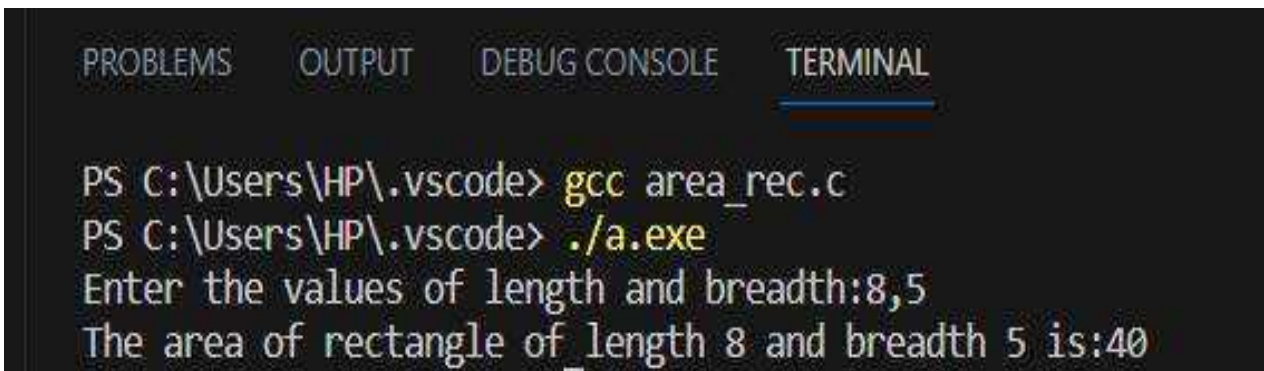
int l,b; int
area;

printf("Enter the values of length and breadth:");
scanf("%d,%d",&l,&b);

area=l*b;

printf("The area of rectangle of length %d and breadth %d
is:%d\n",l,b,area);

return 0;
}
```



The screenshot shows a terminal window with a dark background. At the top, there are four tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', and 'TERMINAL'. The 'TERMINAL' tab is selected and underlined. The terminal displays the following commands and output:

```
PS C:\Users\HP\.vscode> gcc area_rec.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the values of length and breadth:8,5
The area of rectangle of length 8 and breadth 5 is:40
```

Program 12: WAP to find the area of square.

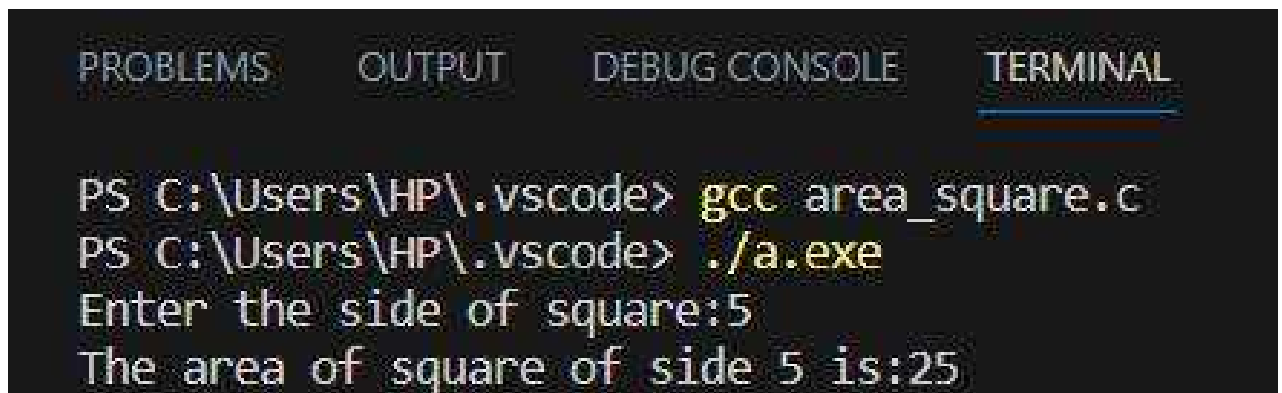
```
#include<stdio.h> int
main(){

int a; int
area;

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

area=a*a;

printf("The area of square of side %d is:%d", a, area);
return 0;
}
```



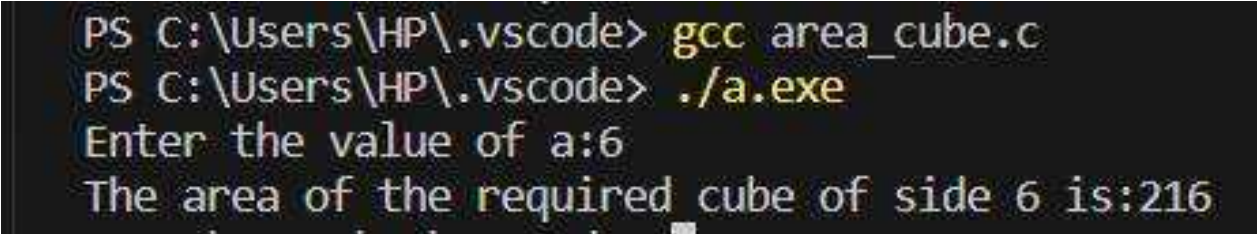
The screenshot shows a terminal window with a dark background. At the top, there are four tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', and 'TERMINAL'. The 'TERMINAL' tab is selected and underlined. The terminal displays the following commands and output:

```
PS C:\Users\HP\.vscode> gcc area_square.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the side of square:5
The area of square of side 5 is:25
```

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

Area of cube:

```
#include<stdio.h>
//area of cube
int main(){
    int a; int area; printf("Enter the value of a:"); scanf("%d",
    &a); area=6*a*a; printf("The area of the required cube of
    side %d is:%d", a, area); return 0;
}
```



```
PS C:\Users\HP\.vscode> gcc area_cube.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the value of a:6
The area of the required cube of side 6 is:216
```

Volume of cube:

```
#include<stdio.h> int main(){ int a; int vol; printf("Enter
the value of side a:"); scanf("%d" , &a); vol=a*a*a;
printf("The volume of cube of side %d is:%d\n" , a ,vol);
return 0;
}
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

PS C:\Users\HP\.vscode> gcc vol_cube.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the value of side a:5
The volume of cube of side 5 is:125
```

Program 14: WAP to find the Area and Volume of cuboid.

Area of Cuboid:

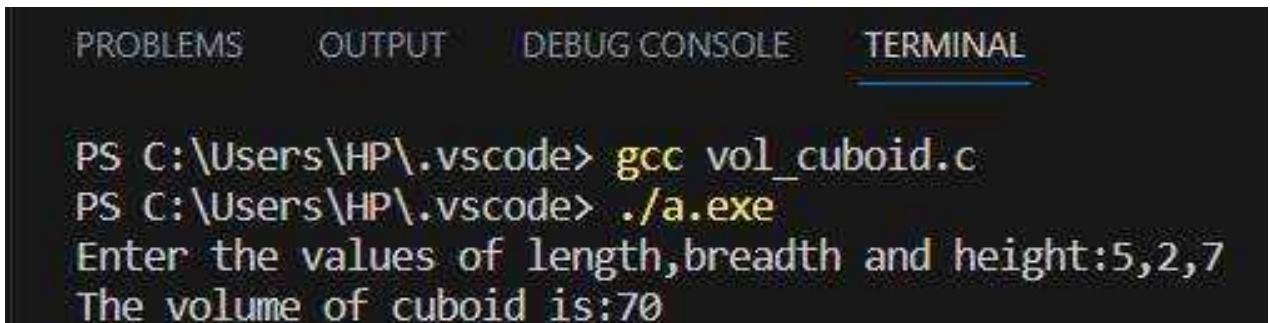
```
#include<stdio.h>
int
main(){
    int l , b , h;    int area;    printf("Enter the values of
length , breadth and height:");    scanf("%d ,%d ,%d " ,&l,
&b , &h);    area=2*(l*b +b* h + h*l);    printf("The area of
cuboid is:%d\n" , area);    return 0;
}
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

PS C:\Users\HP\.vscode> gcc area_cuboid.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the values of length,breadth and height:7,6,5
The area of cuboid is:214
```


Volume of Cuboid:

```
#include<stdio.h>
int main(){ int l,b,h;
int vol;
printf("Enter the values of length,breadth and height:");
scanf("%d,%d,%d",&l,&b,&h);
vol=l*b*h;
printf("The volume of cuboid is:%d\n",vol);
return 0;
}
```

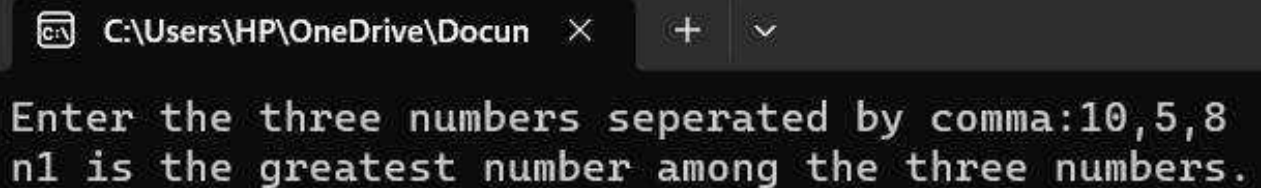


The screenshot shows a terminal window with four tabs: PROBLEMS, OUTPUT, DEBUG CONSOLE, and TERMINAL. The TERMINAL tab is active. The commands and output are as follows:

```
PS C:\Users\HP\.vscode> gcc vol_cuboid.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the values of length,breadth and height:5,2,7
The volume of cuboid is:70
```

Program 15: WAP to find the greatest no. using && operator.

```
#include<stdio.h>
int main(){
    int n1,n2,n3;
    printf("Enter the three numbers seperated by comma:");
    scanf("%d,%d,%d",&n1,&n2,&n3);
    if(n1>n2 && n1>n3){
        printf("n1 is the greatest number among the three
        numbers.\n");
    }
    else if(n2>n1 && n2>n3){
        printf("n2 is the greatest number among the three
        numbers.\n");
    }
    else if(n3>n1 && n3>n2){
        printf("n3 is the greatest number among the three
        numbers.\n");
    }
    else{ printf("Not valid
    task.\n");
    }
}
```

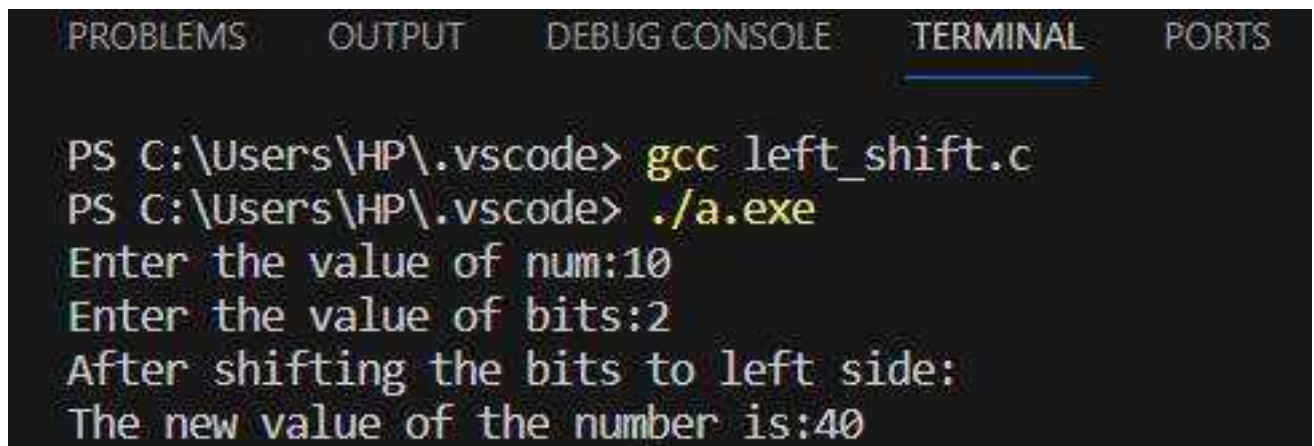


```
C:\Users\HP\OneDrive\Docun > Enter the three numbers seperated by comma:10,5,8
n1 is the greatest number among the three numbers.
```

**Program 16: WAP to validate the
username and password entered by
the user is correct or not.**

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

```
#include<stdio.h>
int main(){
int num,bit;
printf("Enter the value of no.:");
scanf("%d",&num);
printf("Enter the value of bits:");
scanf("%d",&bit);
num=(num<<bit);
printf("After shifting the bits to left side:\n");
printf("The new value of the number is:%d",num);
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The prompt is PS C:\Users\HP\.vscode>. The user enters gcc left_shift.c, followed by ./a.exe. The program prompts for the value of num (10) and bits (2), then displays the result after shifting: 40.

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

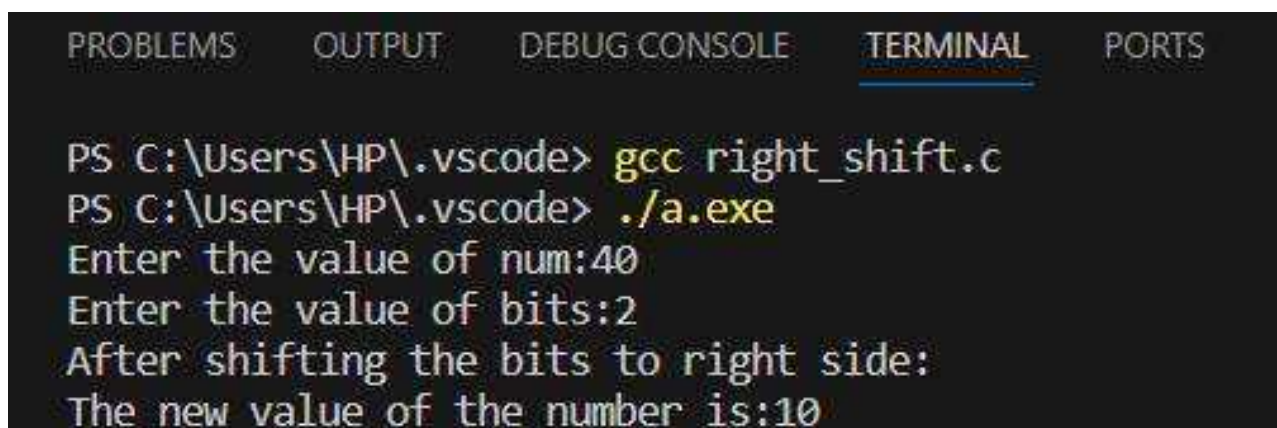
PS C:\Users\HP\.vscode> gcc left_shift.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the value of num:10
Enter the value of bits:2
After shifting the bits to left side:
The new value of the number is:40
```

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

```
#include<stdio.h>
int main(){

int num,bit;
printf("Enter the value of num:");
scanf("%d",&num);
printf("Enter the value of bits:");
scanf("%d",&bit);

num=(num>>bit);
printf("After shifting the bits to right side:\n");
printf("The new value of the number is:%d",num);
}
```

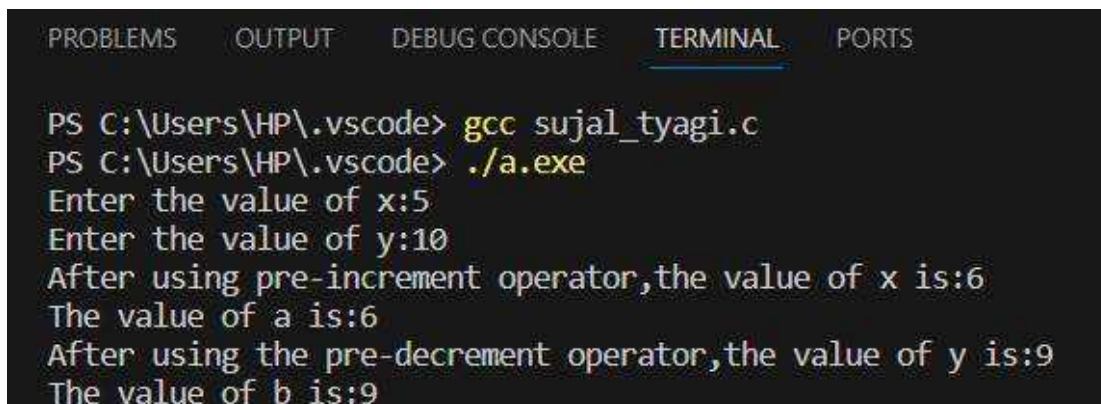


The screenshot shows a terminal window with a dark background. At the top, there are five tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. The terminal displays the following text:

```
PS C:\Users\HP\.vscode> gcc right_shift.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the value of num:40
Enter the value of bits:2
After shifting the bits to right side:
The new value of the number is:10
```

Program 19: WAP to perform pre increment and pre decrement operators on two values.

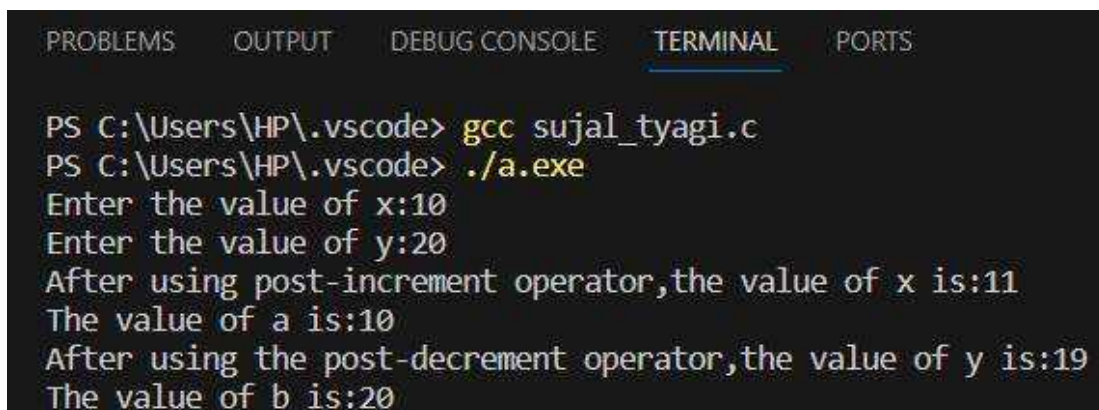
```
#include <stdio.h>
int main (){
int x,y,a,b;
printf ("Enter the value of x:");
scanf ("%d", &x);
printf ("Enter the value of y:");
scanf ("%d", &y);
a= ++x;
printf ("After using pre-increment operator,the value of x
is:%d\n",x);
printf ("The value of a is:%d\n",a);
b= --y;
printf ("After using the pre-decrement operator,the value of y
is:%d\n",y);
printf ("The value of b is:%d\n",b);
return 0;
}
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the value of x:5
Enter the value of y:10
After using pre-increment operator,the value of x is:6
The value of a is:6
After using the pre-decrement operator,the value of y is:9
The value of b is:9
```

Program 20: WAP to perform post increment and post decrement operators on two values.

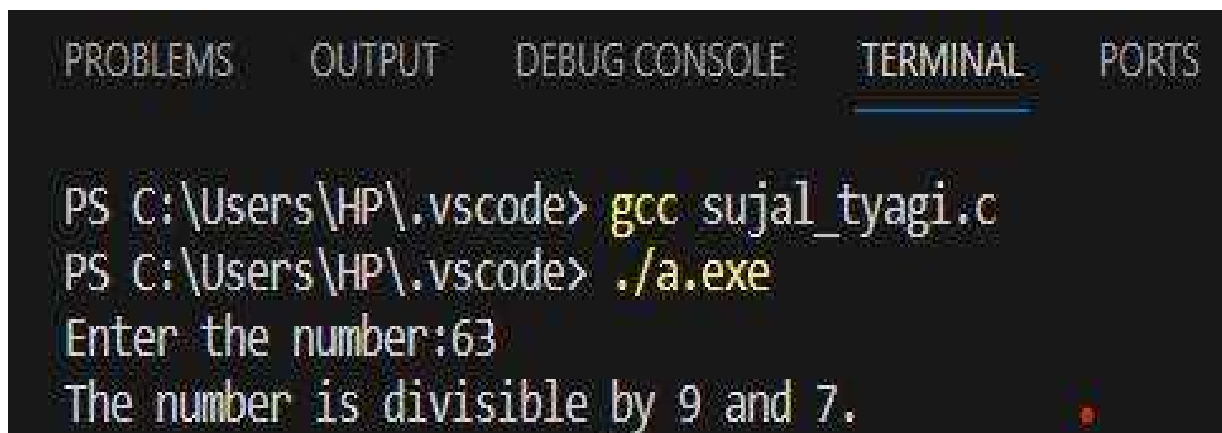
```
#include <stdio.h>
int main (){
int x,y,a,b;
printf ("Enter the value of x:");
scanf ("%d", &x);
printf ("Enter the value of y:");
scanf ("%d", &y);
a= x++;
printf ("After using post-increment operator,the value of x
is:%d\n",x);
printf ("The value of a is:%d\n",a);
b= y--;
printf ("After using the post-decrement operator,the value of y
is:%d\n",y);
printf ("The value of b is:%d\n",b);
return 0;
}
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the value of x:10
Enter the value of y:20
After using post-increment operator,the value of x is:11
The value of a is:10
After using the post-decrement operator,the value of y is:19
The value of b is:20
```

Program 21: WAP for an integer to check whether it is divisible by 9 or 7 using || operator.

