Set One

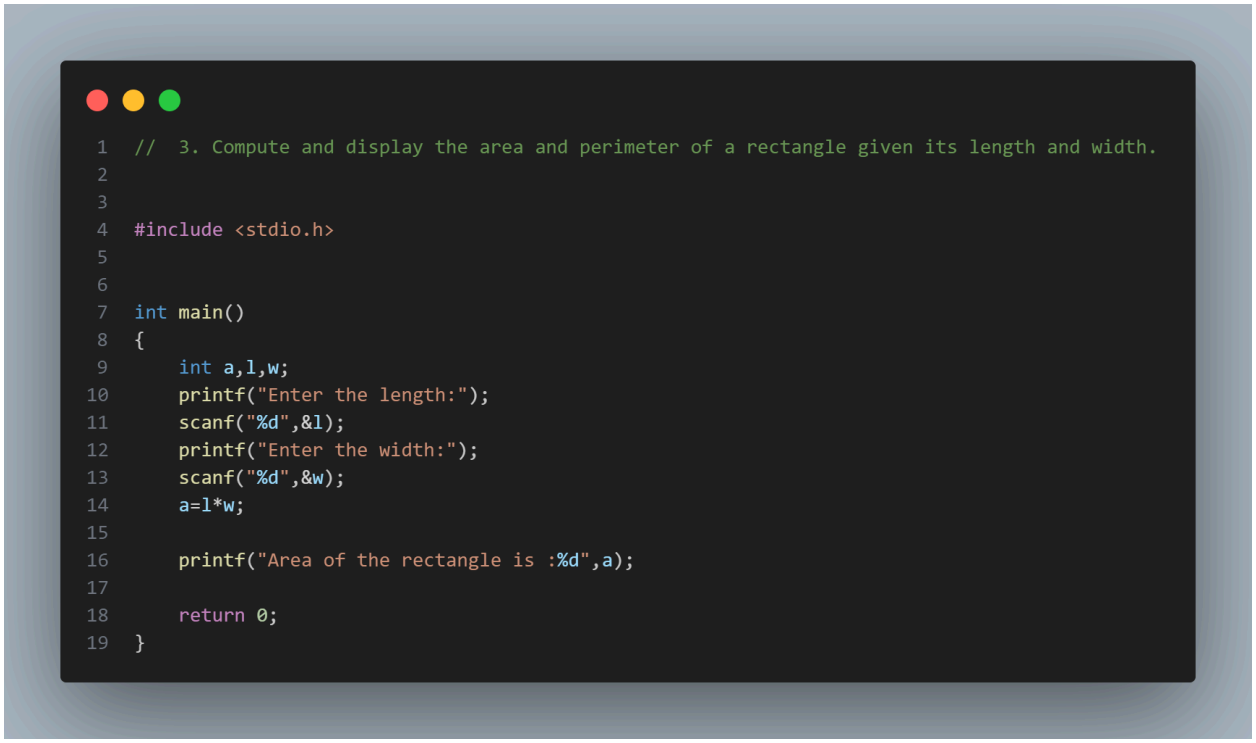
1. Write a program to perform addition, subtraction, multiplication, division, and modulus operations on two user-provided integers.

```c
// 1. Write a program to perform addition, subtraction, multiplication, division, and modulus operations on two user-provided integers.

#include <stdio.h>


int main()
{
    int a,b;
    printf("Enter the first integer:");
    scanf("%d",&a);
    printf("Enter the Second integer:");
    scanf("%d",&b);

    printf("Addition between the two integers : %d \n",a+b);
    printf("Substraction between the two integers : %d \n",a-b);
    printf("Multiplication between the two integers : %d \n",a*b);
    printf("Division between the two integers : %d \n",a/b);
    printf("Modulus between the two integers : %d \n",a%b);


    return 0;
}
```

2. Write a program to calculate the average of five integers provided by the user.

```c
// 2. Write a program to calculate the average of five integers provided by the user.

#include <stdio.h>


int main()
{
    int a,b,c,d,e;
    printf("Enter the first integer:");
    scanf("%d",&a);
    printf("Enter the second integer:");
    scanf("%d",&b);
    printf("Enter the third integer:");
    scanf("%d",&c);
    printf("Enter the fourth integer:");
    scanf("%d",&d);
    printf("Enter the fifth integer:");
    scanf("%d",&e);

    printf("Average of the given integers :%d",(a+b+c+d+e)/5);

    return 0;
}
```

3. Compute and display the area and perimeter of a rectangle given its length and width.



```c
//  3. Compute and display the area and perimeter of a rectangle given its length and width.


#include <stdio.h>


int main()
{
    int a,l,w;
    printf("Enter the length:");
    scanf("%d",&l);
    printf("Enter the width:");
    scanf("%d",&w);
    a=l*w;

    printf("Area of the rectangle is :%d",a);

    return 0;
}
```

4. Write a program to calculate the compound interest using the formula:

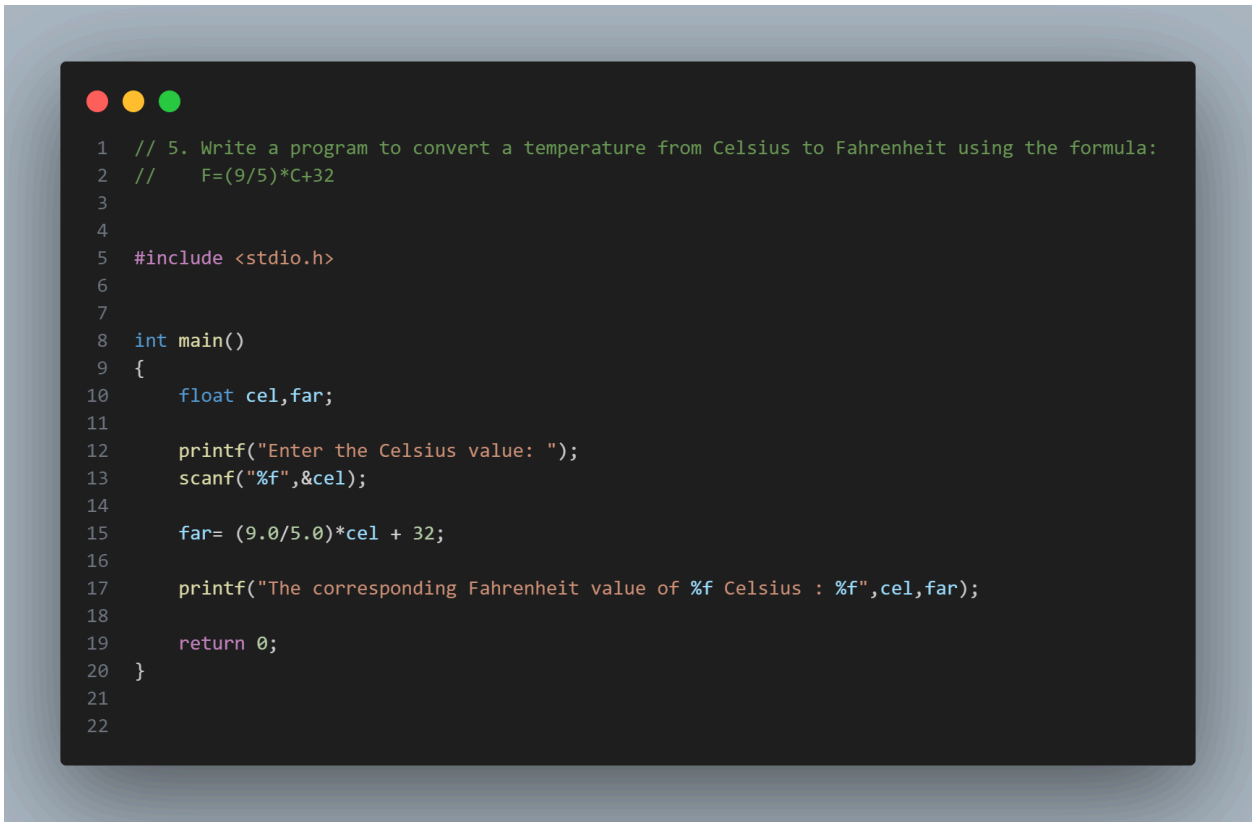
A=P×(1+(r/100))^n

where P is the principal, r is the rate of interest, and n is the time period.