```
#include <stdio.h>
int main (){
int num;
printf("Enter the number:");
scanf("%d",&num);
if(num%9==0 || num%7==0){
printf("The number is divisible by 9 and 7.\n");
}
return 0;
}
```



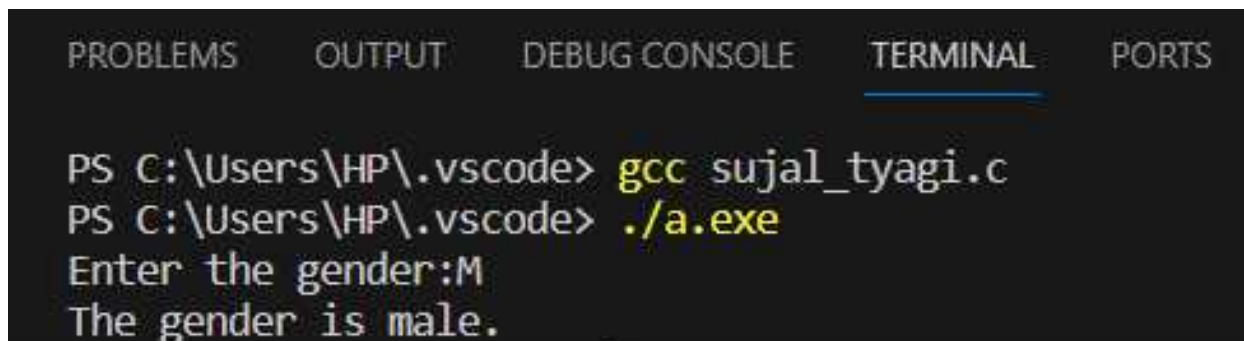
The screenshot shows a VS Code terminal window with the following content:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:63
The number is divisible by 9 and 7.
```


Program 22: WAP to identify gender in single character and print full gender.

```
#include<stdio.h>
int main(){
char gen;
printf("Enter the gender:");
scanf("%c",&gen);
if(gen=='M' || gen=='m'){
    printf("The gender is male.\n");
}
else{
printf("The gender is female.\n");
}
}
```

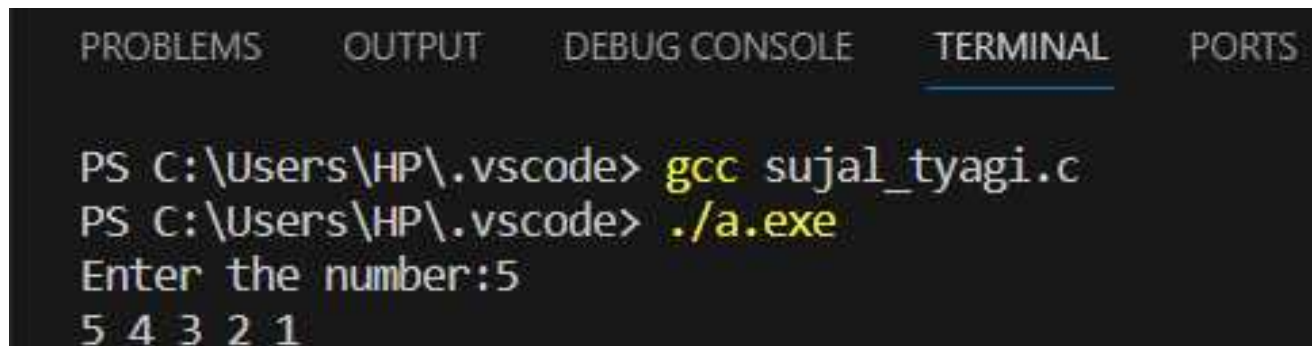


The screenshot shows a terminal window with a dark background. At the top, there are five tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. Below the tabs, the terminal shows the following commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the gender:M
The gender is male.
```

Program 23: WAP to print all the numbers from n to 1.

```
#include <stdio.h>
void main()
{
    int n, i;
    printf("Enter the number:");
    scanf("%d", &n);
    for (i = n; i >= 1; i--)
    {
        printf("%d ", i);
    }
}
```

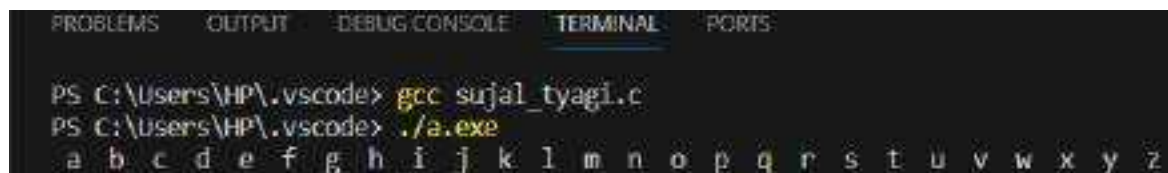


The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The commands and output are as follows:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:5
5 4 3 2 1
```

Program 24: WAP to print all alphabets from 'a' to 'z'.

```
#include <stdio.h>
int main()
{
    char ch;
    for (ch = 'a'; ch <= 'z'; ch++)
    {
        printf(" %c ",ch);
    }
}
```



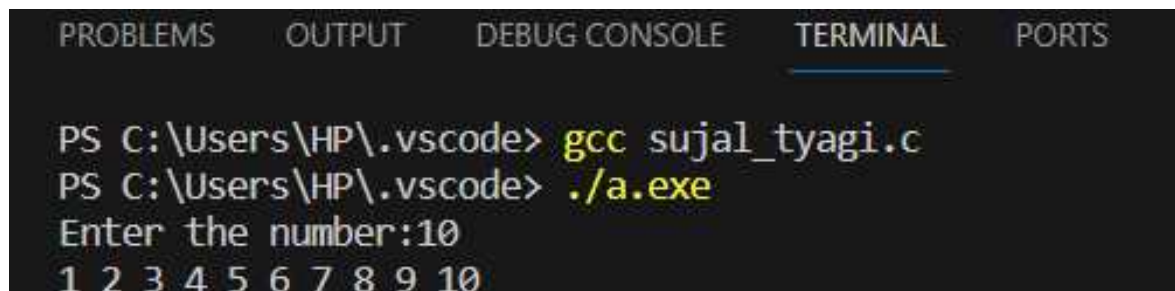
The screenshot shows a terminal window with the following content:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
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
```

Program 25: WAP to print all the numbers from 1 to n.

```
#include <stdio.h>
void main()
{
    int n, i;
    printf("Enter the number:");
    scanf("%d", &n);
    for (i = 1; i <=n; i++)
    {
        printf("%d ", i);
    }
}
```

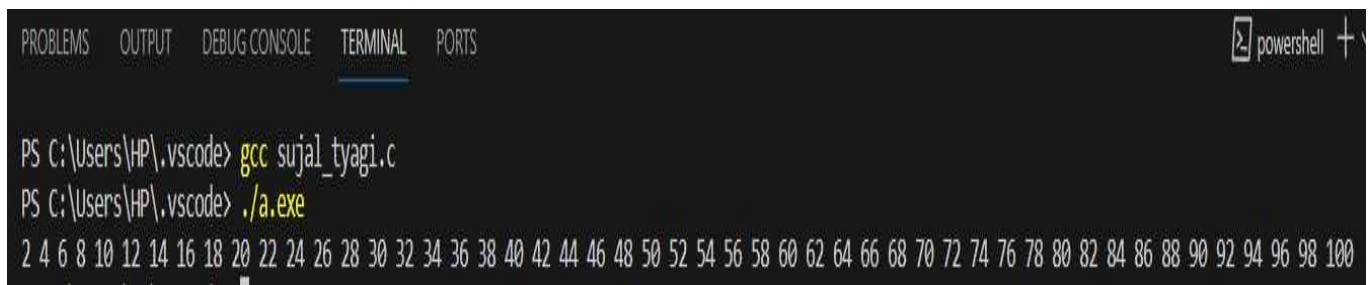


```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:10
1 2 3 4 5 6 7 8 9 10
```

Program 26: WAP to print all the even numbers from 1 to 100.

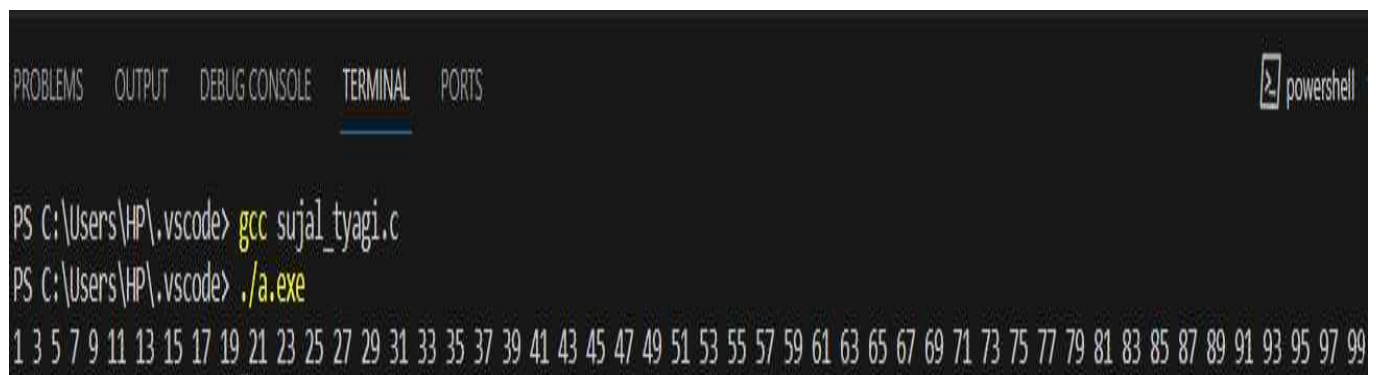
```
#include <stdio.h>
void main()
{
    int i;
    for(i=1;i<=100;i++){
        if(i%2==0){
            printf("%d ",i);
        }
    }
}
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS powershell +
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
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
```

Program 27: WAP to print all the odd numbers from 1 to 100.

```
#include <stdio.h>
void main()
{
    int i;
    for(i=1;i<=100;i++){
        if(i%2!=0){
            printf("%d ",i);
        }
    }
}
```



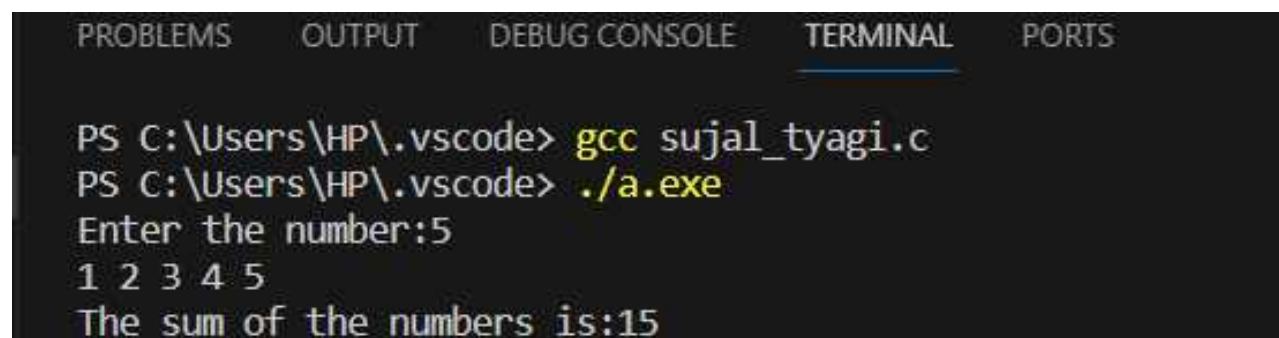
The screenshot shows a PowerShell terminal window with the following content:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  powershell

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
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
```

Program 27: WAP to print the sum of numbers between 1 to n.

```
#include <stdio.h>
void main()
{
    int i, n, sum = 0;
    printf("Enter the number:");
    scanf("%d", &n);
    for (i = 1; i <= n; i++)
    {
        printf("%d ", i);
        sum += i;
    }
    printf("\nThe sum of the numbers is:%d\n", sum);
}
```

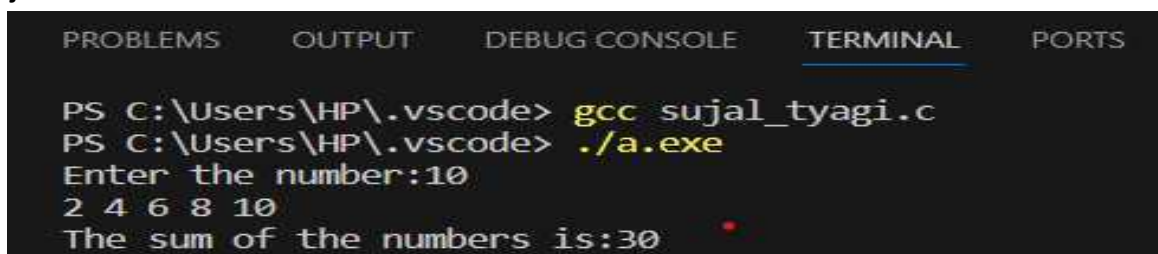


```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:5
1 2 3 4 5
The sum of the numbers is:15
```

Program 29: WAP to print the sum of all even numbers between 1 to n.

```
#include <stdio.h>
void main()
{
    int i, n, sum = 0;
    printf("Enter the number:");
    scanf("%d", &n);
    for (i = 1; i <= n; i++)
    {
        if (i % 2 == 0)
        {
            printf("%d ", i);
            sum += i;
        }
    }
    printf("\nThe sum of the numbers is:%d\n", sum);
}
```

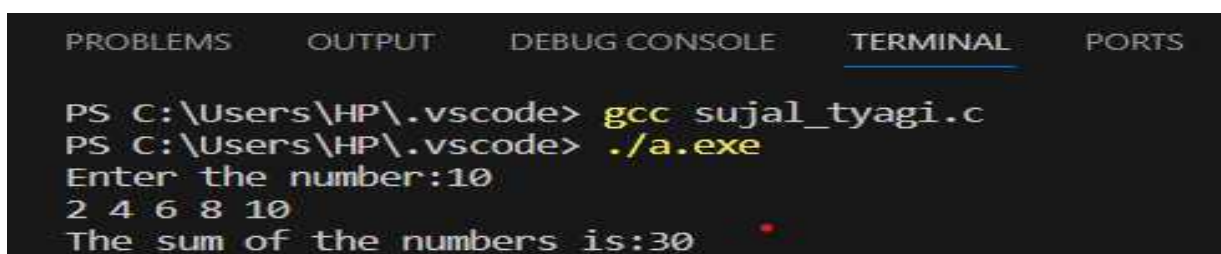


```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:10
2 4 6 8 10
The sum of the numbers is:30
```


Program 30: WAP to print the sum of all odd numbers between 1 to n.

```
#include <stdio.h>
void main()
{
    int i, n, sum = 0;
    printf("Enter the number:");
    scanf("%d", &n);
    for (i = 1; i <= n; i++)
    {
        if (i % 2 != 0)
        {
            printf("%d ", i);
            sum += i;
        }
    }
    printf("\nThe sum of the numbers is:%d\n", sum);
}
```

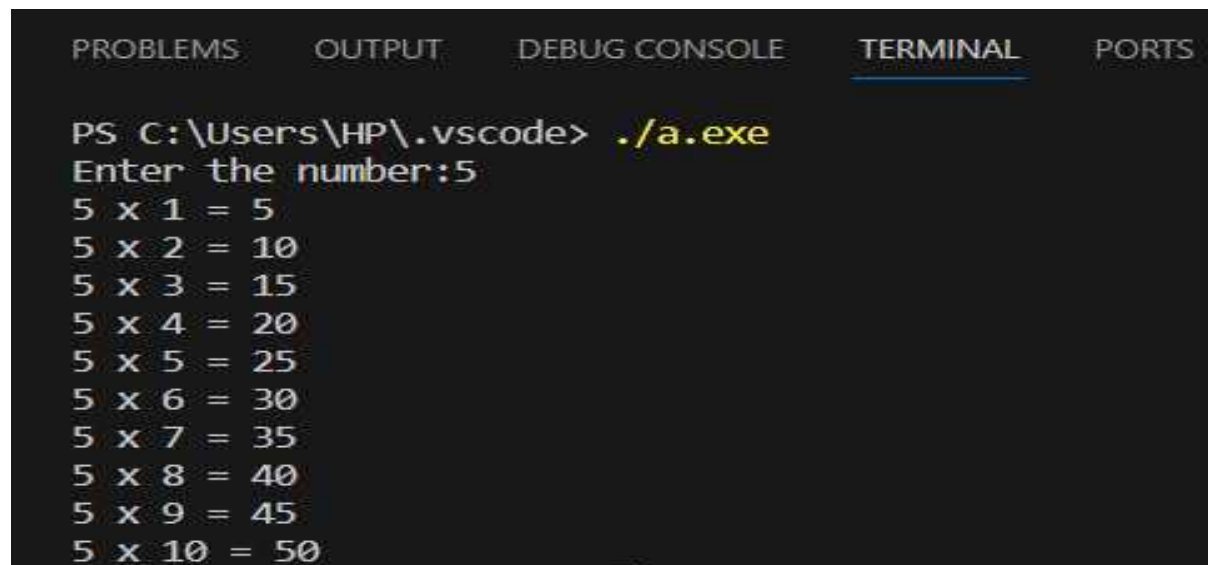


```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:10
2 4 6 8 10
The sum of the numbers is:30
```

Program 31: WAP to print the multiplication table of any number.

```
#include <stdio.h>
void main()
{
    int i, n, prod = 1;
    printf("Enter the number:");
    scanf("%d", &n);
    for (i = 1; i <= 10; i++)
    {
        prod = n * i;
        printf("%d x %d = %d\n", n, i, prod);
    }
}
```



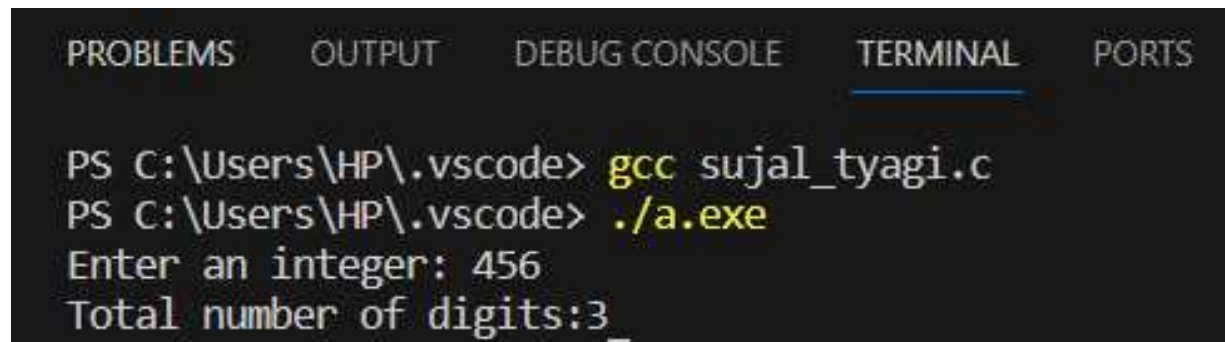
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> ./a.exe
Enter the number:5
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
```

Program 32: WAP to count the digits of a number.

```
#include <stdio.h>
void main()
{
    int i,n;
    int count = 0;
    printf("Enter an integer: ");
    scanf("%d", &n);

    while(n>0){
        n=n/10;
        count++;
    }
    printf("Total number of digits:%d\n", count);
}
```



The screenshot shows a terminal window with a dark background and light-colored text. At the top, there are five tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. Below the tabs, the terminal shows the following commands and output:

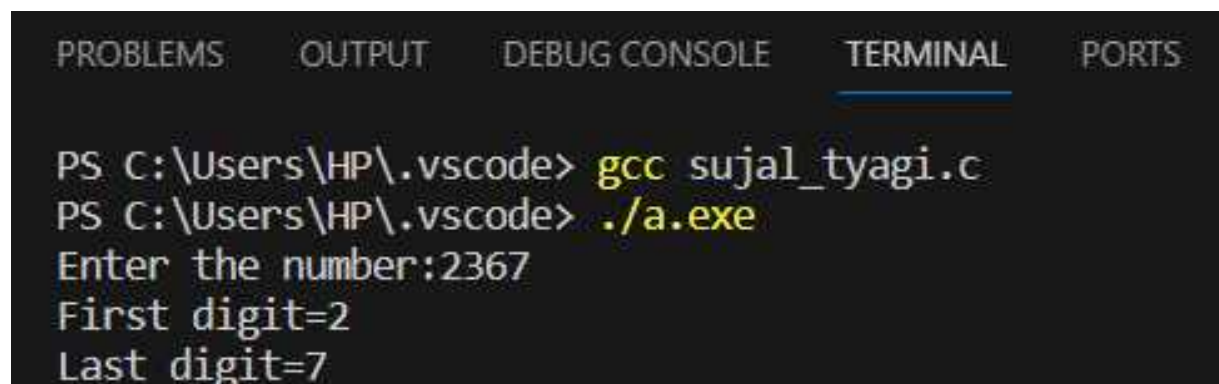
```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter an integer: 456
Total number of digits:3
```

Program 33: WAP to print the first and last digits of a number.

```
#include <stdio.h>
void main()
{
    int n, sum = 0, frstdig, lstdig;
    printf("Enter the number:");
    scanf("%d", &n);

    lstdig = n % 10;

    while (n >= 10)
    {
        n = n / 10;
    }
    frstdig = n;
    printf("First digit=%d\nLast digit=%d\n", frstdig, lstdig);
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

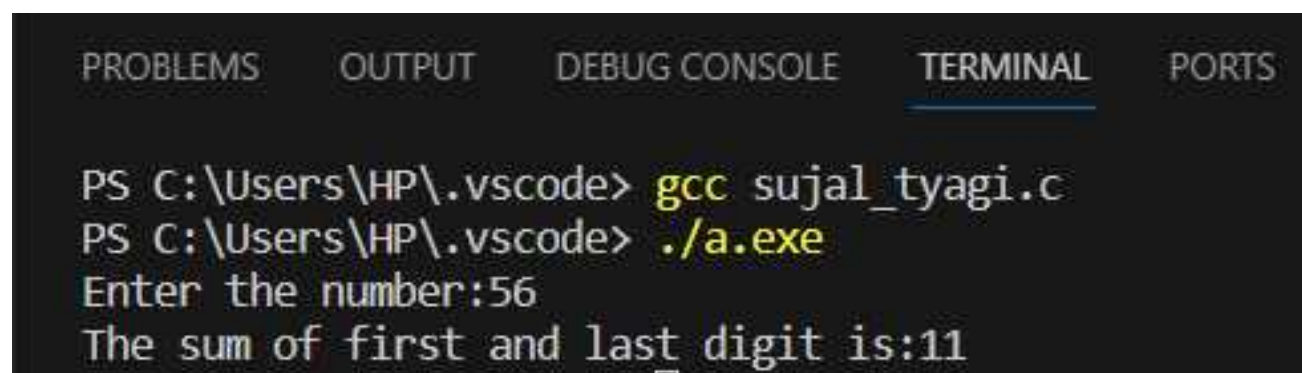
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:2367
First digit=2
Last digit=7
```

Program 34: WAP to print the sum of first and last digit of a number.

```
#include <stdio.h>
void main()
{
    int n, sum = 0, frstdig, lstdig;
    printf("Enter the number:");
    scanf("%d", &n);

    lstdig = n % 10;

    while (n >= 10)
    {
        n = n / 10;
    }
    frstdig = n;
    sum = frstdig + lstdig;
    printf("The sum of first and last digit is:%d\n", sum);
}
```



The screenshot shows a terminal window with a dark background. At the top, there are five tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. Below the tabs, the terminal shows the following commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:56
The sum of first and last digit is:11
```

Program 35: WAP to swap first and last digit of a number.

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

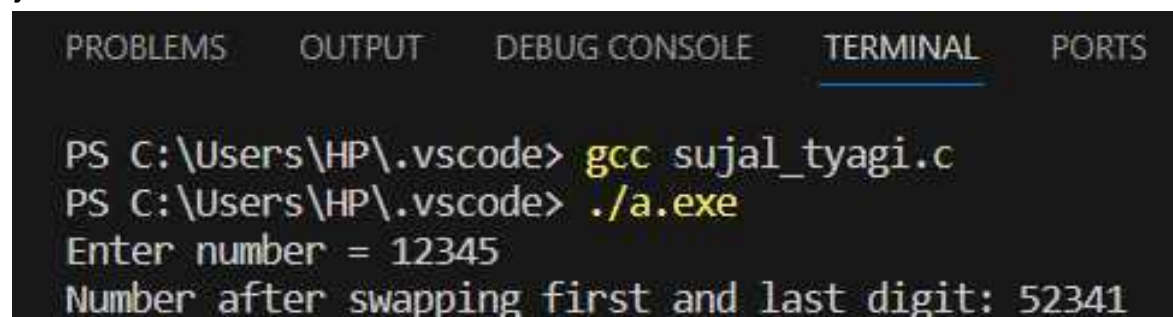
int main()
{
    int n, firstDigit, lastDigit, digits, swappedNum;
    printf("Enter number = ");
    scanf("%d", &n);

    lastDigit = n % 10;

    digits = (int)log10(n);

    firstDigit = (int)(n / pow(10, digits));
    swappedNum = lastDigit;
    swappedNum *= (int)round(pow(10, digits));
    swappedNum += n % ((int)round(pow(10, digits)));
    swappedNum -= lastDigit;
    swappedNum += firstDigit;
    printf("Number after swapping first and last digit: %d", swappedNum);

    return 0;
}
```



The screenshot shows a terminal window with a dark background. At the top, there are five tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. Below the tabs, the terminal displays the following text:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter number = 12345
Number after swapping first and last digit: 52341
```

Program 36: WAP to calculate sum of digits of a number.

```
#include <stdio.h>
int main()
{
    int n, t, sum = 0, remainder;

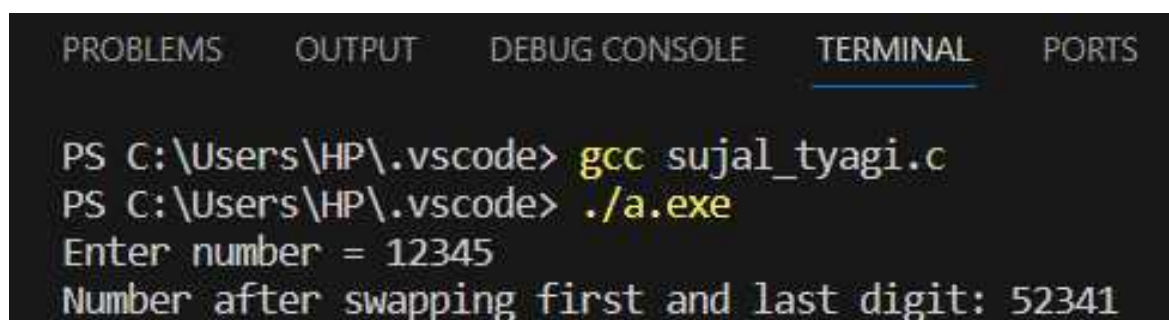
    printf("Enter the number:");
    scanf("%d", &n);

    t = n;

    while (t != 0)
    {
        remainder = t % 10;
        sum = sum + remainder;
        t = t / 10;
    }

    printf("Sum of digits of %d = %d\n", n, sum);

    return 0;
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The commands and output are as follows:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter number = 12345
Number after swapping first and last digit: 52341
```

Program 37: WAP to calculate product of digits of a number.

```
#include <stdio.h>
int main()
{
    int n, t, product = 1, remainder;

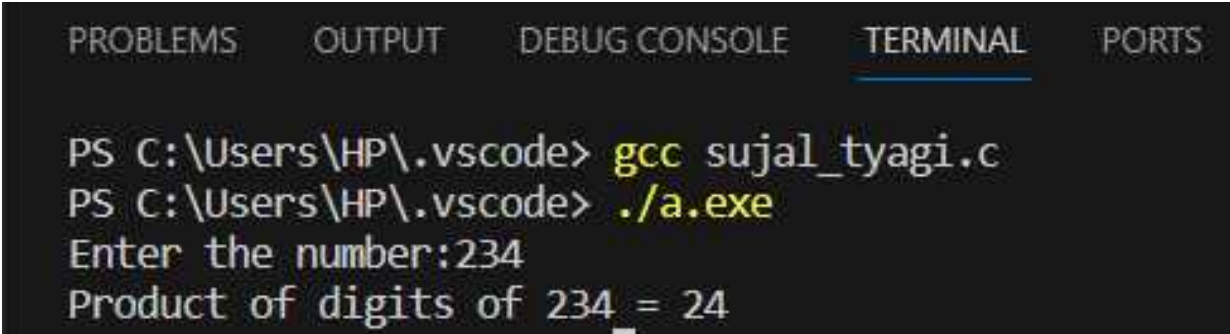
    printf("Enter the number:");
    scanf("%d", &n);

    t = n;

    while (t != 0)
    {
        remainder = t % 10;
        product = product * remainder;
        t = t / 10;
    }

    printf("Product of digits of %d = %d\n", n, product);

    return 0;
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The commands and output are as follows:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:234
Product of digits of 234 = 24
```

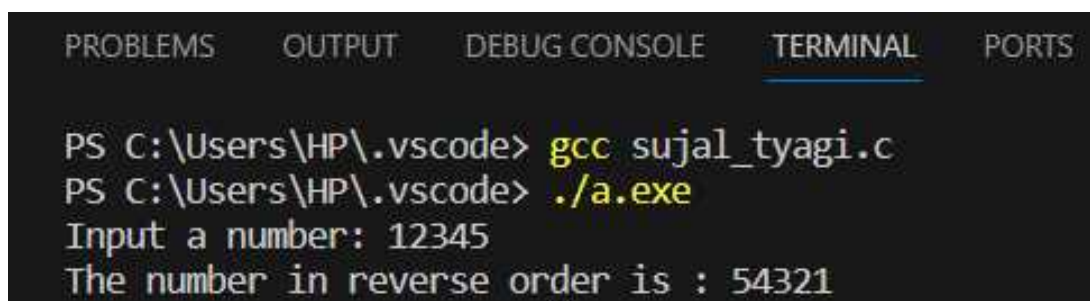

Program 38: WAP to enter a number and print its reverse.

```
#include <stdio.h>

void main(){
    int num,r,sum=0,t;

    printf("Input a number: ");
    scanf("%d",&num);

    for(t=num;num!=0;num=num/10){
        r=num % 10;
        sum=sum*10+r;
    }
    printf("The number in reverse order is : %d \n",sum);
}
```



The screenshot shows a terminal window with the following content:

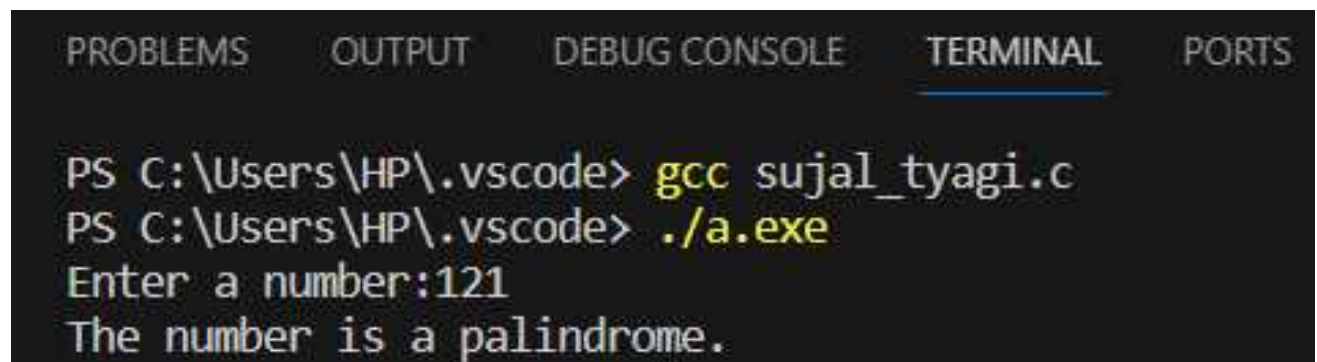
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Input a number: 12345
The number in reverse order is : 54321
```

Program 39: WAP to check whether a number is palindrome or not.

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

```
void main(){
    int c,n,s=0,r;
    printf("Enter a number:");
    scanf("%d",&n);
    c=n;
    while(n>0){
        r=n%10;
        s=r+(s*10);
        n=n/10;
    }if(c==s){
        printf("The number is a palindrome.\n");
    }else{
        printf("The number is not a palindrome.\n");
    }
}
```



The screenshot shows a terminal window with a dark background. At the top, there are five tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. The terminal content shows the following commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter a number:121
The number is a palindrome.
```

Program 40: WAP to find the frequency of digits in a number.

```
#include <stdio.h>
#define BASE 10

int main()
{
    long num, n;

    int i, lastDigit;

    int freq[BASE];

    printf("Enter any number: ");
    scanf("%lld", &num);

    for(i=0; i<BASE; i++)
    {
        freq[i] = 0;
    }
    n = num;
    while(n != 0)
    {
        lastDigit = n % 10;

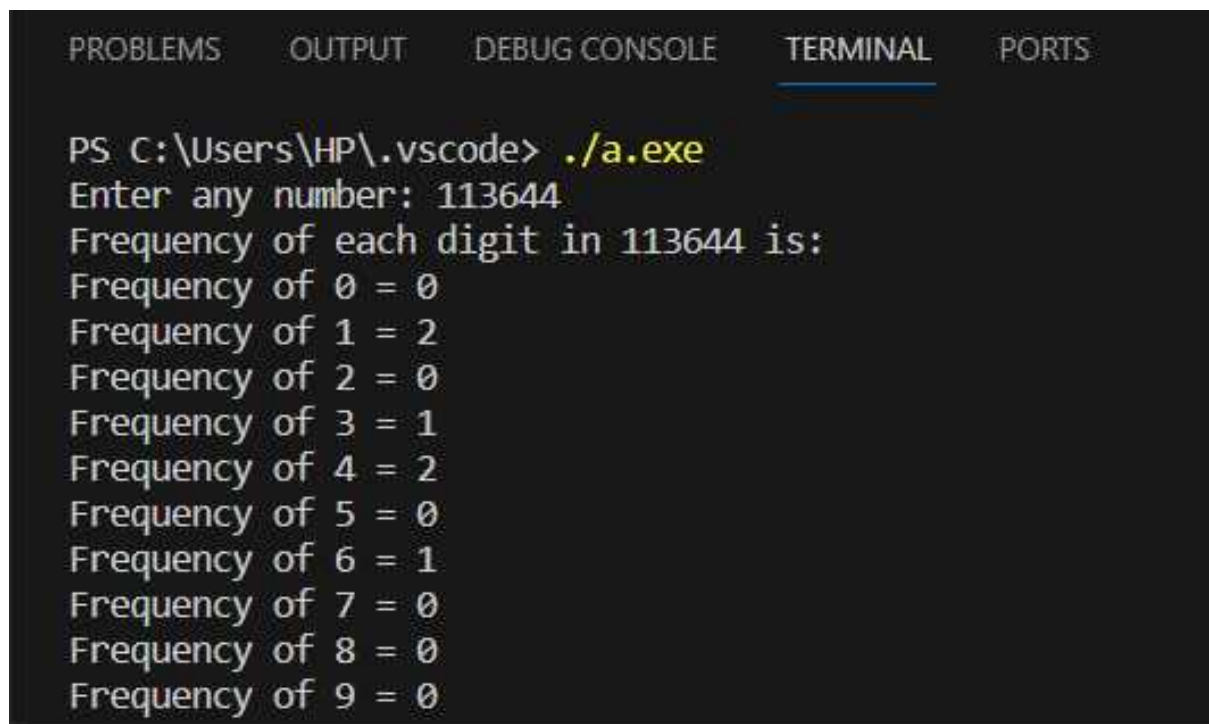
        n /= 10;

        freq[lastDigit]++;
    }
```

```
printf("Frequency of each digit in %lld is: \n", num);

for(i=0; i<BASE; i++)
{
    printf("Frequency of %d = %d\n", i, freq[i]);
}

return 0;
}
```



The screenshot shows a VS Code terminal window with the 'TERMINAL' tab selected. The terminal output is as follows:

```
PS C:\Users\HP\.vscode> ./a.exe
Enter any number: 113644
Frequency of each digit in 113644 is:
Frequency of 0 = 0
Frequency of 1 = 2
Frequency of 2 = 0
Frequency of 3 = 1
Frequency of 4 = 2
Frequency of 5 = 0
Frequency of 6 = 1
Frequency of 7 = 0
Frequency of 8 = 0
Frequency of 9 = 0
```

Program 41: WAP to find the frequency of digits in a number.

```
#include <stdio.h>
#include <math.h>
int main()
{
    int data, num = 0, digits;
    printf("Enter any number to print in words: ");
    scanf("%d", &data);
    digits = (int) log10(data);
    while(data != 0)
    {
        num = (num * 10) + (data % 10);
        data /= 10;
    }
    digits = digits - ((int) log10(num));

    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 /= 10;
}
// Print all trailing 0
while(digits)
{
    printf("Zero ");
    digits--;
}
return 0;
}
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter any number to print in words: 6737
Six Seven Three Seven
```

Program 42: WAP to print all the ASCII characters 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;
```

```
}
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
ASCII value of character = 0
ASCII value of character 0 = 1
ASCII value of character 0 = 2
ASCII value of character 0 = 3
ASCII value of character 0 = 4
ASCII value of character 0 = 5
ASCII value of character 0 = 6
ASCII value of character = 7
ASCII value of character = 8
ASCII value of character = 9
ASCII value of character
```

Program 43: WAP to find the power of a number using for loop.

```
#include <stdio.h>

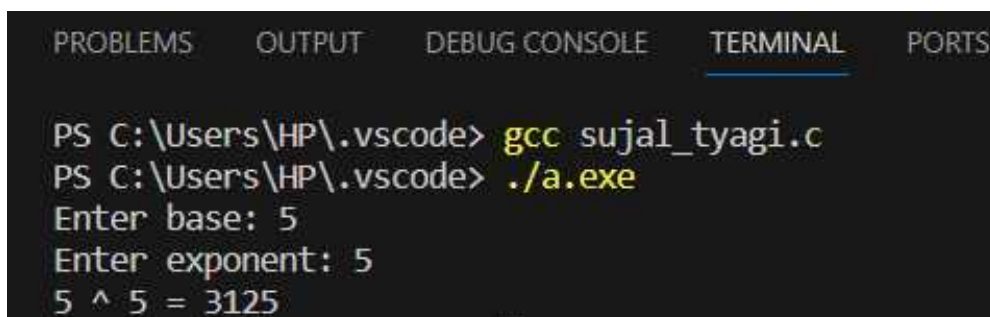
int main()
{
    int base, exponent;
    long power = 1;
    int i;

    printf("Enter base: ");
    scanf("%d", &base);
    printf("Enter exponent: ");
    scanf("%d", &exponent);

    for(i=1; i<=exponent; i++)
    {
        power = power * base;
    }

    printf("%d ^ %d = %lld", base, exponent, power);

    return 0;
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active, displaying the following commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter base: 5
Enter exponent: 5
5 ^ 5 = 3125
```


Program 44: WAP to find all factors of a number.

```
#include <stdio.h>

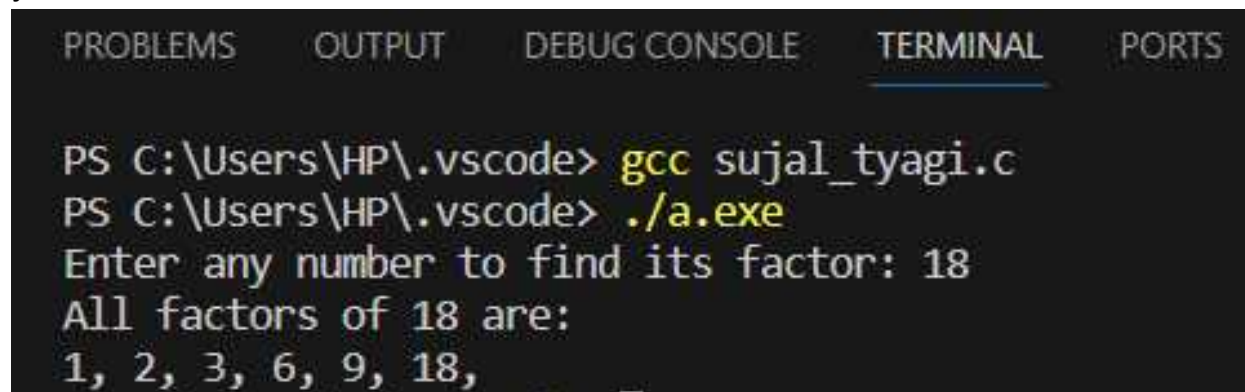
int main()
{
    int i, num;

    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;
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The prompt is PS C:\Users\HP\.vscode>. The user enters gcc sujal_tyagi.c, followed by ./a.exe. The program prompts "Enter any number to find its factor: 18" and then outputs "All factors of 18 are: 1, 2, 3, 6, 9, 18,".

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter any number to find its factor: 18
All factors of 18 are:
1, 2, 3, 6, 9, 18,
```

Program 45: WAP to find all factorial of a number.

```
#include <stdio.h>

int main()
{
    int x,fact=1,n;

    printf("Enter a number to find factorial: ");

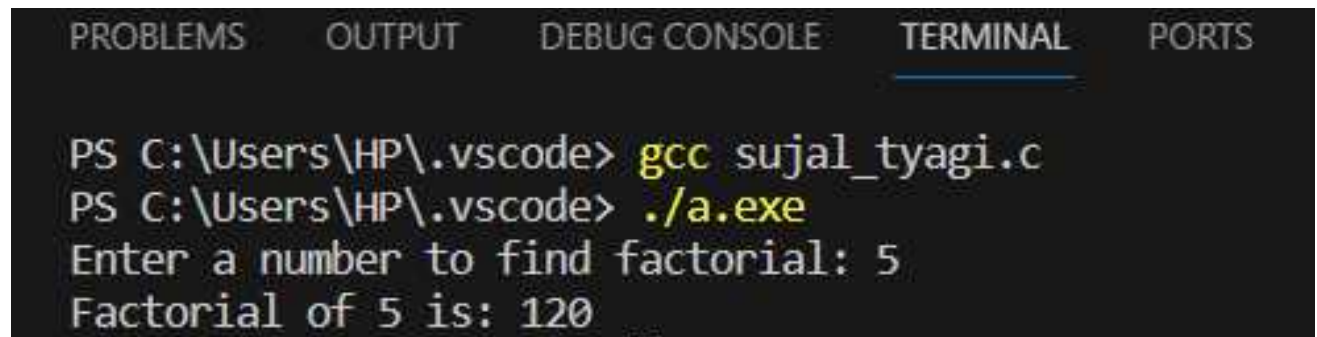
    scanf("%d",&n);

    for(x=1;x<=n;x++)

        fact=fact*x;

    printf("Factorial of %d is: %d",n,fact);

    return 0;
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The commands and output are as follows:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter a number to find factorial: 5
Factorial of 5 is: 120
```

Program 46: WAP to find the HCF of a given number.

```
#include <stdio.h>

int main()
{
    int i, n1, n2, j, hcf=1;

    printf("Input 1st number for HCF: ");
    scanf("%d", &n1);
    printf("Input 2nd number for HCF: ");
    scanf("%d", &n2);

    j = (n1<n2) ? n1 : n2;

    for(i=1; i<=j; i++)
    {

        if(n1%i==0 && n2%i==0)
        {
            hcf = i;
        }
    }
}
```

```
    }  
}  
  
printf("\nHCF of %d and %d is : %d\n\n", n1, n2, hcf);  
  
return 0;  
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c

PS C:\Users\HP\.vscode> ./a.exe

Input 1st number for HCF: 24

Input 2nd number for HCF: 48

HCF of 24 and 48 is : 24

Program 47: WAP to find the LCM of a number.

```
#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
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter two positive integers: 2,3
The LCM of 2 and 3 is 6.
```

Program 48: WAP to check whether a number is prime or not.

```
#include <stdio.h>

int main()
{
    int num,i,ctr=0;
    printf("Input a number: ");
    scanf("%d",&num);
    for(i=2;i<=num/2;i++){
        if(num % i==0){
            ctr++;
            break;
        }
    }
    if(ctr==0 && num!= 1)
        printf("%d is a prime number.\n",num);
    else
        printf("%d is not a prime number",num);
    return 0;
}
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Input a number: 13
13 is a prime number.
```

Program 49: WAP to print all prime numbers from 1 to n.

```
#include<stdio.h>

void 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", 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);  
}  
}
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
```

```
PS C:\Users\HP\.vscode> ./a.exe
```

```
Enter the range:50
```

```
The prime numbers in between the range 1 to 50:
```

```
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47
```


Program 50: WAP to find sum of all prime numbers from 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);

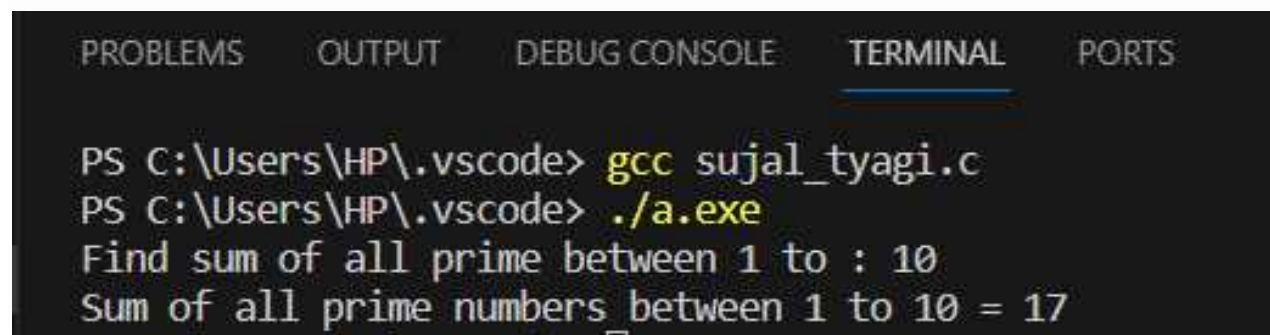
    for(i=2; i<=end; i++)
    {

        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;
}
```



The screenshot shows a VS Code interface with the 'TERMINAL' tab selected. The terminal displays the following commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Find sum of all prime between 1 to : 10
Sum of all prime numbers between 1 to 10 = 17
```

Program 51: WAP to find 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;  
}
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c

PS C:\Users\HP\.vscode> ./a.exe

Enter any number to print Prime factors: 15

All Prime Factors of 15 are:

3, 5,

Program 52: WAP to check whether a number is an Armstrong number 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) {

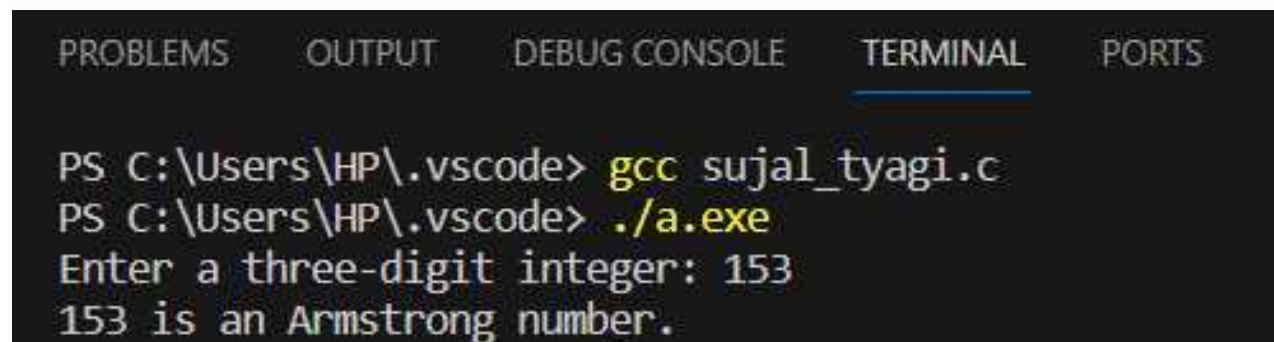
        remainder = originalNum % 10;

        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;
}
```



The screenshot shows the VS Code interface with the 'TERMINAL' tab selected. The terminal displays the following commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter a three-digit integer: 153
153 is an Armstrong number.
```

Program 53: WAP to print all the Armstrong numbers from 1 to n.

```
#include <stdio.h>

#include<math.h>

int main() {

    int i,n,sum,num,count = 0;

    printf("Enter the number:");

    scanf("%d",&n);

    for (i = 1; i <=n; i++) {

        num = i;

        while (num != 0) {

            num /= 10;

            count++;

        }

        num = i;

        sum = pow(num % 10, count)

            + pow((num % 100 - num % 10) / 10, count)

            + pow((num % 1000 - num % 100) / 100, count);
```

```
    if (sum == i) {  
        printf("%d ", i);  
    }  
    count = 0;  
}  
return 0;  
}
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
```

```
PS C:\Users\HP\.vscode> ./a.exe
```

```
Enter the number:500
```

```
1 2 3 4 5 6 7 8 9 153 370 371 407
```


Program 54: WAP to check whether a number is a perfect number or not.