```c
// 4. Write a program to calculate the compound interest using the formula:
// A=P×(1+(r/100))^n
// where P is the principal, r is the rate of interest, and n is the time period.

#include <stdio.h>


int main()
{
    double p,r,n,amount,ci;
    printf("Enter the principal: ");
    scanf("%lf",&p);
    printf("Enter the rate of intrest: ");
    scanf("%lf",&r);
    printf("Enter the time period: ");
    scanf("%lf",&n);

    amount= p*pow((1+r/100),n);
    ci=amount-p;

    printf("The compound interest is : %lf",ci);

    return 0;
}

```

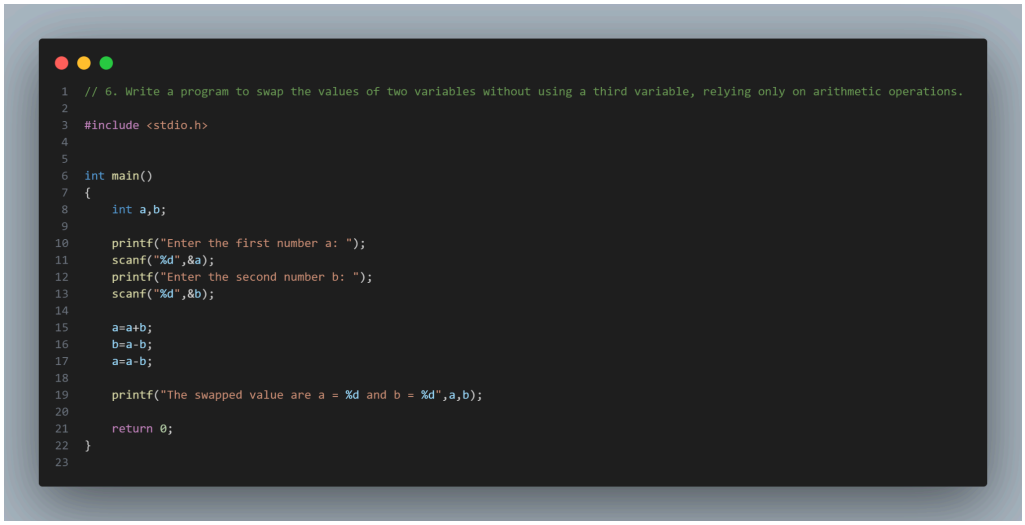
5. Write a program to convert a temperature from Celsius to Fahrenheit using the formula:

F=(9/5)*C+32



```c
// 5. Write a program to convert a temperature from Celsius to Fahrenheit using the formula:
//    F=(9/5)*C+32


#include <stdio.h>


int main()
{
    float cel,far;

    printf("Enter the Celsius value: ");
    scanf("%f",&cel);

    far= (9.0/5.0)*cel + 32;

    printf("The corresponding Fahrenheit value of %f Celsius : %f",cel,far);

    return 0;
}
```

6. Write a program to swap the values of two variables without using a third variable, relying only on arithmetic operations.