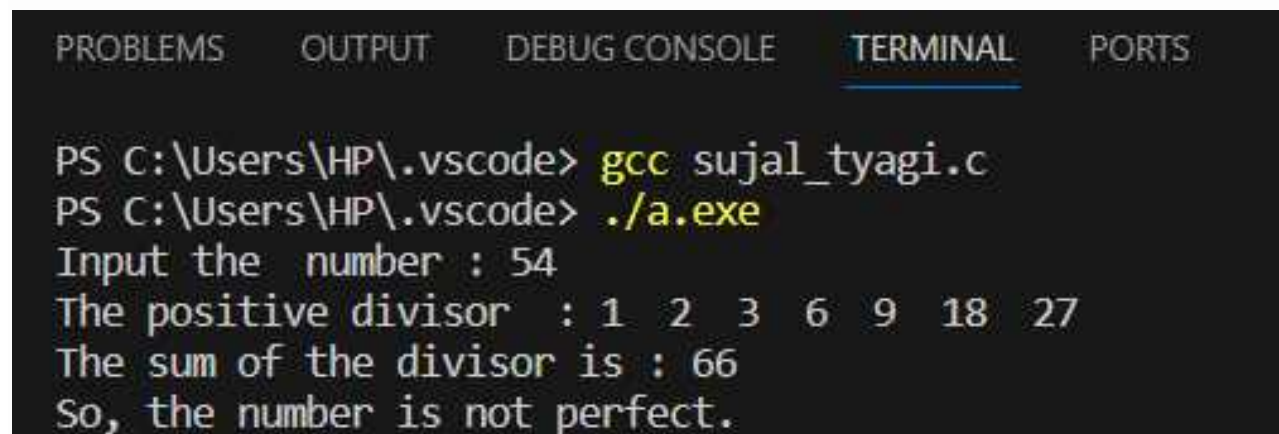
```
#include <stdio.h>

#include <math.h>

int main()
{
    int n, i, sum;
    int mn, mx;

    printf("Input the number : ");
    scanf("%d", &n);
    sum = 0;
    printf("The positive divisor : ");
    for (i = 1; i < n; i++)
    {
        if (n % i == 0)
        {
            sum = sum + i;
            printf("%d ", i);
        }
    }
```

```
}  
  
printf("\nThe sum of the divisor is : %d", sum);  
if (sum == n)  
    printf("\nSo, the number is perfect.");  
else  
    printf("\nSo, the number is not perfect.");  
printf("\n");  
return 0;  
}
```



The screenshot shows a VS Code terminal window with the following content:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  
  
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c  
PS C:\Users\HP\.vscode> ./a.exe  
Input the number : 54  
The positive divisor : 1 2 3 6 9 18 27  
The sum of the divisor is : 66  
So, the number is not perfect.
```

The terminal window has tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The command prompt is PS C:\Users\HP\.vscode>. The user has compiled the program sujal_tyagi.c using gcc and executed it using ./a.exe. The program prompts for an input number (54) and outputs the positive divisors (1, 2, 3, 6, 9, 18, 27), the sum of the divisors (66), and a message stating that the number is not perfect.

Program 55: WAP to print all the perfect numbers from 1 to n.

```
#include <stdio.h>

#include<math.h>

int main() {
int n,i,sum,mn,mx;

printf("Input the starting range or number : ");
scanf("%d",&mn);

printf("Input the ending range of number : ");
scanf("%d",&mx);

printf("The Perfect numbers within the given range : ");
for(n=mn;n<=mx;n++){
    i=1;

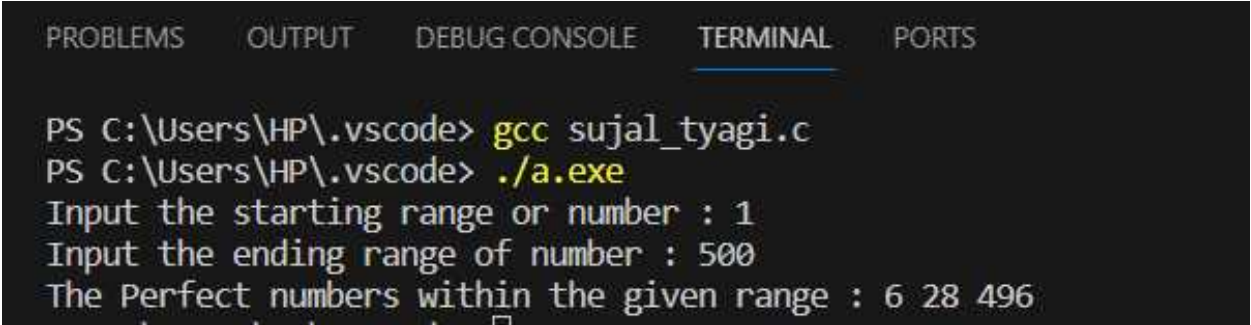
    sum = 0;

    while(i<n){
        if(n%i==0)
            sum=sum+i;

        i++;
    }

    if(sum==n)
```

```
    printf("%d ",n);  
}  
    printf("\n");  
return 0;  
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The command prompt shows the user is in the directory C:\Users\HP\.vscode. The user has compiled a C file named sujal_tyagi.c using gcc, creating an executable file a.exe. The user then runs a.exe, which prompts for a starting range or number (1) and an ending range of number (500). The program outputs the perfect numbers within this range: 6, 28, and 496.

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  
  
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c  
PS C:\Users\HP\.vscode> ./a.exe  
Input the starting range or number : 1  
Input the ending range of number : 500  
The Perfect numbers within the given range : 6 28 496
```

Program 56: WAP to check whether a number is a strong number or not.

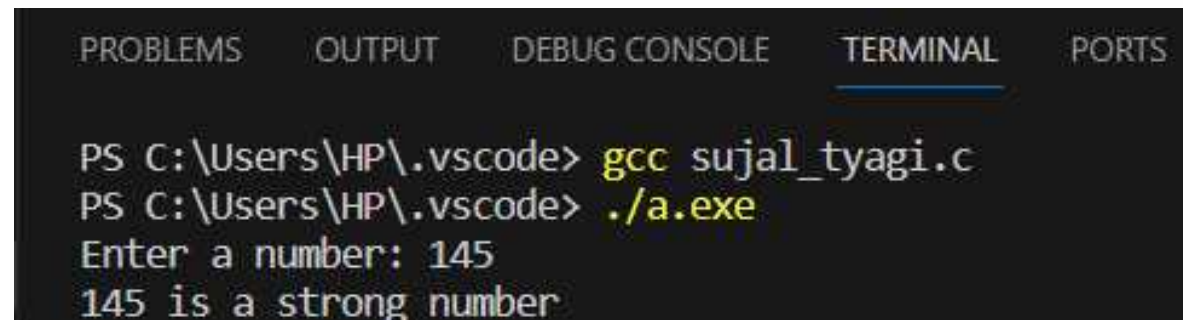
```
#include <stdio.h>

#include <math.h>

int main()
{
    int num, i, f, r, sum = 0, temp;
    printf("Enter a number: ");
    scanf("%d", &num);
    temp = num;
    while (num)
    {
        i = 1, f = 1;
        r = num % 10;
        while (i <= r)
        {
            f = f * i;
            i++;
        }
        sum = sum + f;
```

```
    num = num / 10;
}
if (sum == temp)
    printf("%d is a strong number", temp);
else
    printf("%d is not a strong number", temp);

return 0;
}
```



The image shows a terminal window from Visual Studio Code. At the top, there are tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. The terminal content shows the following sequence of commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter a number: 145
145 is a strong number
```

Program 57: WAP to print all the strong numbers from 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;
    }

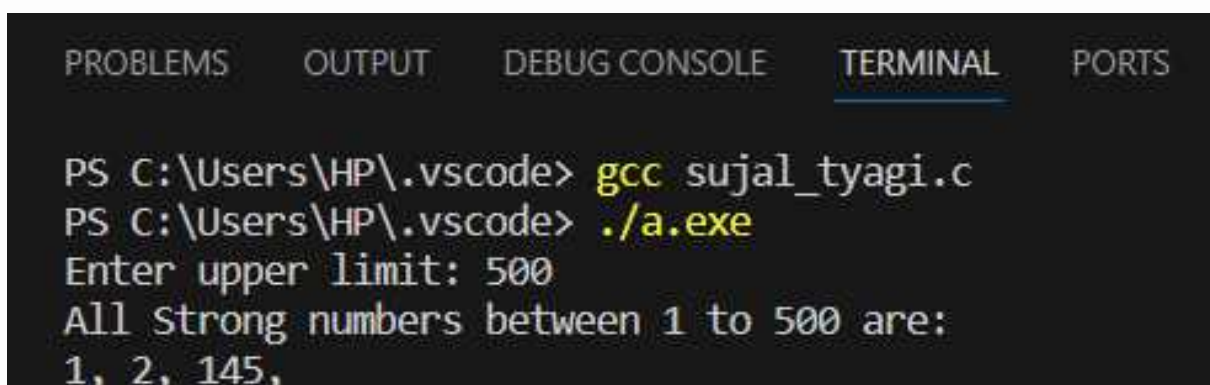
    sum += fact;

    cur /= 10;
}

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

}

return 0;
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter upper limit: 500
All Strong numbers between 1 to 500 are:
1, 2, 145,
```


Program 58: WAP to print Fibonacci terms upto n.

```
#include <stdio.h>

int main()
{
    int n1=0,n2=1,n3,i,number;

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

    scanf("%d",&number);

    printf("\n%d %d",n1,n2);

    for(i=2;i<number;++i)
    {
        n3=n1+n2;

        printf(" %d",n3);

        n1=n2;

        n2=n3;
    }

    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number of elements:15
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377
```

Program 59: WAP to find the one's complement of a binary number.

```
#include <stdio.h>

#include<string.h>

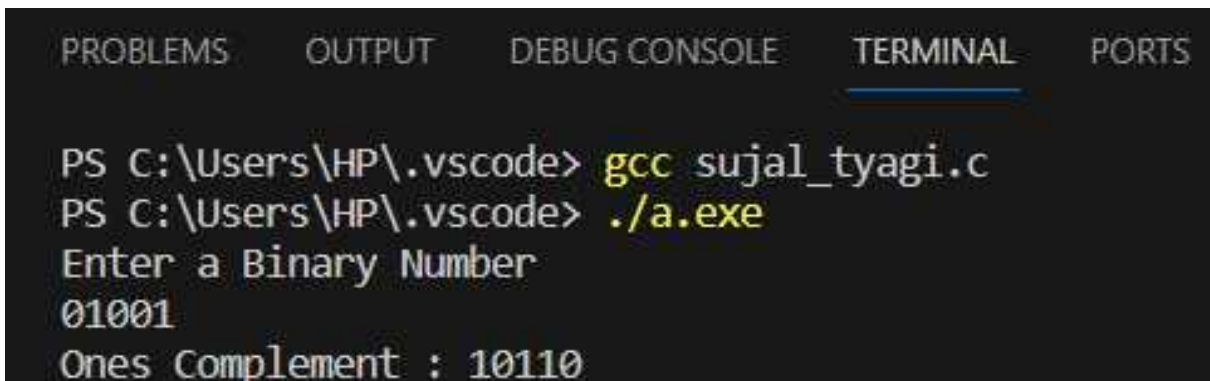
int main()
{
    char binaryNumber[100], onesComplement[100];
    int counter, error=0, digitCount;

    printf("Enter a Binary Number\n");
    scanf("%s", binaryNumber);

    digitCount = strlen(binaryNumber);

    for(counter=0; counter < digitCount; counter++) {
        if(binaryNumber[counter]=='1') {
            onesComplement[counter] = '0';
        } else if(binaryNumber[counter]=='0') {
            onesComplement[counter] = '1';
        } else {
```

```
    printf("Error :( ");  
    return 1;  
}  
}  
onesComplement[digitCount] = '\0';  
  
printf("Ones Complement : %s", onesComplement);  
return 0;  
}
```

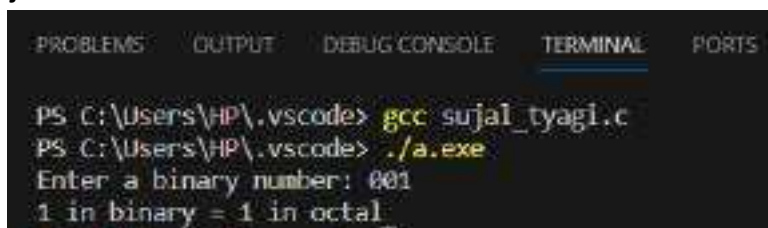


```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  
  
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c  
PS C:\Users\HP\.vscode> ./a.exe  
Enter a Binary Number  
01001  
Ones Complement : 10110
```

Program 61: WAP 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;
    while (bin != 0) { dec += (bin % 10) * pow(2, i);
        ++i;
        bin /= 10;
    }
    i = 1;
    while (dec != 0) { oct += (dec % 8) * i;
        dec /= 8;
        i *= 10;
    }
    return oct;
}
```

A screenshot of a terminal window with a dark background. At the top, there are tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. The terminal shows the following commands and output:
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter a binary number: 001
1 in binary = 1 in octal

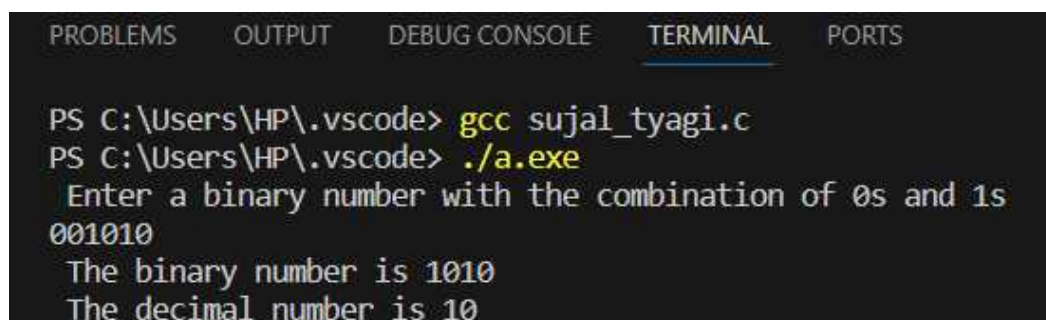
Program 62: WAP to convert binary to decimal number system.

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

int main() {
    int num, binary_num, decimal_num = 0, base = 1, rem;
    printf (" Enter a binary number with the combination of 0s and 1s \n");
    scanf ("%d", &num);

    binary_num = num;
    while ( num > 0)
    {
        rem = num % 10;
        decimal_num = decimal_num + rem * base;
        num = num / 10;
        base = base * 2;
    }

    printf ( " The binary number is %d \t", binary_num);
    printf (" \n The decimal number is %d \t", decimal_num);
}
```



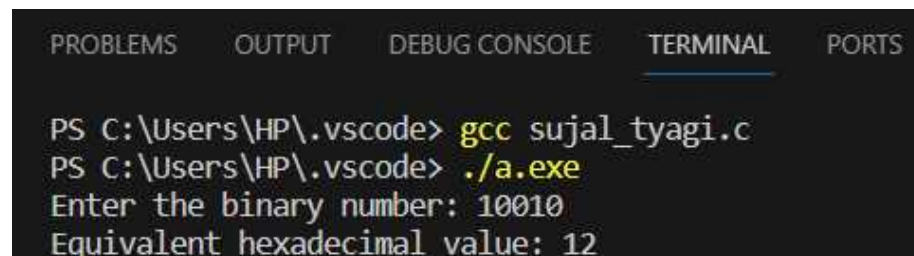
The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The prompt is PS C:\Users\HP\.vscode>. The user enters gcc sujal_tyagi.c, followed by ./a.exe. The program prompts for a binary number, and the user enters 001010. The program outputs: The binary number is 1010 and The decimal number is 10.

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter a binary number with the combination of 0s and 1s
001010
The binary number is 1010
The decimal number is 10
```

Program 63: WAP 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;
}
```



The screenshot shows a terminal window with a dark background. At the top, there are five tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. Below the tabs, the terminal shows the following commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the binary number: 10010
Equivalent hexadecimal value: 12
```

Program 64: WAP to convert octal to binary number system.

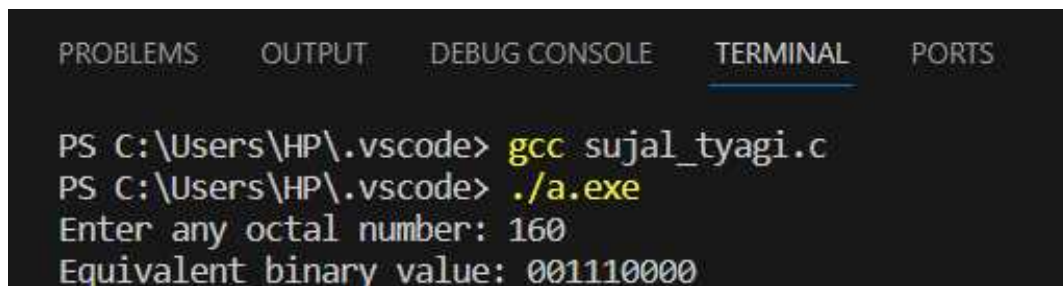
```
#include <stdio.h>
#define MAX 1000

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;  
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  
  
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c  
PS C:\Users\HP\.vscode> ./a.exe  
Enter any octal number: 160  
Equivalent binary value: 001110000
```

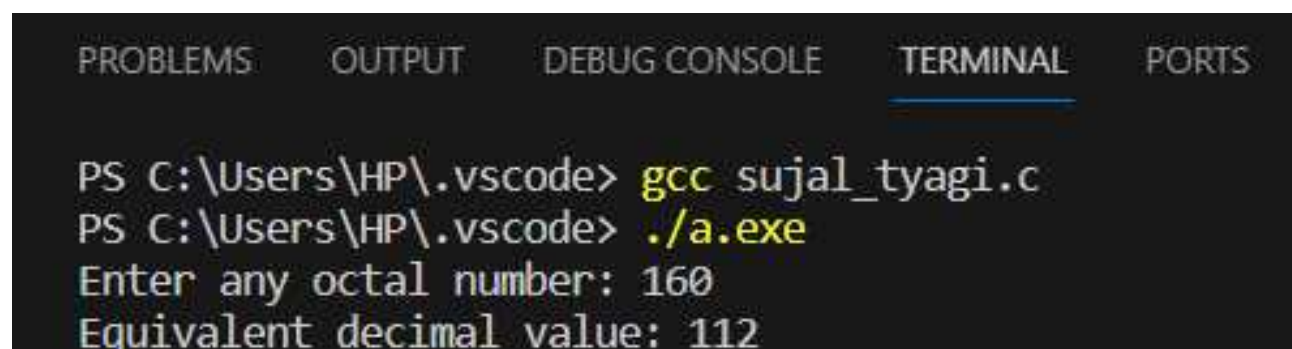

Program 65: WAP to convert octal to decimal number system.

```
#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;
}
```



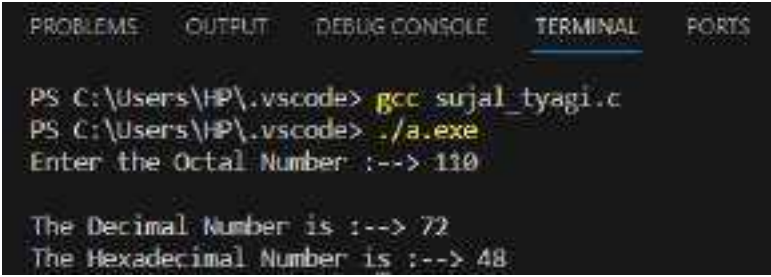
The screenshot shows a VS Code interface with a terminal window. The terminal has tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (which is active and underlined), and PORTS. The terminal text shows the compilation and execution of a C program: `PS C:\Users\HP\.vscode> gcc sujal_tyagi.c`, `PS C:\Users\HP\.vscode> ./a.exe`, followed by the program's output: `Enter any octal number: 160` and `Equivalent decimal value: 112`.

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter any octal number: 160
Equivalent decimal value: 112
```

Program 66: WAP to convert octal to hexadecimal number system.

```
#include <stdio.h>
#include <math.h>
int main()
{
    int n, sum = 0;
    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);
}
```

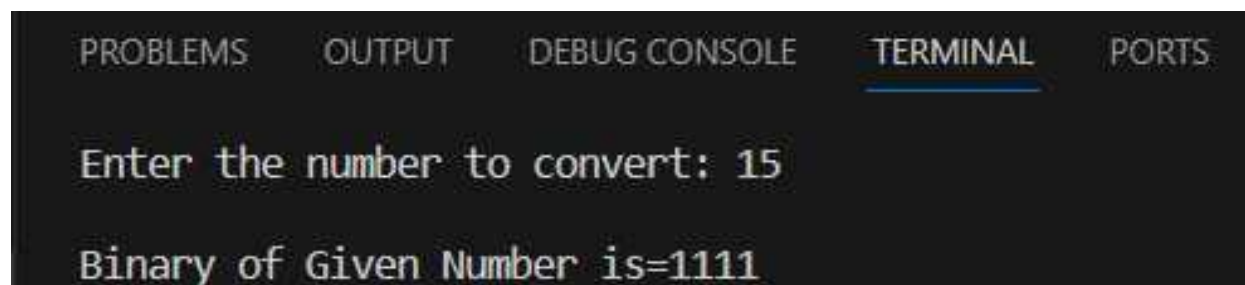


```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\HP\.vscode> gcc surjal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the Octal Number :--> 110

The Decimal Number is :--> 72
The Hexadecimal Number is :--> 48
```

Program 67: WAP to convert decimal to binary number system.

```
#include <stdio.h>
#include <math.h>
int main()
{
    int a[10],n,i;
    system ("cls");
    printf("Enter the number to convert: ");
    scanf("%d",&n);
    for(i=0;n>0;i++)
    {
        a[i]=n%2;
        n=n/2;
    }
    printf("\nBinary of Given Number is=");
    for(i=i-1;i>=0;i--)
    {
        printf("%d",a[i]);
    }
    return 0;
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

Enter the number to convert: 15

Binary of Given Number is=1111
```

Program 68: WAP to convert decimal to octal number system.

```
#include <stdio.h>
#include <math.h>
int main()
{
    int a[10],n,i;
    system("cls");
    printf("Enter the number to convert: ");
    scanf("%d",&n);
    for(i=0;n>0;i++)
    {
        a[i]=n%2;
        n=n/2;
    }
    printf("\nBinary of Given Number is=");
    for(i=i-1;i>=0;i--)
    {
        printf("%d",a[i]);
    }
    return 0;
}
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

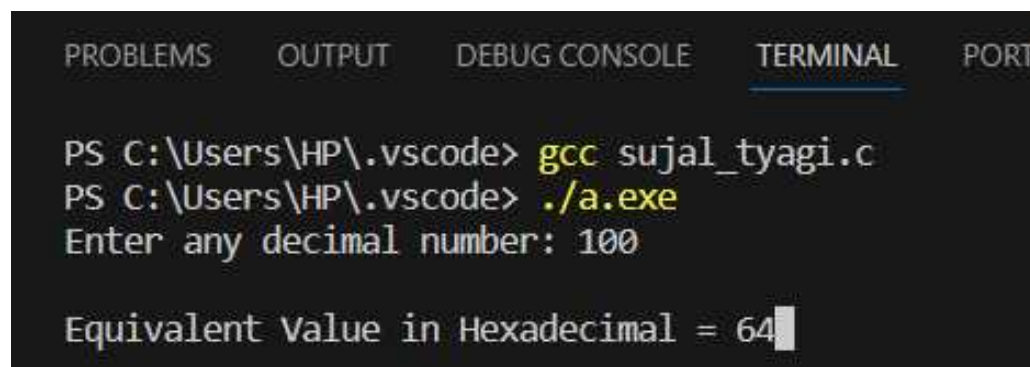
TERMINAL

PORTS

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter a decimal number: 150
150 in decimal = 226 in octal
```

Program 69: WAP to convert decimal to hexadecimal number system.

```
#include<stdio.h>
int main()
{
    int decnum, rem, i=0;
    char hexnum[50];
    printf("Enter any decimal number: ");
    scanf("%d", &decnum);
    while(decnum!=0)
    {
        rem = decnum%16;
        if(rem<10)
            rem = rem+48;
        else
            rem = rem+55;
        hexnum[i] = rem;
        i++; decnum = decnum/16;
    }
    printf("\nEquivalent Value in Hexadecimal = ");
    for(i=i-1; i>=0; i--)
        printf("%c", hexnum[i]);
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORT. The terminal displays the following commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter any decimal number: 100

Equivalent Value in Hexadecimal = 64
```

Program 70: WAP to convert hexadecimal to binary number system.

```
#include <stdio.h>
#include <math.h>
int main()
{
    int n, ans = 0, B[100];

    printf("Enter the Hexadecimal Number :--> ");
    scanf("%d", &n);

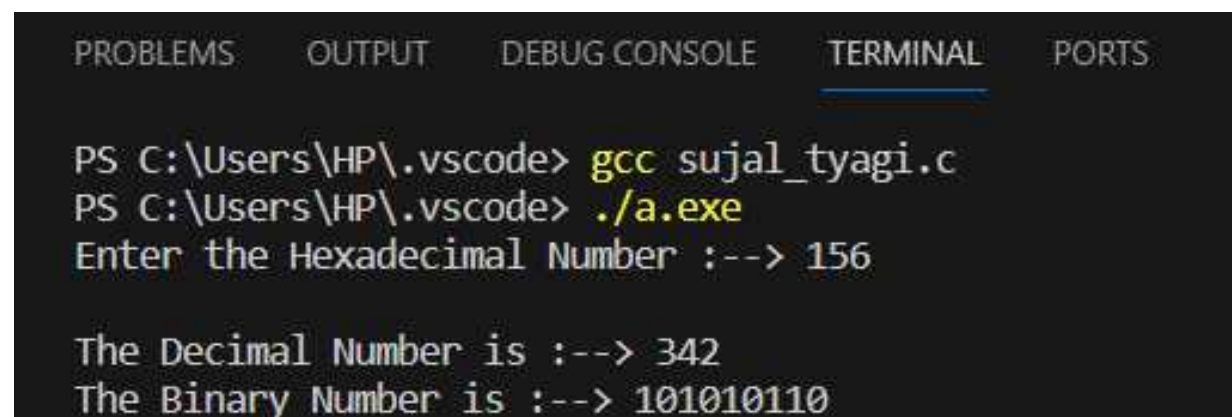
    int i = 0;
    while(n != 0)
    {
        int digit = n % 10;
        ans = ans + (digit * pow(16, i));
        n = n / 10;
        i++;
    }

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

    int j = 0, k;
    while(ans > 0)
    {
        B[j] = ans % 2;           //to store the remainder in array
        ans = ans >> 1;
        j++;
    }
```

```
printf("\nThe Binary Number is :--> ");

for(k = j - 1; k >= 0; k--)
{
    printf("%d",B[k]);
}
return 0;
}
```



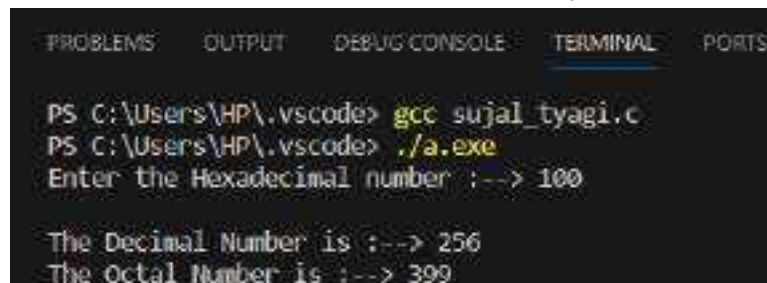
The screenshot shows a VS Code terminal window with the 'TERMINAL' tab selected. The terminal displays the following text:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the Hexadecimal Number :--> 156

The Decimal Number is :--> 342
The Binary Number is :--> 101010110
```

Program 71: WAP to convert hexadecimal to octal and decimal 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); }
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the Hexadecimal number :--> 100

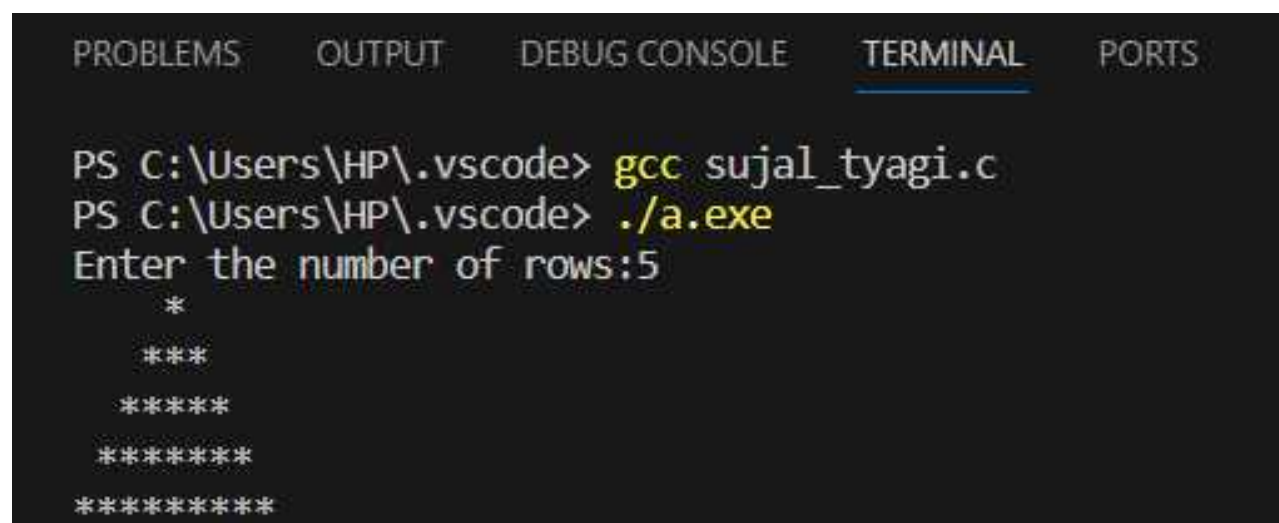
The Decimal Number is :--> 256
The Octal Number is :--> 399
```


Program 73: Star Patter 1.

```
#include<stdio.h>
int main(){
    int i,j,rows,space;

    printf("Enter the number of rows:");
    scanf("%d",&rows);

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



The screenshot shows a VS Code terminal window with the following content:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

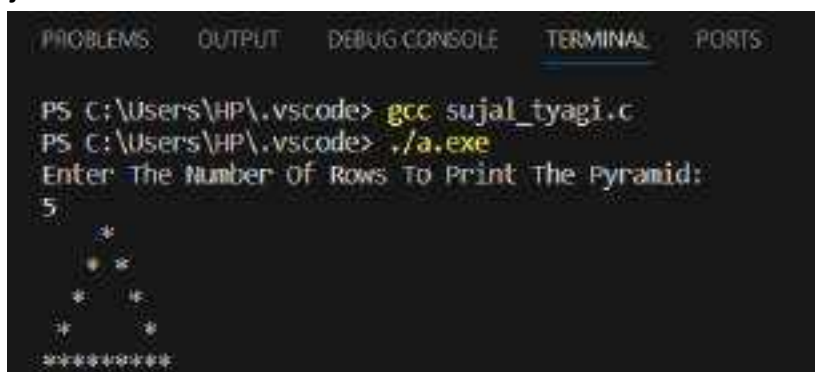
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number of rows:5
    *
   ***
  *****
 *****
*****
```

The terminal output displays a star pattern for 5 rows. The pattern consists of 5 lines of stars, with the number of stars increasing by 2 in each row (1, 3, 5, 5, 7 stars respectively). The first three rows have leading spaces to form a triangular shape, while the last two rows are left-aligned.

Program 74: Star Patter 2.

```
#include<stdio.h>

int main() {
int i, space, rows, star=0;
printf("Enter The Number Of Rows To Print The Pyramid: \n");
scanf("%d",&rows);
for(i = 0; i < rows-1; i++) {
for(space = 1; space < rows-i; space++) {
printf(" ");
}
for (star = 0; star <= 2*i; star++) {
if(star==0 || star==2*i)
printf("*");
else
printf(" ");
}
printf("\n");
}
for(i=0; i<2*rows-1; i++){
printf("*");
}
return 0;
}
```



The screenshot shows a terminal window with the following content:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter The Number Of Rows To Print The Pyramid:
5
  *
 * *
*   *
*   *
*****
```

The output displays a pyramid of stars for 5 rows. The first four rows have leading spaces, and the bottom row is a solid line of 11 stars.

Program 75: Star Patter 3.

```
#include<stdio.h>

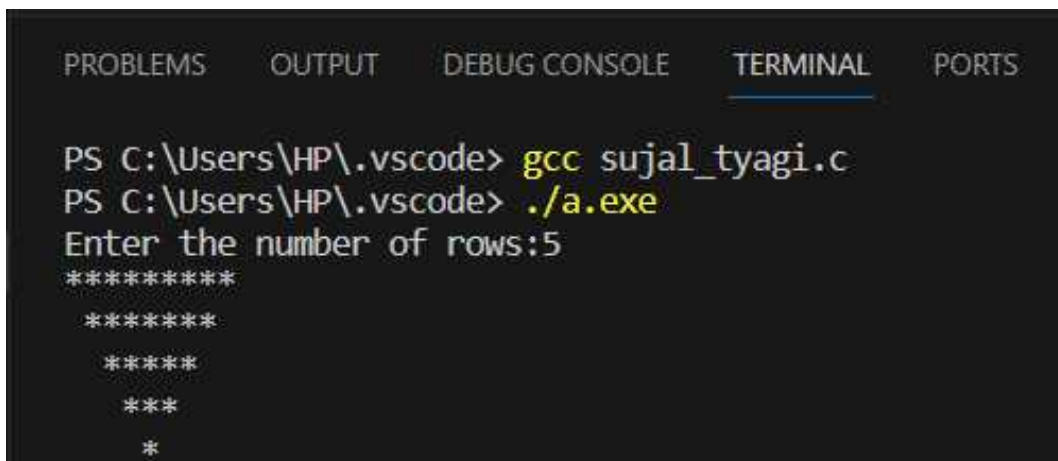
int main() {

int i, space, rows,j;

printf("Enter the number of rows:");
scanf("%d",&rows);

for(i=rows;i>=1;i--){
    for(space=1;space<=rows-i;space++){
        printf(" ");
    }for(j=1;j<=2*i-1;j++){
        printf("*");
    }printf("\n");
}

return 0;
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The prompt is PS C:\Users\HP\.vscode>. The user enters gcc sujal_tyagi.c, followed by ./a.exe. The program prompts "Enter the number of rows:5". The output is a star pattern with 5 rows: 5 stars in the first row, 3 in the second, 1 in the third, 1 in the fourth, and 1 in the fifth. The stars are aligned to the left.

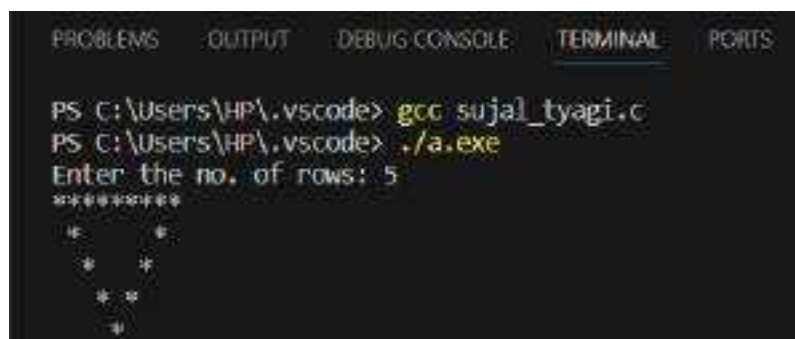
```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number of rows:5
*****
***
*
*
*
```

Program 76: Star Patter 4.

```
#include <stdio.h>
int main()
{
    int i, j, k, m = 1, rows;
    printf("Enter the no. of rows: ");
    scanf("%d", &rows);

    for (i = rows; i >= 1; i--)
    {
        for (j = 1; j < m; j++)
            printf(" ");

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



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the no. of rows: 5
*****
 *   *
*   *
*   *
*   *
*****
```

Program 77: Star Patter 5.

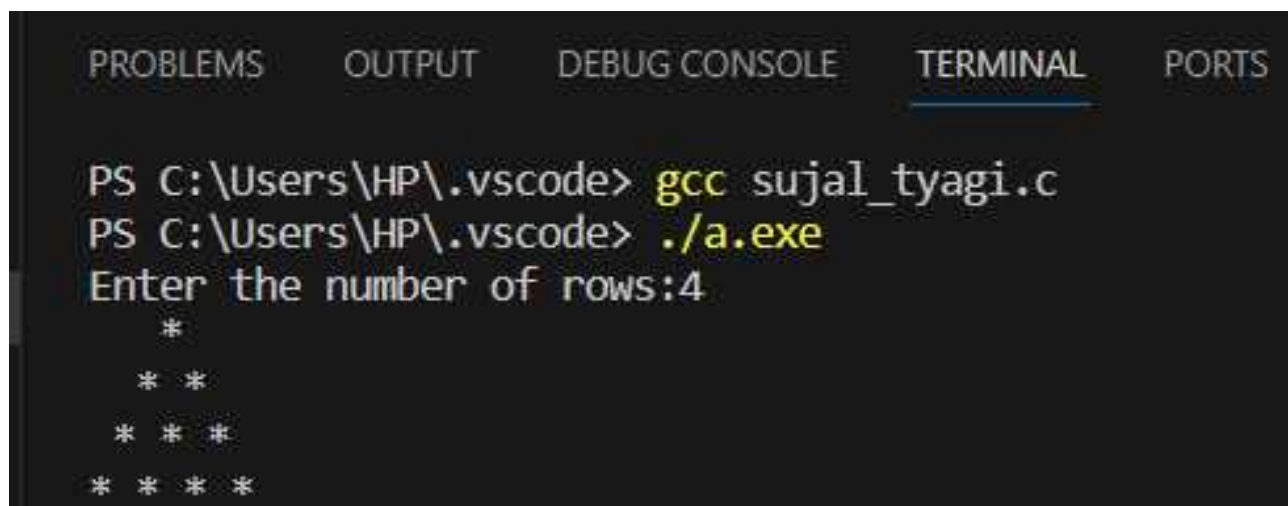
```
#include<stdio.h>

int main(){

    int i,j,rows,space;

    printf("Enter the number of rows:");
    scanf("%d",&rows);

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



The screenshot shows a terminal window with the following content:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number of rows:4
    *
   * *
  * * *
 * * * *
```

The terminal window has tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (selected), and PORTS. The command prompt shows the compilation of sujal_tyagi.c and its execution. The user enters 4 for the number of rows, and the program outputs a star pattern of 4 rows.

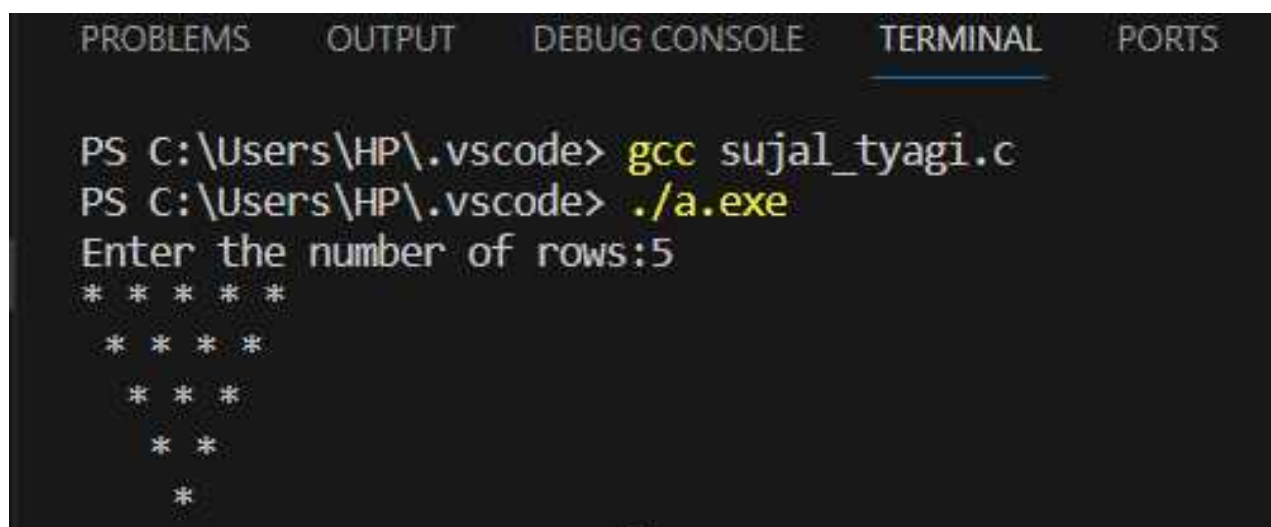
Program 78: Star Patter 6.