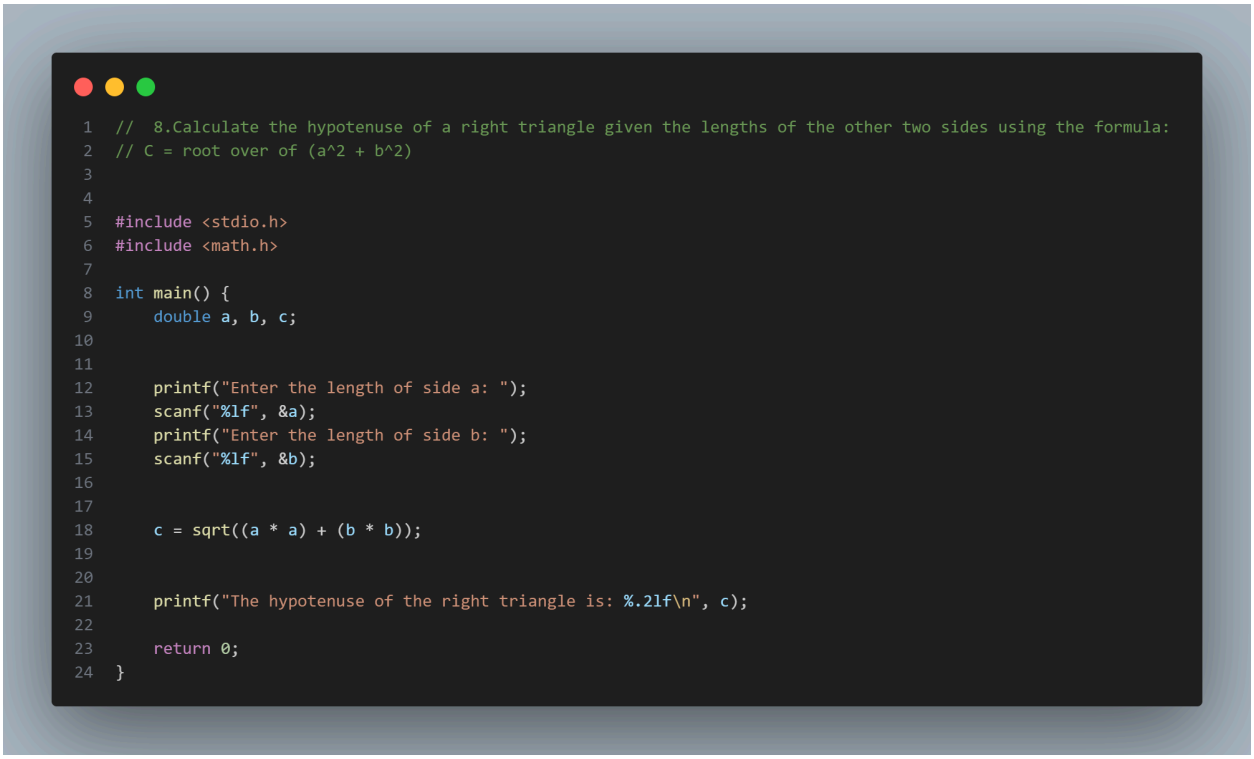
```c
// 6. Write a program to swap the values of two variables without using a third variable, relying only on arithmetic operations.

#include <stdio.h>


int main()
{
    int a,b;

    printf("Enter the first number a: ");
    scanf("%d",&a);
    printf("Enter the second number b: ");
    scanf("%d",&b);

    a=a+b;
    b=a-b;
    a=a-b;

    printf("The swapped value are a = %d and b = %d",a,b);

    return 0;
}
```

7. Write a program to find the sum of the digits of a given three-digit number.

```c
//  7. Write a program to find the sum of the digits of a given three-digit number.
#include <stdio.h>

int main() {
    int num, dig1, dig2, dig3, sum;


    printf("Enter a three-digit number: ");
    scanf("%d", &num);


    dig1 = num/ 100;
    dig2 = (num / 10) % 10;
    dig3 = num % 10;


    sum = dig1 + dig2 + dig3;


    printf("The sum of the digits of %d is %d.\n", num, sum);

    return 0;
}
```