```
#include<stdio.h>
int main(){

    int i,j,rows,space;

    printf("Enter the number of rows:");
    scanf("%d",&rows);

    for(i=rows;i>=1;i--){
        for(space=1;space<=rows-i;space++){
            printf(" ");
        }for(j=1;j<=i;j++){
            printf("* ");
        }printf("\n");
    }
}
```



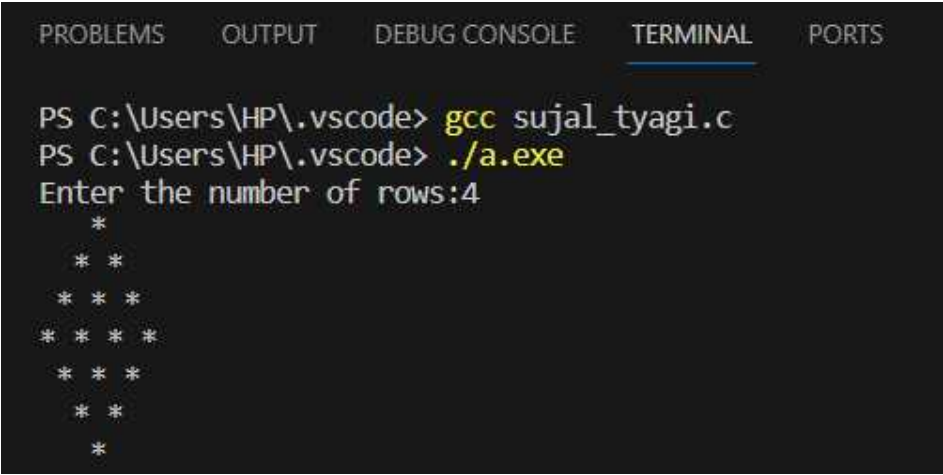
The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The prompt is PS C:\Users\HP\.vscode>. The user enters gcc sujal_tyagi.c, followed by ./a.exe. The program prompts "Enter the number of rows:5". The output is a star pattern of 5 rows: Row 1 has 5 stars, Row 2 has 4 stars, Row 3 has 3 stars, Row 4 has 2 stars, and Row 5 has 1 star. The stars are separated by a space.

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number of rows:5
* * * * *
 * * * *
  * * *
   * *
    *

```

Program 79: Star Patter 7.

```
#include<stdio.h>
int main(){
    int i,j,rows,space;
    printf("Enter the number of rows:");
    scanf("%d",&rows);
    for(i=1;i<=rows;i++){
        for(space=1;space<=rows-i;space++){
            printf(" ");
        }for(j=1;j<=i;j++){
            printf("* ");
        }printf("\n");
    }
    for(i=rows-1;i>=1;i--){
        for(space=1;space<=rows-i;space++){
            printf(" ");
        }for(j=1;j<=i;j++){
            printf("* ");
        }printf("\n");
    }
}
```

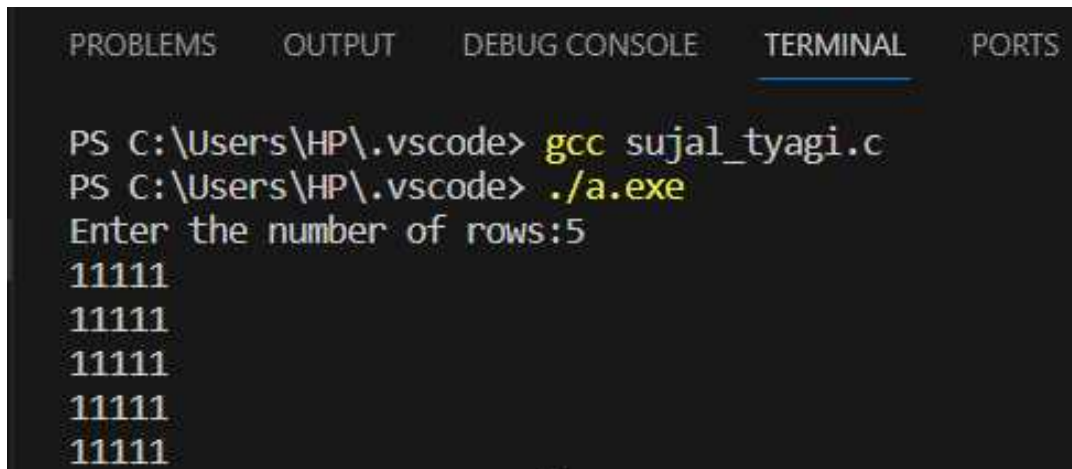


The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The prompt is PS C:\Users\HP\.vscode>. The user enters gcc sujal_tyagi.c, followed by PS C:\Users\HP\.vscode> ./a.exe. The program prompts "Enter the number of rows:4". The output is a star pattern with 4 rows: Row 1 has 1 star, Row 2 has 2 stars, Row 3 has 3 stars, and Row 4 has 4 stars. The pattern is centered, with spaces preceding the stars in each row.

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number of rows:4
    *
   * *
  * * *
 * * * *
  * * *
   * *
    *
```

Program 80: Square Pattern 1.

```
#include<stdio.h>
int main(){
    int i,j,rows,space;
    printf("Enter the number of rows:");
    scanf("%d",&rows);
    for(i=1;i<=rows;i++){
        for(j=1;j<=rows;j++){
            printf("1");
        }printf("\n");
    }
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The command prompt shows the user is in the directory C:\Users\HP\.vscode. The user has compiled a file named sujal_tyagi.c using gcc and then executed the resulting a.exe. The program prompts the user to enter the number of rows, and the user has entered 5. The output is a square pattern of 1s, with 5 rows and 5 columns.

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number of rows:5
11111
11111
11111
11111
11111
```

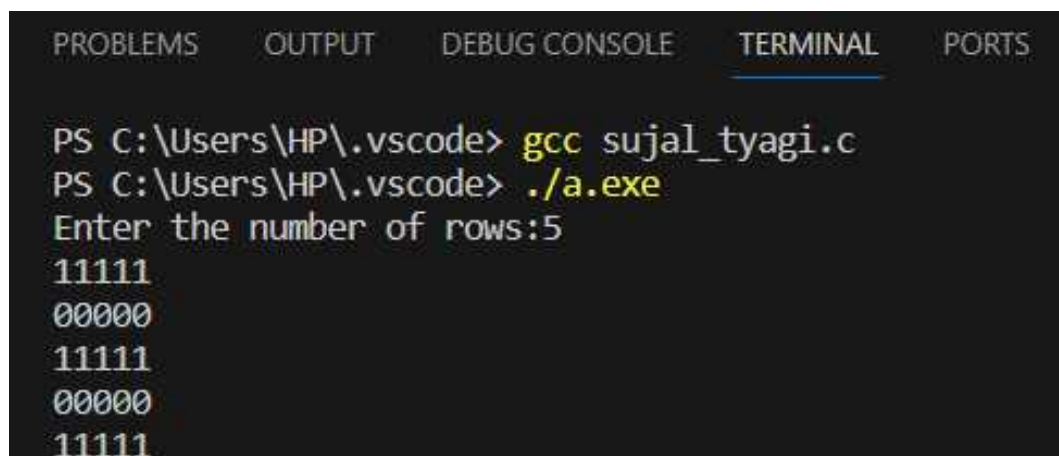

Program 81: Square Pattern 2.

```
#include<stdio.h>
int main(){

    int i,j,rows,space;

    printf("Enter the number of rows:");
    scanf("%d",&rows);

    for(i=1;i<=rows;i++){
        for(j=1;j<=rows;j++){
            if(i%2==0){
                printf("0");
            }else{
                printf("1");
            }
        }printf("\n");
    }
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number of rows:5
11111
00000
11111
00000
11111
```

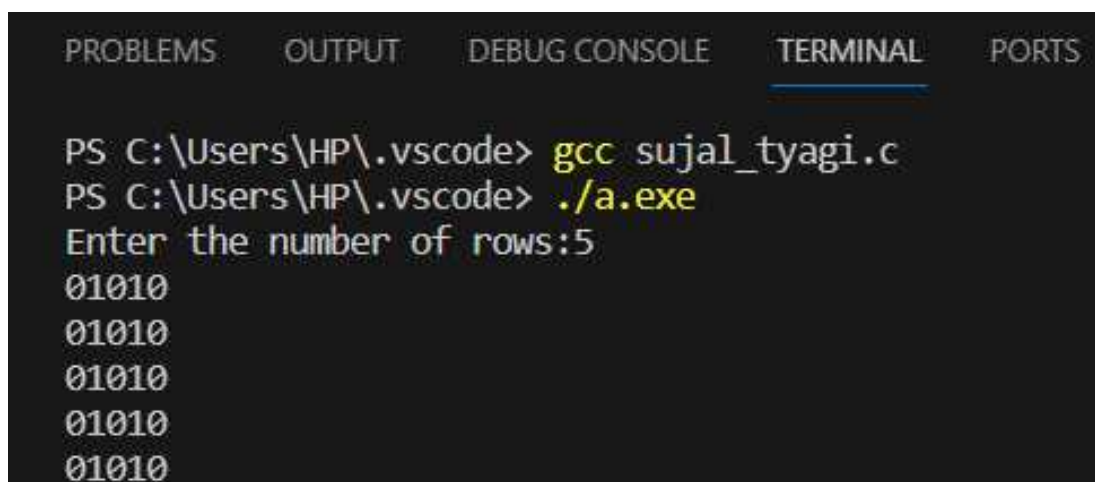
Program 82: Square Pattern 3.

```
#include<stdio.h>
int main(){

    int i,j,rows,space;

    printf("Enter the number of rows:");
    scanf("%d",&rows);

    for(i=1;i<=rows;i++){
        for(j=1;j<=rows;j++){
            if(j%2==1){
                printf("0");
            }else{
                printf("1");
            }
        }printf("\n");
    }
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number of rows:5
01010
01010
01010
01010
01010
```

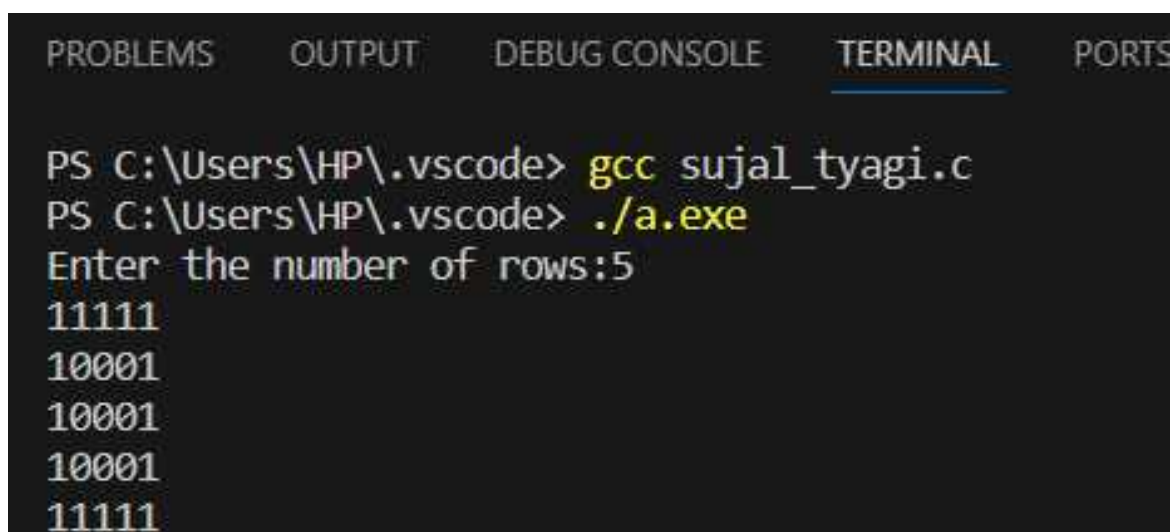
Program 83: Square Pattern 4.

```
#include<stdio.h>
int main(){

    int i,j,rows,space;

    printf("Enter the number of rows:");
    scanf("%d",&rows);

    for(i=1;i<=rows;i++){
        for(j=1;j<=rows;j++){
            if(i==1 || i==rows || j==1 || j==rows){
                printf("1");
            }else{
                printf("0");
            }
        }printf("\n");
    }
}
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number of rows:5
11111
10001
10001
10001
11111
```

Program 84: Square Pattern 5.

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

```
int main()
```

```
{
```

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

```
    int centerRow, centerCol;
```

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

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

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

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

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

```
    /* Find center row and column */
```

```
    centerRow = (rows + 1) / 2;
```

```
    centerCol = (cols + 1) / 2;
```

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

```
    {
```

```
        for(j=1; j<=cols; j++)
```

```
        {
```

```
            if(centerCol == j && centerRow == i)
```

```
            {
```

```
                printf("0");
```

```
            }
```

```
            else if(cols%2 == 0 && centerCol+1 == j)
```

```
            {
```

```
                if(centerRow == i || (rows%2 == 0 && centerRow+1 == i))
```

```
                    printf("0");
```

```
            }
        }
```

```

        printf("1");
    }
    else if(rows%2 == 0 && centerRow+1 == i)
    {
        if(centerCol == j || (cols%2 == 0 && centerCol+1 == j))
            printf("0");
        else
            printf("1");
    }
    else
    {
        printf("1");
    }
}

printf("\n");
}

return 0;
}

```

```

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter number of rows: 5
Enter number of columns: 5
11111
11111
11011
11111
11111

```

Program 85: Square Pattern 6.

```
#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");
            }

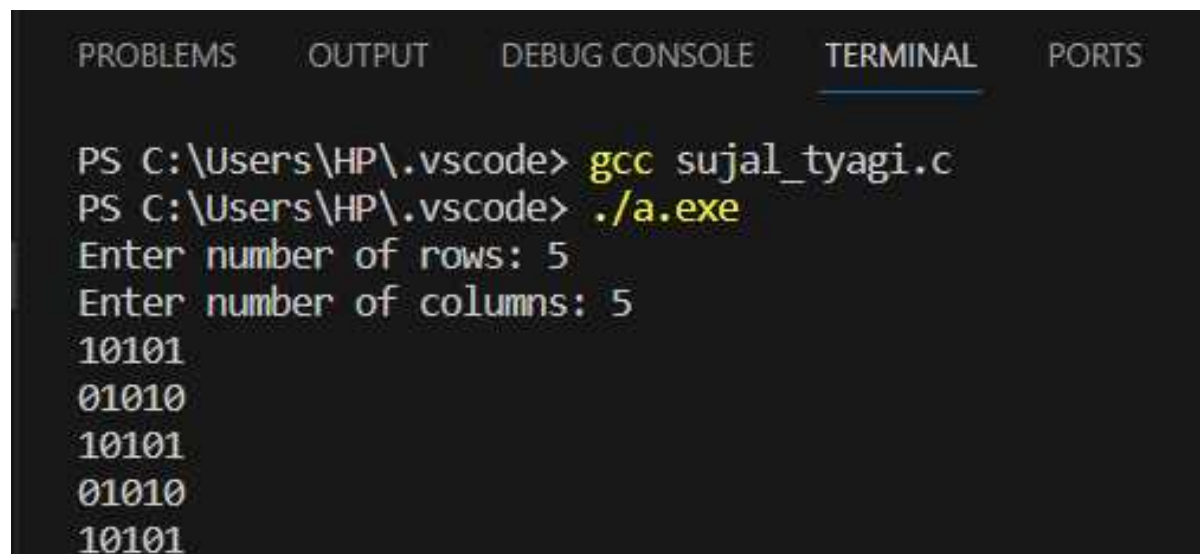
            // If k = 1 then k *= -1 => -1
            // If k = -1 then k *= -1 => 1
            k *= -1;
        }
    }
}
```

```
    }

    if(cols % 2 == 0)
    {
        k *= -1;
    }

    printf("\n");
}

return 0;
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

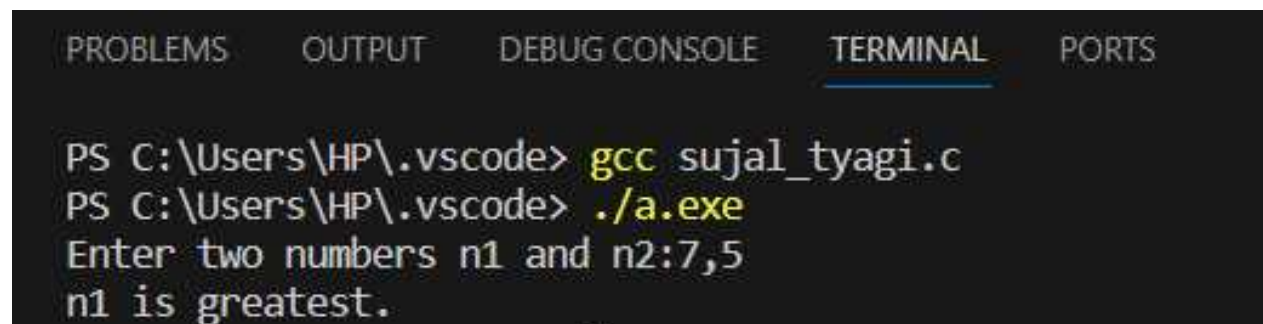
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter number of rows: 5
Enter number of columns: 5
10101
01010
10101
01010
10101
```

Program 86: Write a C program to find maximum between two numbers.

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

    printf("Enter two numbers n1 and n2:");
    scanf("%d,%d",&n1,&n2);

    if((n1>n2) && (n2<n1)){
        printf("n1 is greatest.");
    }
    else if((n2>n1) && (n1<n2)){
        printf("n2 is greatest.");
    }
}
```



The screenshot shows a terminal window with a dark background. At the top, there are tabs labeled 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. The terminal content shows the following commands and output:

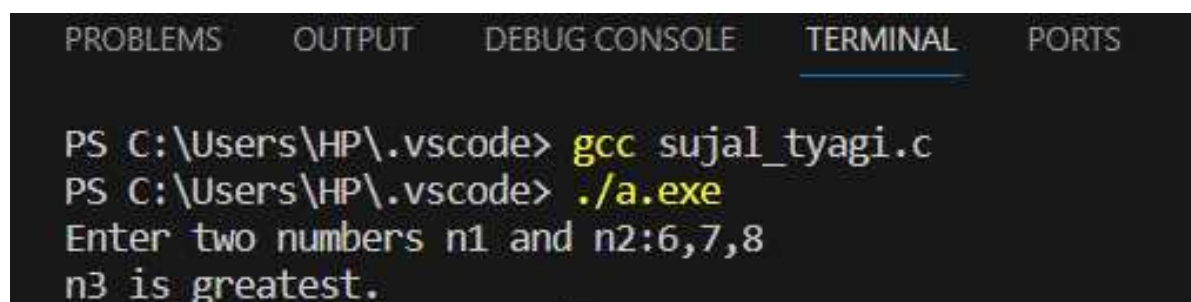
```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter two numbers n1 and n2:7,5
n1 is greatest.
```


Program 87: Write a C program to find maximum between three numbers.

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

    printf("Enter two numbers n1 and n2:");
    scanf("%d,%d,%d",&n1,&n2,&n3);

    if((n1>n2) && (n1>n3)){
        printf("n1 is greatest.");
    }
    else if((n2>n1) && (n2>n3)){
        printf("n2 is greatest.");
    }
    else if((n3>n1) && (n3>n2)){
        printf("n3 is greatest.");
    }
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The command prompt shows the following sequence of commands and output:

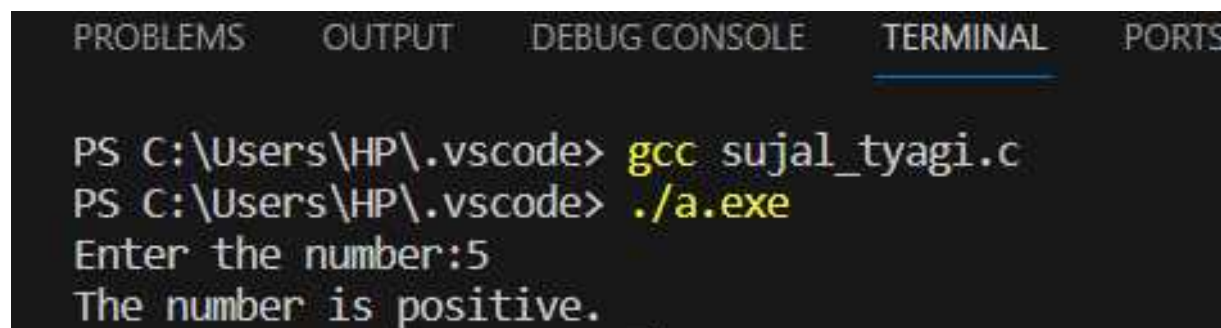
```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter two numbers n1 and n2:6,7,8
n3 is greatest.
```

Program 88: Write a C program to check whether a number is negative, positive or zero.

```
#include<stdio.h>
int main(){
    int num;

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

    if(num>0){
        printf("The number is positive.");
    }
    else if(num<0){
        printf("The number is negative.");
    }
    else if(num==0){
        printf("The number is zero.");
    }
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active. The commands and output are as follows:

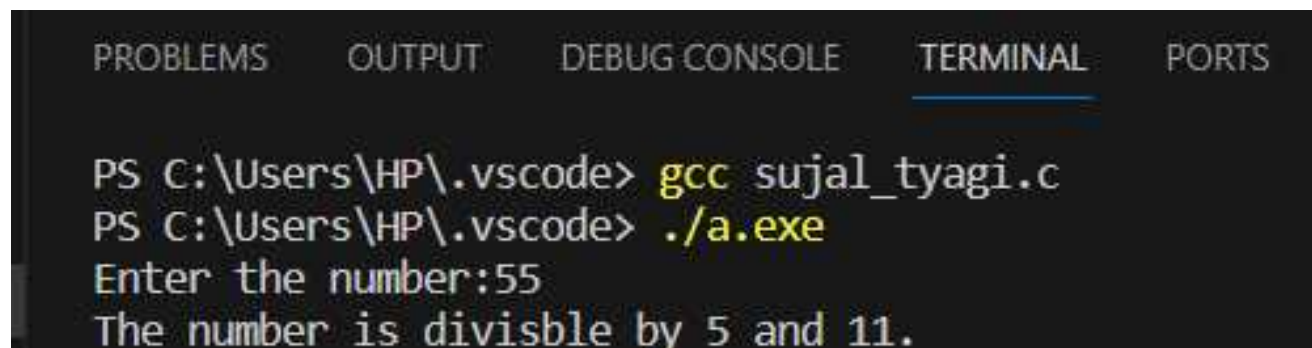
```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:5
The number is positive.
```

Program 89: 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 the number:");
    scanf("%d", &num);

    if (num / 5 && num / 11)
    {
        printf("The number is divisible by 5 and 11.");
    }
    else
    {
        printf("The number is not divisible by 5 and 11 both.");
    }
}
```



The screenshot shows a VS Code interface with a terminal window. The terminal has tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (which is active), and PORTS. The terminal output shows the following commands and results:

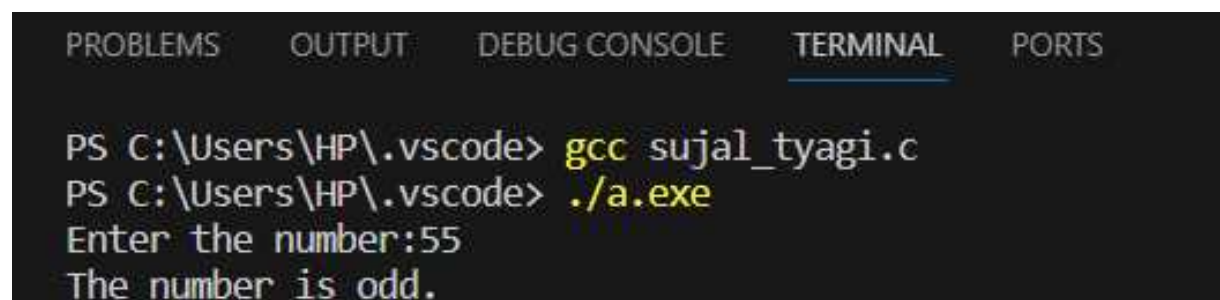
```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:55
The number is divisble by 5 and 11.
```

Program 90: Write a C program to check whether a number is even or odd.

```
#include <stdio.h>
int main()
{
    int num;

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

    if (num % 2 == 0)
    {
        printf("The number is even.");
    }
    else
    {
        printf("The number is odd.");
    }
}
```



The screenshot shows a terminal window with a dark background. At the top, there are five tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. Below the tabs, the terminal shows the following commands and output:

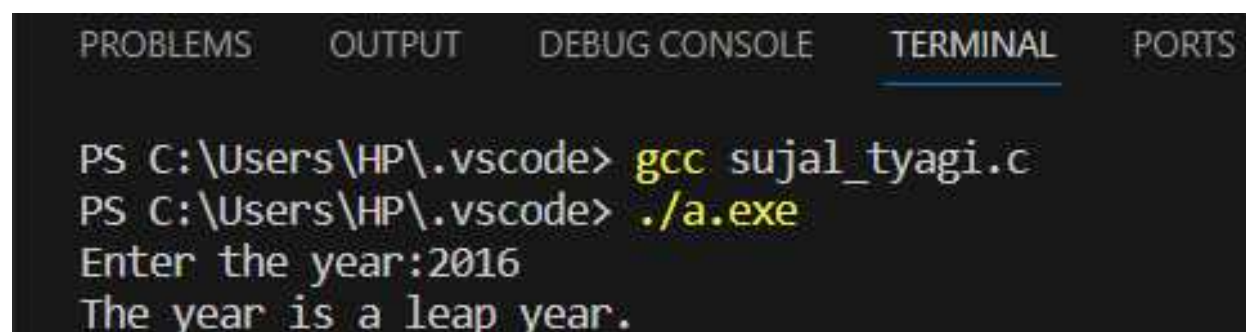
```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the number:55
The number is odd.
```

Program 91: Write a C program to check whether year is leap year or not.

```
#include <stdio.h>
int main()
{
    int year;

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

    if (year % 400 == 0)
    {
        printf("The year is a leap year.");
    }
    else if (year % 100 == 0)
    {
        printf("The year is not a leap year.");
    }
    else if (year % 4 == 0)
    {
        printf("The year is a leap year.");
    }
}
```



The screenshot shows a terminal window with a dark background. At the top, there are five tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. Below the tabs, the terminal shows the following commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the year:2016
The year is a leap year.
```

Program 92: Write a C program to check whether alphabet is or not.