8. Calculate the hypotenuse of a right triangle given the lengths of the other two sides using the formula:

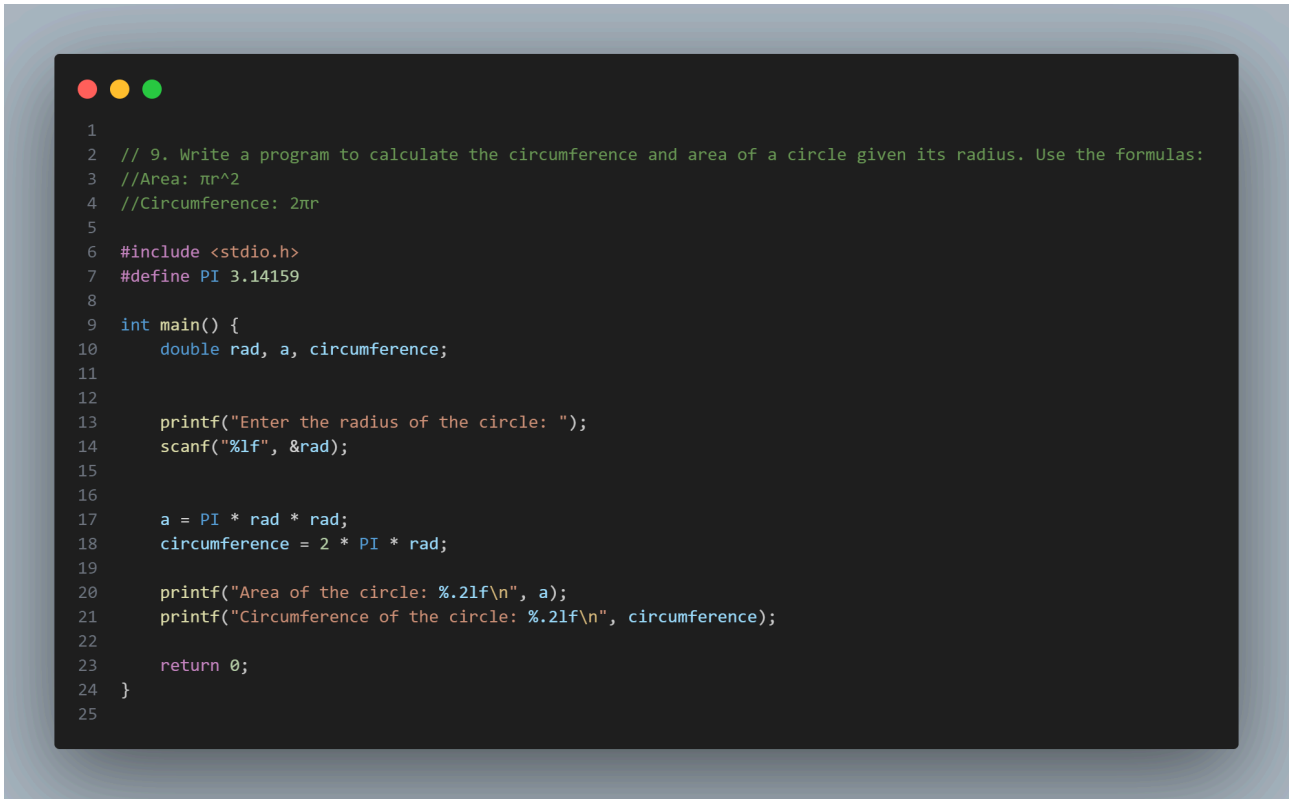
C = root over of (a^2 + b^2)



```c
//  8.Calculate the hypotenuse of a right triangle given the lengths of the other two sides using the formula:
// C = root over of (a^2 + b^2)


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

int main() {
    double a, b, c;


    printf("Enter the length of side a: ");
    scanf("%lf", &a);
    printf("Enter the length of side b: ");
    scanf("%lf", &b);


    c = sqrt((a * a) + (b * b));


    printf("The hypotenuse of the right triangle is: %.2lf\n", c);

    return 0;
}
```

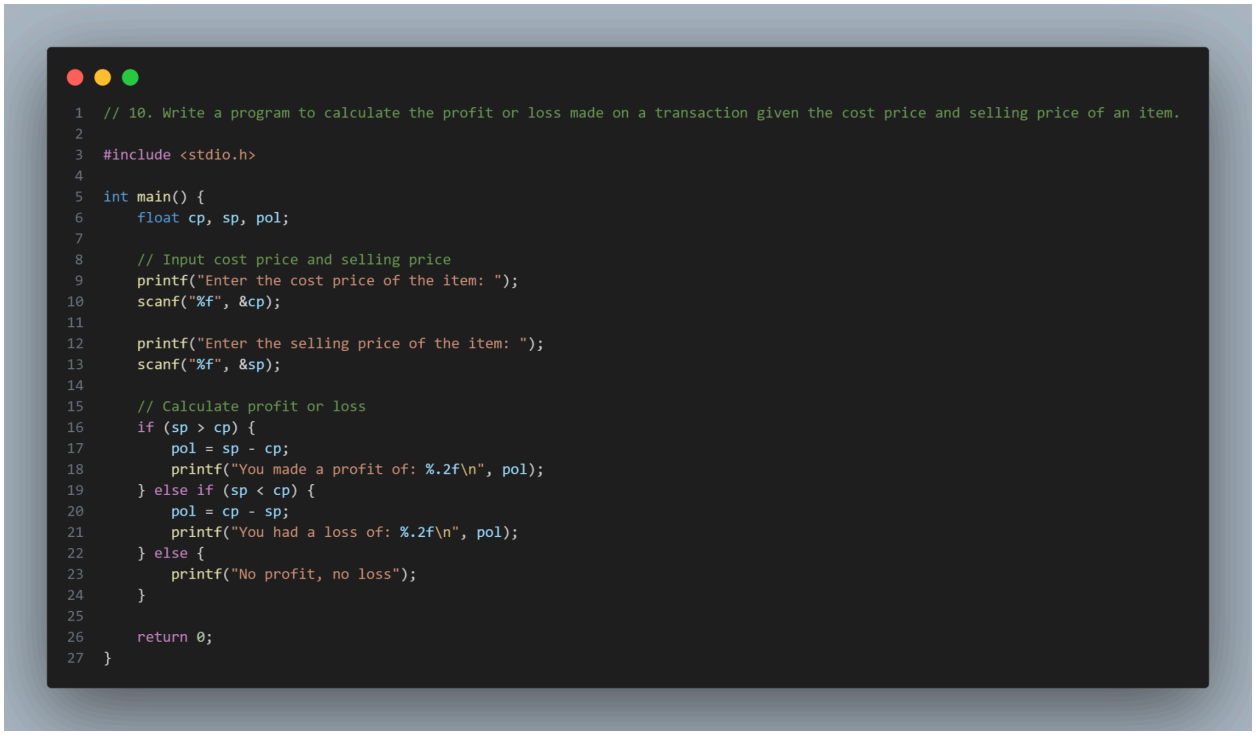
9. Write a program to calculate the circumference and area of a circle given its radius. Use the formulas:

- Area: πr^2
- Circumference: 2πr



```c

// 9. Write a program to calculate the circumference and area of a circle given its radius. Use the formulas:
//Area: πr^2
//Circumference: 2πr

#include <stdio.h>
#define PI 3.14159

int main() {
    double rad, a, circumference;


    printf("Enter the radius of the circle: ");
    scanf("%lf", &rad);


    a = PI * rad * rad;
    circumference = 2 * PI * rad;

    printf("Area of the circle: %.2lf\n", a);
    printf("Circumference of the circle: %.2lf\n", circumference);

    return 0;
}

```

10. Write a program to calculate the profit or loss made on a transaction given the cost price and selling price of an item.