```
#include <stdio.h>
int main()
{
    char ch;

    printf("Enter the character:");
    scanf("%c", &ch);

    if ((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
    {
        printf("The given character is an alphabet.");
    }
    else
    {
        printf("The given character is not an alphabet.");
    }
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

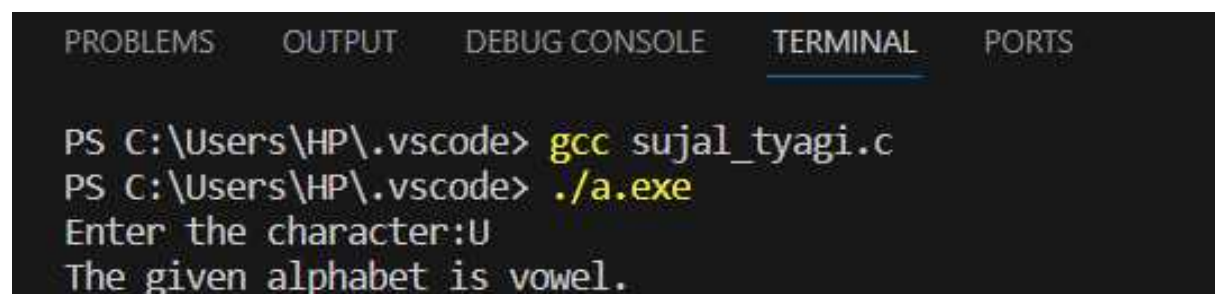
```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the character:n
The given character is an alphabet.
```

Program 93: Write a C program to check whether an alphabet is vowel or consonant.

```
#include <stdio.h>
int main()
{
    char ch;

    printf("Enter the character:");
    scanf("%c", &ch);

    if (ch == 'a' || ch == 'A' || ch == 'e' || ch == 'E' || ch == 'i' || ch == 'I' || ch
    == 'o' || ch == 'O' || ch == 'u' || ch == 'U')
    {
        printf("The given alphabet is vowel.");
    }
    else
    {
        printf("The alphabet is a consonant.");
    }
}
```

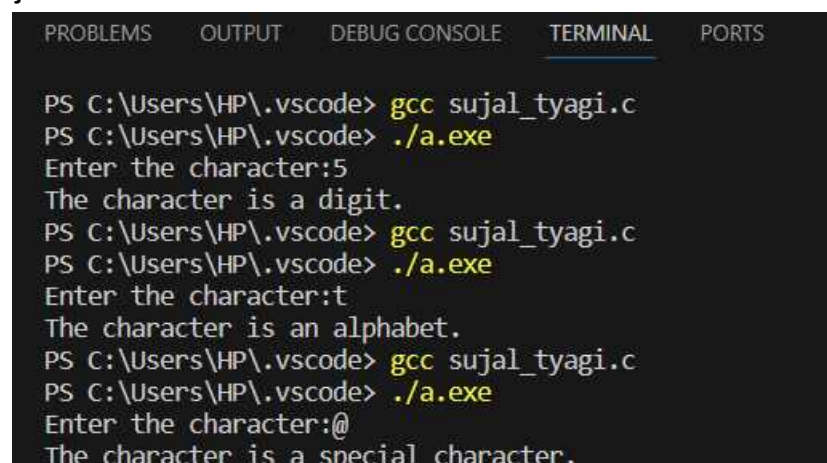


The screenshot shows a terminal window with a dark background. At the top, there are five tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. Below the tabs, the terminal shows the following commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the character:U
The given alphabet is vowel.
```

Program 94: Write a C program to input any character and check whether it is an alphabet, digit or a special character.

```
#include <stdio.h>
int main()
{
    char ch;
    printf("Enter the character:");
    scanf("%c", &ch);
    if ((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
    {
        printf("The character is an alphabet.\n");
    }
    else if (ch >= '0' && ch <= '9')
    {
        printf("The character is a digit.\n");
    }
    else
    {
        printf("The character is a special character.\n");
    }
}
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

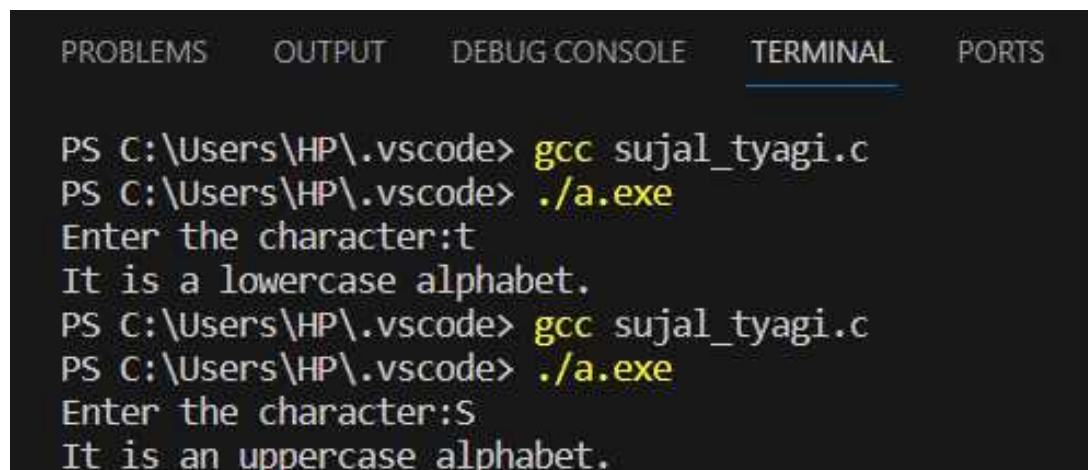
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the character:5
The character is a digit.
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the character:t
The character is an alphabet.
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the character:@
The character is a special character.
```


Program 95: Write a C program to check whether an alphabet is uppercase or lowercase letter.

```
#include <stdio.h>
int main()
{
    char ch;

    printf("Enter the character:");
    scanf("%c", &ch);

    if (ch >= 'a' && ch <= 'z')
    {
        printf("It is a lowercase alphabet.");
    }
    else if (ch >= 'A' && ch <= 'Z')
    {
        printf("It is an uppercase alphabet.");
    }
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the character:t
It is a lowercase alphabet.
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the character:S
It is an uppercase alphabet.
```

Program 96: Write a C program to input week and print day.

```
#include <stdio.h>
int main()
{
    int week;

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

    switch (week)
    {
    case 1:
        printf("Monday.\n");
        break;
    case 2:
        printf("Tuesday.\n");
        break;
    case 3:
        printf("Wednesday.\n");
        break;
    case 4:
        printf("Thursday.\n");
        break;
    case 5:
        printf("Friday.\n");
        break;
    case 6:
        printf("Saturday.\n");
        break;
```

case 7:

```
printf("Sunday.\n");
```

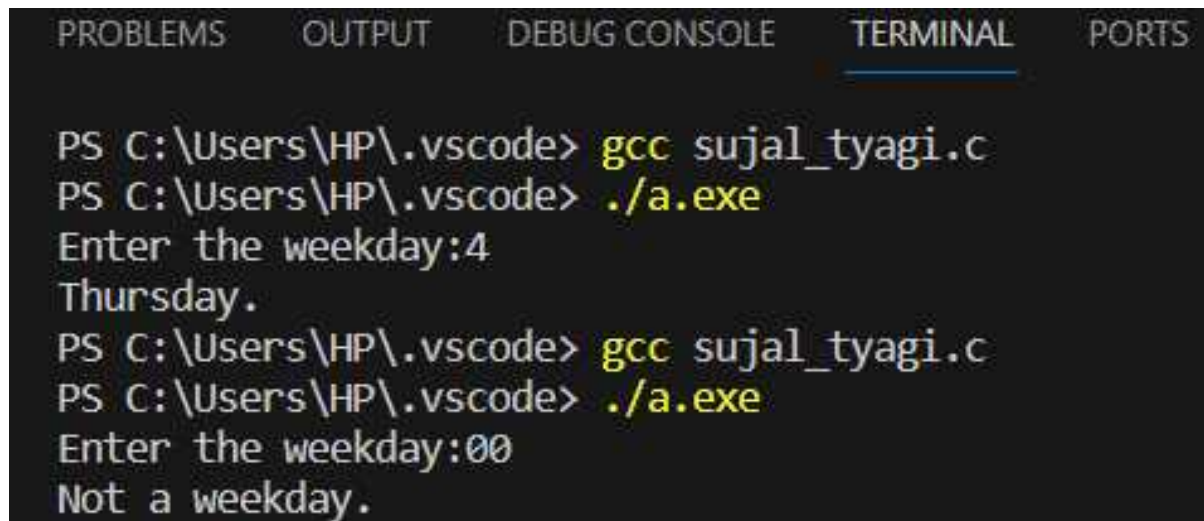
```
break;
```

default:

```
printf("Not a weekday.\n");
```

```
}
```

```
}
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the weekday:4
Thursday.
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the weekday:00
Not a weekday.
```

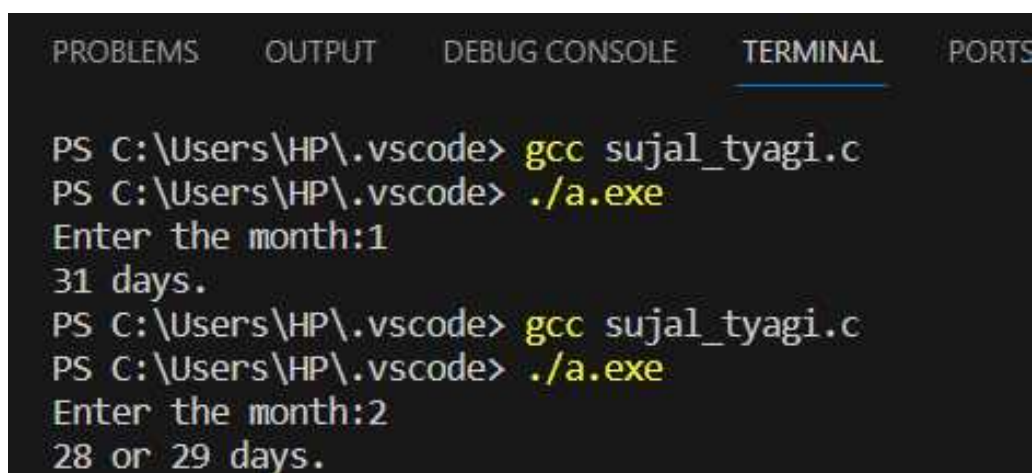
Program 97: Write a C program to input month number and print number of days in that month.

```
#include <stdio.h>
int main()
{
    int month;

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

    switch (month)
    {
    case 1:
        printf("31 days.\n");
        break;
    case 2:
        printf("28 or 29 days.\n");
        break;
    case 3:
        printf("31 days.\n");
        break;
    case 4:
        printf("30 days.\n");
        break;
    case 5:
        printf("31 days.\n");
        break;
    case 6:
        printf("30 days.\n");
        break;
```

```
case 7:
    printf("31 days.\n");
    break;
case 8:
    printf("31 days.\n");
    break;
case 9:
    printf("30 days.\n");
    break;
case 10:
    printf("31 days.\n");
    break;
case 11:
    printf("30 days.\n");
    break;
case 12:
    printf("31 days.\n");
    break;
default:
    printf("Invalid month.\n");
}
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the month:1
31 days.
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the month:2
28 or 29 days.
```

Program 98: Write a C program to count notes in given amount.

```
#include<stdio.h>

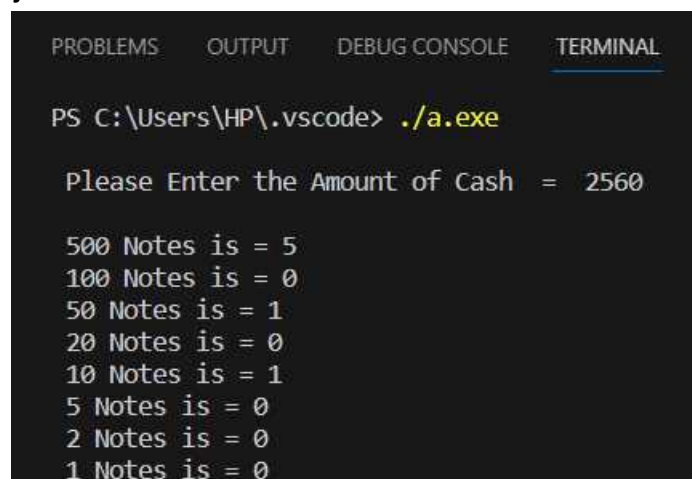
int main()
{
    int a[8] = {500, 100, 50, 20, 10, 5, 2, 1};
    int Amount, i, temp;

    printf("\n Please Enter the Amount of Cash = ");
    scanf("%d", &Amount);

    temp = Amount;

    for(i = 0; i < 8; i++)
    {
        printf("\n %d Notes is = %d", a[i], temp / a[i]);
        temp = temp % a[i];
    }

    return 0;
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Users\HP\.vscode> ./a.exe

Please Enter the Amount of Cash = 2560

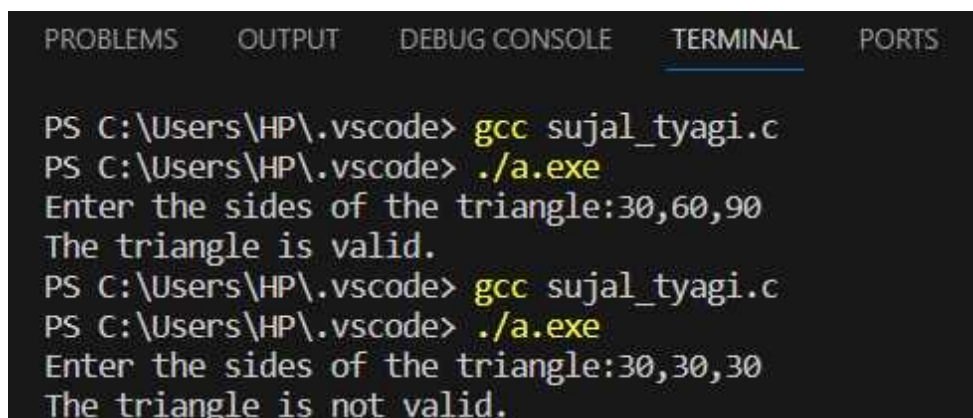
500 Notes is = 5
100 Notes is = 0
50 Notes is = 1
20 Notes is = 0
10 Notes is = 1
5 Notes is = 0
2 Notes is = 0
1 Notes is = 0
```

Program 99: Write a C program to input three angles of triangle and check whether it is valid or not.

```
#include <stdio.h>

int main()
{
    int s1, s2, s3, sum;
    printf("Enter the sides of the triangle:");
    scanf("%d,%d,%d", &s1, &s2, &s3);

    sum = s1 + s2 + s3;
    if (sum == 180 && s1 > 0 && s2 > 0 && s3 > 0)
    {
        printf("The triangle is valid.\n");
    }
    else
    {
        printf("The triangle is not valid.\n");
    }
    return 0;
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the sides of the triangle:30,60,90
The triangle is valid.
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the sides of the triangle:30,30,30
The triangle is not valid.
```

Program 100: Write a C program to input three sides of triangle and check whether it is valid or not.

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

```
int main()
```

```
{
```

```
    int s1, s2, s3;
```

```
    printf("Enter the sides of the triangle:");
```

```
    scanf("%d,%d,%d", &s1, &s2, &s3);
```

```
    if ((s1 + s2) > s3)
```

```
    {
```

```
        if ((s2 + s3) > s1)
```

```
        {
```

```
            if ((s1 + s3) > s2)
```

```
            {
```

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

```
            }
```

```
        else
```

```
        {
```

```
            printf("Triangle is not valid.");
```

```
        }
```

```
    }
```

```
    else
```

```
    {
```

```
        printf("Triangle is not valid.");
```

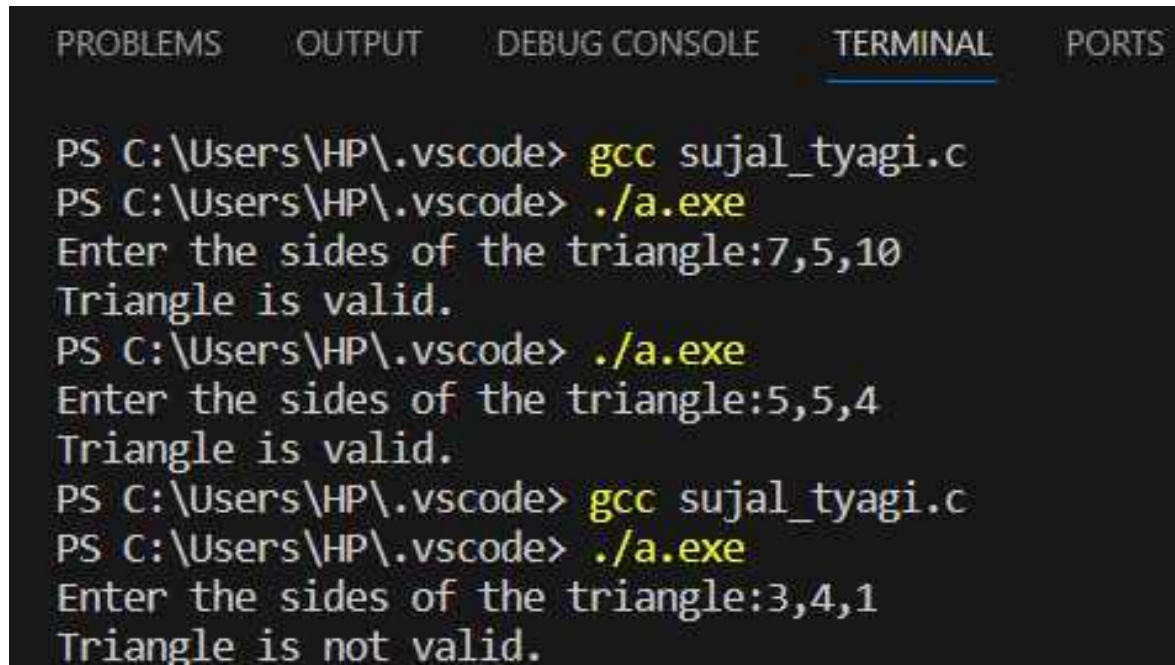
```
    }
```

```
}
```

```
else
```



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

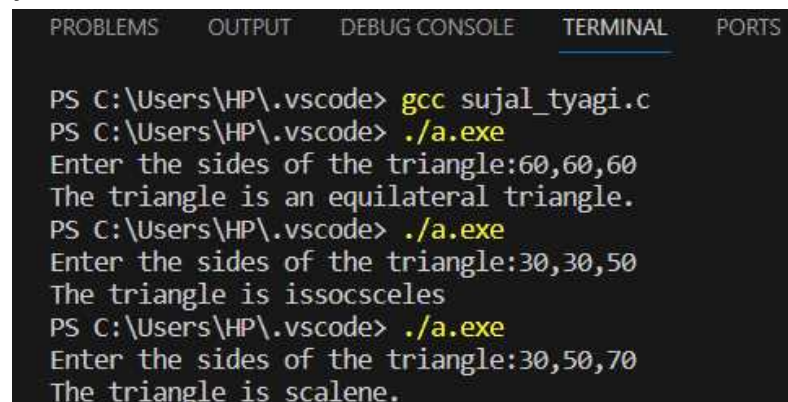


```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS  
  
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c  
PS C:\Users\HP\.vscode> ./a.exe  
Enter the sides of the triangle:7,5,10  
Triangle is valid.  
PS C:\Users\HP\.vscode> ./a.exe  
Enter the sides of the triangle:5,5,4  
Triangle is valid.  
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c  
PS C:\Users\HP\.vscode> ./a.exe  
Enter the sides of the triangle:3,4,1  
Triangle is not valid.
```

Program 101: Write a C program to check whether triangle is equilateral, isosceles or scalene.