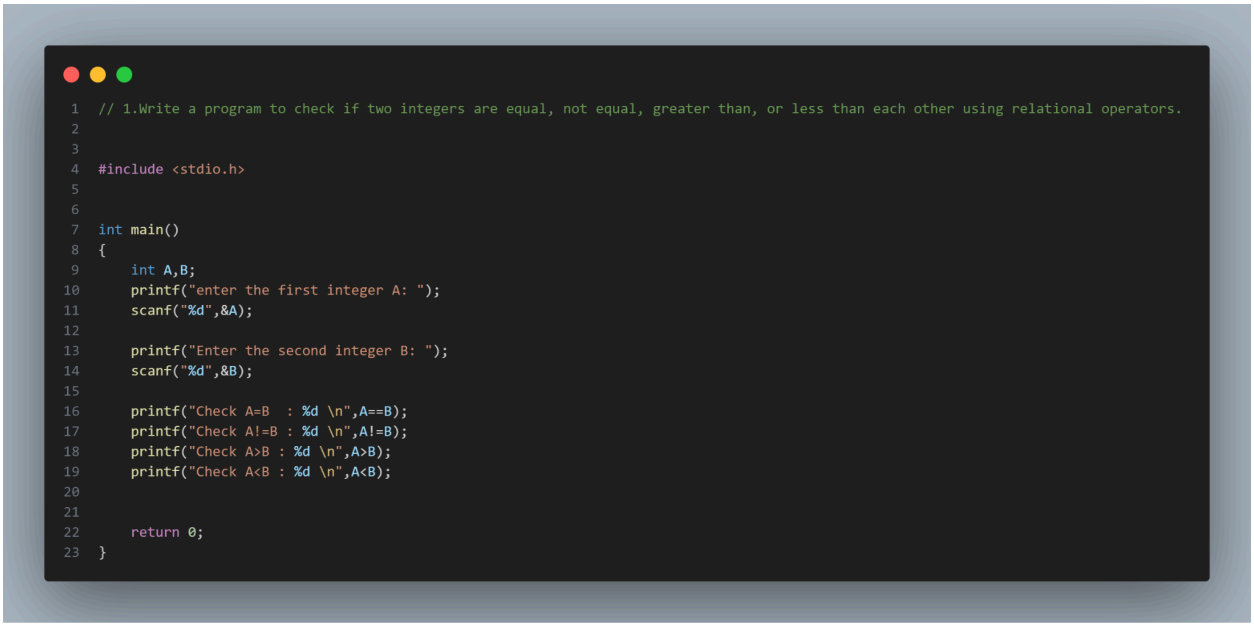


```c
// 10. Write a program to calculate the profit or loss made on a transaction given the cost price and selling price of an item.

#include <stdio.h>

int main() {
    float cp, sp, pol;

    // Input cost price and selling price
    printf("Enter the cost price of the item: ");
    scanf("%f", &cp);

    printf("Enter the selling price of the item: ");
    scanf("%f", &sp);

    // Calculate profit or loss
    if (sp > cp) {
        pol = sp - cp;
        printf("You made a profit of: %.2f\n", pol);
    } else if (sp < cp) {
        pol = cp - sp;
        printf("You had a loss of: %.2f\n", pol);
    } else {
        printf("No profit, no loss");
    }

    return 0;
}
```

Set Two

Compare Two Numbers:

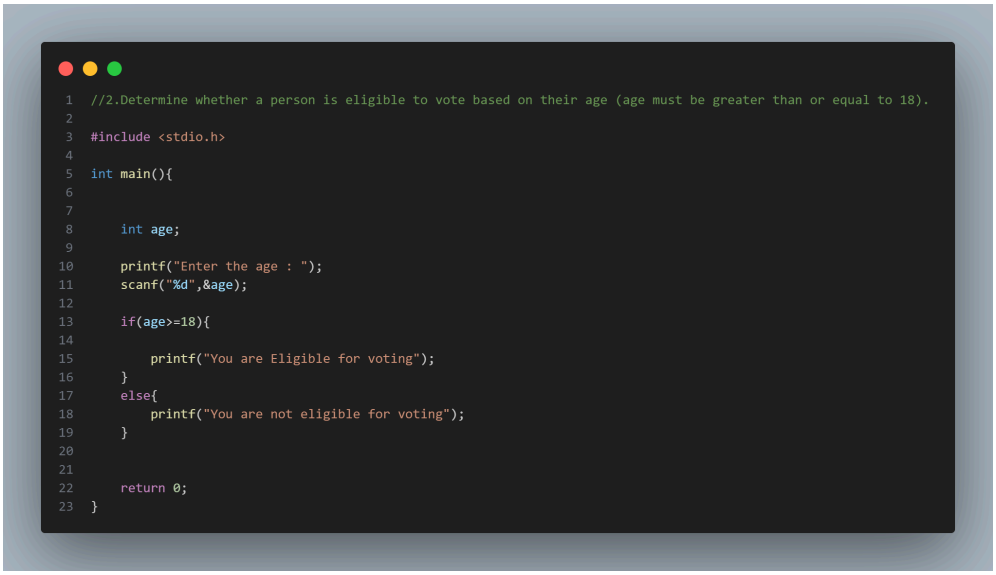
1. Write a program to check if two integers are equal, not equal, greater than, or less than each other using relational operators.



```c
// 1.Write a program to check if two integers are equal, not equal, greater than, or less than each other using relational operators.


#include <stdio.h>


int main()
{
    int A,B;
    printf("enter the first integer A: ");
    scanf("%d",&A);

    printf("Enter the second integer B: ");
    scanf("%d",&B);

    printf("Check A=B  : %d \n",A==B);
    printf("Check A!=B : %d \n",A!=B);
    printf("Check A>B : %d \n",A>B);
    printf("Check A<B : %d \n",A<B);


    return 0;
}
```