```
#include <stdio.h>

int main()
{
    int s1, s2, s3;
    printf("Enter the sides of the triangle:");
    scanf("%d,%d,%d", &s1, &s2, &s3);
    if (s1 == s2 && s2 == s3)
    {
        printf("The triangle is an equilateral triangle.\n");
    }
    else if (s1 == s2 || s1 == s3 || s2 == s3)
    {
        printf("The triangle is issocsceles");
    }
    else if (s1 != s2 != s3)
    {
        printf("The triangle is scalene.\n");
    }
}
```



The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is active, displaying the following commands and output:

```
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the sides of the triangle:60,60,60
The triangle is an equilateral triangle.
PS C:\Users\HP\.vscode> ./a.exe
Enter the sides of the triangle:30,30,50
The triangle is issocsceles
PS C:\Users\HP\.vscode> ./a.exe
Enter the sides of the triangle:30,50,70
The triangle is scalene.
```

Program 102: Write a C program to find the roots of a quadratic equation.

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

int main()
{
    float a, b, c;
    float root1, root2, imaginary;
    float discriminant;

    printf("Enter values of a, b, c of quadratic equation (aX^2 + bX + c): ");
    scanf("%f,%f,%f", &a, &b, &c);

    discriminant = (b * b) - (4 * a * c);

    if(discriminant > 0)
    {
        root1 = (-b + sqrt(discriminant)) / (2*a);
        root2 = (-b - sqrt(discriminant)) / (2*a);

        printf("Two distinct and real roots exists: %.2f and %.2f", root1, root2);
    }
    else if(discriminant == 0)
    {
        root1 = root2 = -b / (2 * a);

        printf("Two equal and real roots exists: %.2f and %.2f", root1, root2);
    }
    else if(discriminant < 0)
```

```
{
    root1 = root2 = -b / (2 * a);
    imaginary = sqrt(-discriminant) / (2 * a);

    printf("Two distinct complex roots exists: %.2f + i%.2f and %.2f - i%.2f",
        root1, imaginary, root2, imaginary);
}

return 0;
}
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

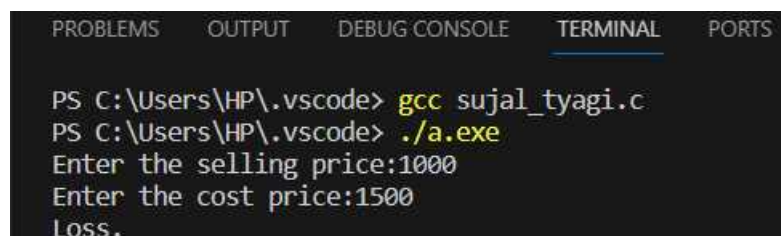
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter values of a, b, c of quadratic equation (aX^2 + bX + c): 9,-5,-3
Two distinct and real roots exists: 0.92 and -0.36
```

Program 103: Write a C program to find the profit or loss.

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

int main()
{
    int sellp, costp, amount;

    printf("Enter the cost price:");
    scanf("%d", &costp);
    printf("Enter the selling price:");
    scanf("%d", &sellp);
    amount = sellp - costp;
    if (sellp > costp)
    {
        printf("Profit.\n");
    }
    else if (costp > sellp)
    {
        printf("Loss.\n");
    }
    else
    { printf("Niether profit nor loss.\n");
    }
}
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Enter the selling price:1000
Enter the cost price:1500
Loss.
```

Program 104: Write a C program to give the grade.

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

```
int main()
```

```
{
```

```
    int p, c, b, m, cs, tot, grade;
```

```
    float per;
```

```
    printf("Enter the marks of Physics,Chemistry,Biology,Mathematics and  
Computer science:");
```

```
    scanf("%d,%d,%d,%d,%d", &p, &c, &b, &m, &cs);
```

```
    tot = p + c + b + m + cs;
```

```
    per = tot / 5.0;
```

```
    printf("The percentage is:%f\n", per);
```

```
    if (per >= 90)
```

```
    {
```

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

```
    }
```

```
    else if (per >= 80)
```

```
    {
```

```
        printf("Grade B\n");
```

```
    }
```

```
    else if (per >= 70)
```

```
    {
```

```
        printf("Grade C\n");
```

```
    }
```

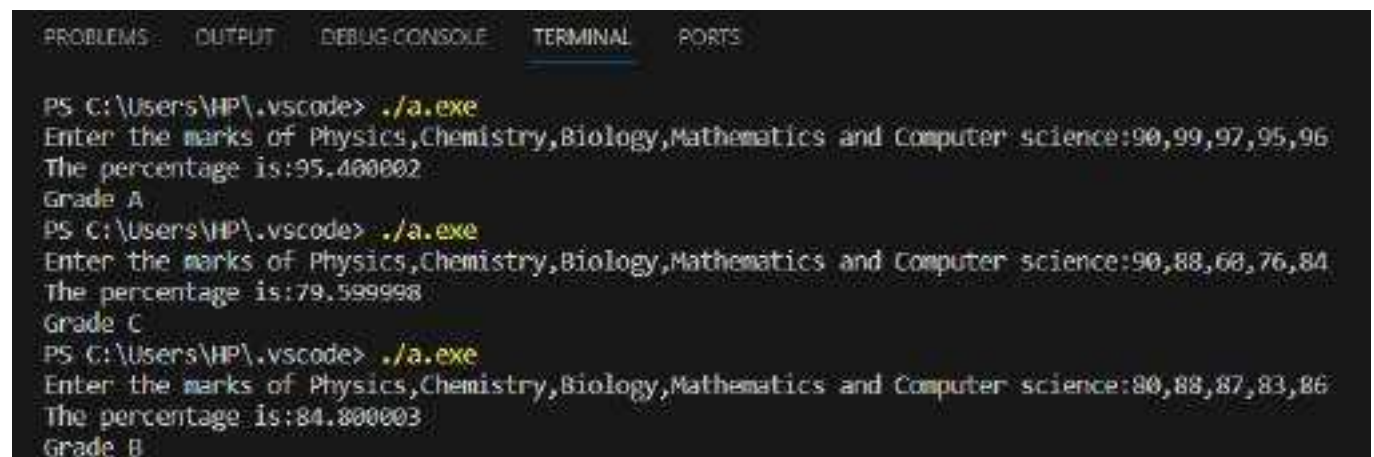
```
    else if (per >= 60)
```

```
    {
```

```
        printf("Grade D\n");
```

```
    }
```

```
else if (per >= 50)
{
    printf("Grade E\n");
}
else if (per < 40)
{
    printf("Grade F\n");
}
return 0;
}
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\HP\.vscode> ./a.exe
Enter the marks of Physics,Chemistry,Biology,Mathematics and Computer science:90,99,97,95,96
The percentage is:95.400002
Grade A
PS C:\Users\HP\.vscode> ./a.exe
Enter the marks of Physics,Chemistry,Biology,Mathematics and Computer science:90,88,60,76,84
The percentage is:79.599998
Grade C
PS C:\Users\HP\.vscode> ./a.exe
Enter the marks of Physics,Chemistry,Biology,Mathematics and Computer science:80,88,87,83,86
The percentage is:84.800003
Grade B
```

Program 105: Write a C program to read n number of values in an array and display them in reverse order.

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

```
void main()
```

```
{
```

```
    int i,n,a[100];
```

```
    printf("Input the number of elements to store in the array :");
```

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

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

```
    {
```

```
        printf("element - %d : ",i);
```

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

```
    }
```

```
    printf("\nThe values store into the array are : \n");
```

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

```
    {
```

```
        printf("% 5d",a[i]);
```

```
    }
```

```
    printf("\n\nThe values store into the array in reverse are :\n");
```

```
    for(i=n-1;i>=0;i--)
```

```
    {
```

```
        printf("% 5d",a[i]);
```

```
    }
```

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

```
}
```



```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Input the number of elements to store in the array :3
element - 0 : 1
element - 1 : 3
element - 2 : 5

The values store into the array are :
    1    3    5

The values store into the array in reverse are :
    5    3    1
```

Program 106: Write a C program to find the sum of all elements in an array.

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

```
void main()
```

```
{
```

```
    int a[100];
```

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

```
        printf("Input the number of elements to be stored in the array :");
```

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

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

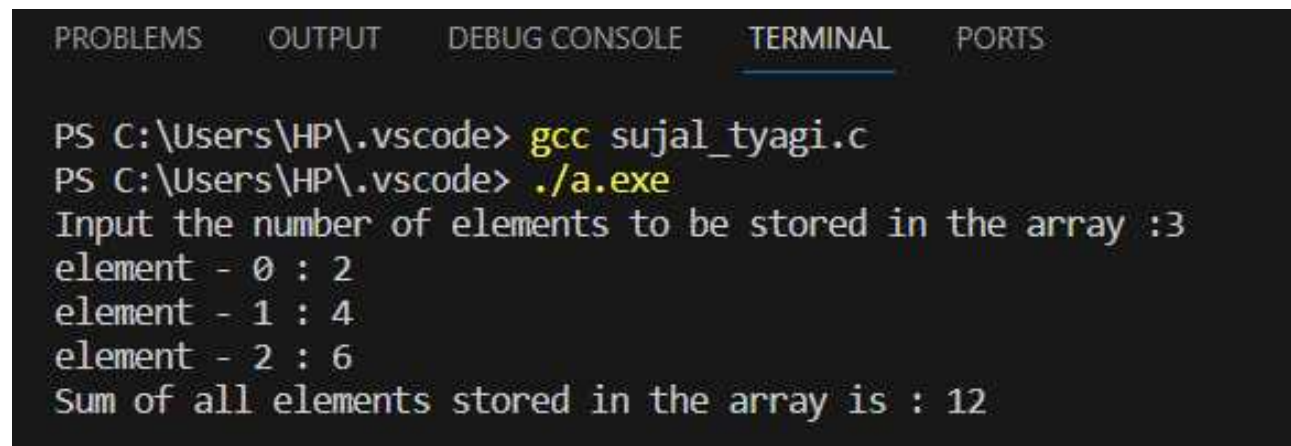
```
        {
```

```
            printf("element - %d : ",i);
```

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

    for(i=0; i<n; i++)
    {
        sum += a[i];
    }

    printf("Sum of all elements stored in the array is : %d\n\n", sum);
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Input the number of elements to be stored in the array :3
element - 0 : 2
element - 1 : 4
element - 2 : 6
Sum of all elements stored in the array is : 12
```

Program 107: Write a C program to copy the elements of one array to another array.

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

```
void main()
```

```
{
```

```
    int arr1[100], arr2[100];
```

```
    int i, n;
```

```
    printf("\n\nCopy the elements one array into another array :\n");
```

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

```
    printf("Input the number of elements to be stored in the array :");
```

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

```
    printf("Input %d elements in the array :\n",n);
```

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

```
    {
```

```
        printf("element - %d : ",i);
```

```
        scanf("%d",&arr1[i]);
```

```
    }
```

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

```
    {
```

```
        arr2[i] = arr1[i];
```

```
    }
```

```
    printf("\nThe elements stored in the first array are :\n");
```

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

```

{
    printf("% 5d", arr1[i]);
}

printf("\n\nThe elements copied into the second array are :\n");
for(i=0; i<n; i++)
{
    printf("% 5d", arr2[i]);
}

    printf("\n\n");
}

```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```

-----
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 5
element - 1 : 7
element - 2 : 9

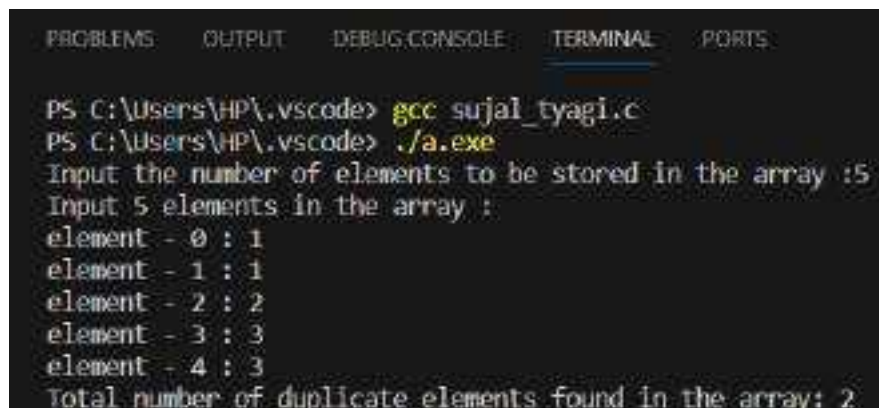
The elements stored in the first array are :
    5    7    9

The elements copied into the second array are :
    5    7    9

```

Program 108: Write a C program to count the total number of duplicates in an array.

```
#include <stdio.h>
int main()
{
    int arr[100]; int n,mm=1,ctr=0; int i, j;
    printf("Input the number of elements to be stored in the array :");
    scanf("%d",&n);
    printf("Input %d elements in the array :\n",n);
    for(i=0;i<n;i++)
    {
        printf("element - %d : ",i);scanf("%d",&arr[i]);
    }
    for (i = 0; i < n; i++) {
    for (j = i + 1; j < n; j++) {
    if (arr[i] == arr[j]) {
        ctr++;
        break;
    }
    }
    }
    printf("Total number of duplicate elements found in the array: %d\n", ctr);
    return 0;
}
```



The screenshot shows a terminal window with the following content:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\HP\.vscode> gcc sujal_tyagi.c
PS C:\Users\HP\.vscode> ./a.exe
Input the number of elements to be stored in the array :5
Input 5 elements in the array :
element - 0 : 1
element - 1 : 1
element - 2 : 2
element - 3 : 3
element - 4 : 3
Total number of duplicate elements found in the array: 2
```

Program 109: Write a C program to find the maximum and minimum elements in an array.

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

```
void main()
```

```
{
```

```
    int arr1[100];
```

```
    int i, mx, mn, n;
```

```
    printf("\n\nFind maximum and minimum element in an array :\n");
```

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

```
    printf("Input the number of elements to be stored in the array :");
```

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

```
    printf("Input %d elements in the array :\n",n);
```

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

```
    {
```

```
        printf("element - %d : ",i);
```

```
        scanf("%d",&arr1[i]);
```

```
    }
```

```
    mx = arr1[0];
```

```
    mn = arr1[0];
```

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

```
    {
```

```
    if(arr1[i]>mx)
    {
        mx = arr1[i];
    }

    if(arr1[i]<mn)
    {
        mn = arr1[i];
    }
}
printf("Maximum element is : %d\n", mx);

printf("Minimum element is : %d\n\n", mn);

}
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

Find maximum and minimum element in an array :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 45

element - 1 : 21

element - 2 : 56

Maximum element is : 56

Minimum element is : 21

Program 110: Write a C program to sort the elements of an array in descending order.

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

```
void main()
```

```
{
```

```
    int arr1[100];
```

```
    int n, i, j, tmp;
```

```
    printf("\n\nsort elements of array in descending order :\n");
```

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

```
    printf("Input the size of array : ");
```

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

```
    printf("Input %d elements in the array :\n",n);
```

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

```
    {
```

```
        printf("element - %d : ",i);
```

```
        scanf("%d",&arr1[i]);
```

```
    }
```

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

```
    {
```

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

```
        {
```

```
            if(arr1[i] < arr1[j])
```

```
            {
```

```
                tmp = arr1[i];
```

```
                arr1[i] = arr1[j];
```



```

        arr1[j] = tmp;
    }
}

printf("\nElements of array is sorted in descending order:\n");

for(i=0; i<n; i++)
{
    printf("%d ", arr1[i]);
}

    printf("\n\n");
}

```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```

sort elements of array in descending order :
-----
Input the size of array : 3
Input 3 elements in the array :
element - 0 : 5
element - 1 : 8
element - 2 : 6

Elements of array is sorted in descending order:
8 6 5

```

Program 111: Write a C program to separate odd and even integers from an array.

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

```
void main()
```

```
{
```

```
    int arr1[10], arr2[10], arr3[10];
```

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

```
    printf("\n\nSeparate odd and even integers in separate arrays:\n");
```

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

```
    printf("Input the number of elements to be stored in the array :");
```

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

```
    printf("Input %d elements in the array :\n",n);
```

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

```
    {
```

```
        printf("element - %d : ",i);
```

```
        scanf("%d",&arr1[i]);
```

```
    }
```

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

```
    {
```

```
        if (arr1[i]%2 == 0)
```

```
        {
```

```
            arr2[j] = arr1[i];
```

```
            j++;
```

```
        }
```

```

        else
        {
            arr3[k] = arr1[i];
            k++;
        }
    }

    printf("\nThe Even elements are : \n");
    for(i=0;i<j;i++)
    {
        printf("%d ",arr2[i]);
    }

    printf("\nThe Odd elements are :\n");
    for(i=0;i<k;i++)
    {
        printf("%d ", arr3[i]);
    }
    printf("\n\n");
}

```

The screenshot shows a terminal window with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The terminal output is as follows:

```

-----
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 1
element - 1 : 3
element - 2 : 4

The Even elements are :
4
The Odd elements are :
1 3

```

Program 112: Write a C program to merge two arrays of same size sorted in descending order.

```
#include <stdio.h>
int main() {
    int size1, size2, size3;
    printf("\nEnter the size for the first array: ");
    scanf("%d", & size1);
    printf("\nEnter the size for the second array: ");
    scanf("%d", & size2);

    size3 = size1 + size2;
    printf("\nEnter the elements in a sorted manner:");

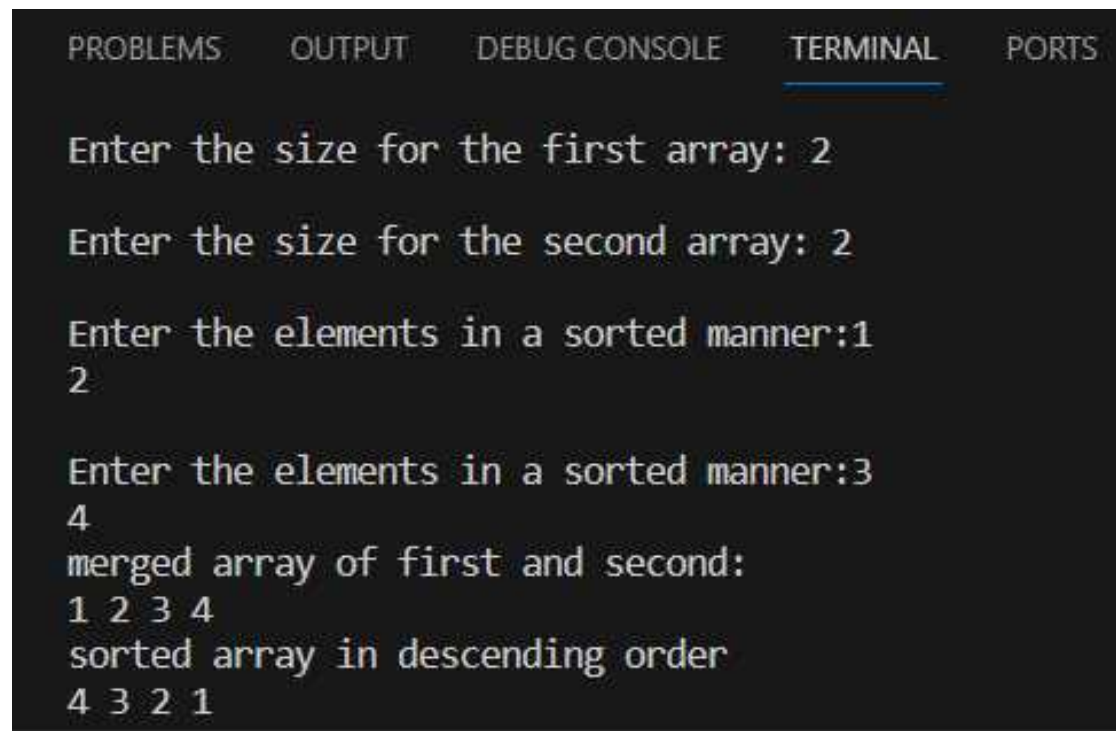
    int array1[size1], array2[size2], array3[size3];
    for (int i = 0; i < size1; i++) {
        scanf("%d", & array1[i]);
        array3[i] = array1[i];
    }
    int k = size1;
    printf("\nEnter the elements in a sorted manner:");
    for (int i = 0; i < size2; i++) {
        scanf("%d", & array2[i]);
        array3[k] = array2[i];
        k++;
    }
    printf("merged array of first and second:\n");
    for (int i = 0; i < size3; i++)
        printf("%d ", array3[i]);

    printf("\nsorted array in descending order\n");
```

```

for (int i = 0; i < size3; i++) {
    int temp;
    for (int j = i + 1; j < size3; j++) {
        if (array3[i] < array3[j]) {
            temp = array3[i];
            array3[i] = array3[j];
            array3[j] = temp;
        }
    }
}
for (int i = 0; i < size3; i++) {
    printf("%d ", array3[i]);
}
return 0;
}

```



The screenshot shows a terminal window with a dark background and light-colored text. At the top, there are five tabs: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected and underlined), and 'PORTS'. The terminal displays the following text:

```

Enter the size for the first array: 2
Enter the size for the second array: 2
Enter the elements in a sorted manner:1
2
Enter the elements in a sorted manner:3
4
merged array of first and second:
1 2 3 4
sorted array in descending order
4 3 2 1

```

Program 113: Write a C program to merge two arrays of same size sorted in ascending order.

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

```
int main() {
    int s1, s2, s3;
    printf("\n Enter the size of 1st array ");
    scanf("%d", & s1);
    printf("\n Enter the size of 2nd array ");
    scanf("%d", & s2);

    s3 = s1 + s2;
    printf("\n Enter the elements of 1st array\n");
    int arr1[s1], arr2[s2], arr3[s3];
    for (int i = 0; i < s1; i++) {
        scanf("%d", & arr1[i]);
        arr3[i] = arr1[i];
    }
    int k = s1;
    printf("\nEnter the elements of 2nd array:\n");
    for (int i = 0; i < s2; i++)
    {
        scanf("%d", & arr2[i]);
        arr3[k] = arr2[i];
        k++;
    }
    printf("The merged array before sorting:\n\t");
    for (int i = 0; i < s3; i++)
```

```
printf("%d ", arr3[i]);
```

```
printf("\nThe merged array after sorting:\n\t");
```

```
for (int i = 0; i < s3; i++)
```

```
{
```

```
    int tem;
```

```
    for (int j = i + 1; j < s3; j++) {
```

```
        if (arr3[i] > arr3[j]) {
```

```
            tem = arr3[i];
```

```
            arr3[i] = arr3[j];
```

```
            arr3[j] = tem;
```

```
        }
```

```
    }
```

```
}
```

```
for (int i = 0; i < s3; i++)
```

```
{
```

```
    printf("%d ", arr3[i]);
```

```
}
```

```
}
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

Enter the elements of 1st array

1

2

Enter the elements of 2nd array:

3

4

The merged array before sorting:

1 2 1 2

The merged array after sorting:

1 1 2 2