Eligibility for Voting:

2. Determine whether a person is eligible to vote based on their age (age must be greater than or equal to 18).



```c
//2.Determine whether a person is eligible to vote based on their age (age must be greater than or equal to 18).

#include <stdio.h>

int main(){


    int age;

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

    if(age>=18){

        printf("You are Eligible for voting");
    }
    else{
        printf("You are not eligible for voting");
    }


    return 0;
}
```

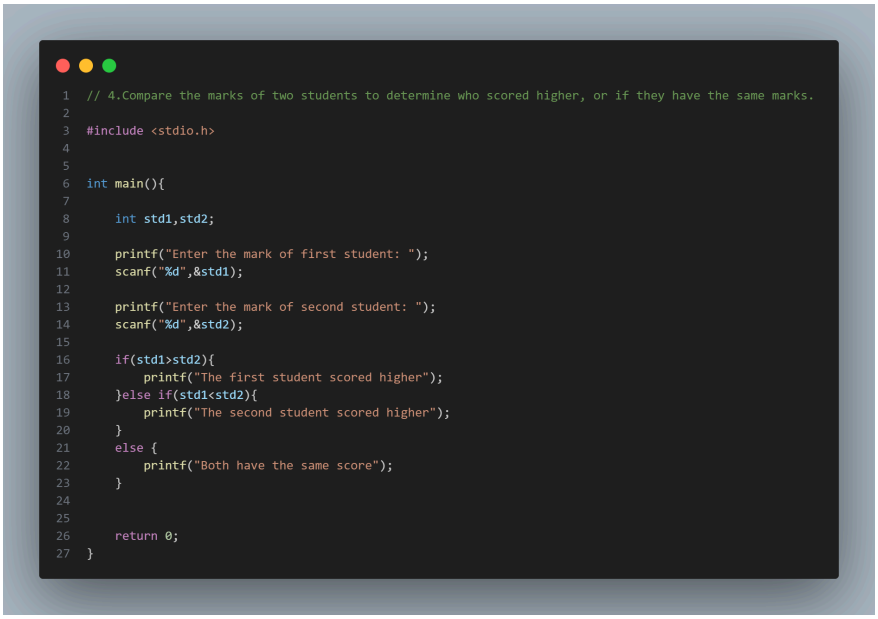
Triangle Validity Check:

3. Given three sides of a triangle, use relational operators to check if the triangle is valid (the sum of any two sides must be greater than the third side).

```c
//3.Given three sides of a triangle, use relational operators to check if the triangle is valid (the sum of any two sides must be greater than the third side).

#include <stdio.h>


int main(){


    int sid1,sid2,sid3,sum;

    printf("enter the first side: ");
    scanf("%d",&sid1);

    printf("Enter the second side: ");
    scanf("%d",&sid2);

    printf("Enter the third side: ");
    scanf("%d",&sid3);

    if(((sid1+sid2)>sid3) && ((sid2+sid3)>sid1) && ((sid3+sid1)>sid2)){

        printf("The triangle is vaild");
    }else{
        printf("The triangle is not vaild");
    }


    return 0;
}
```

Student Grade Comparison:

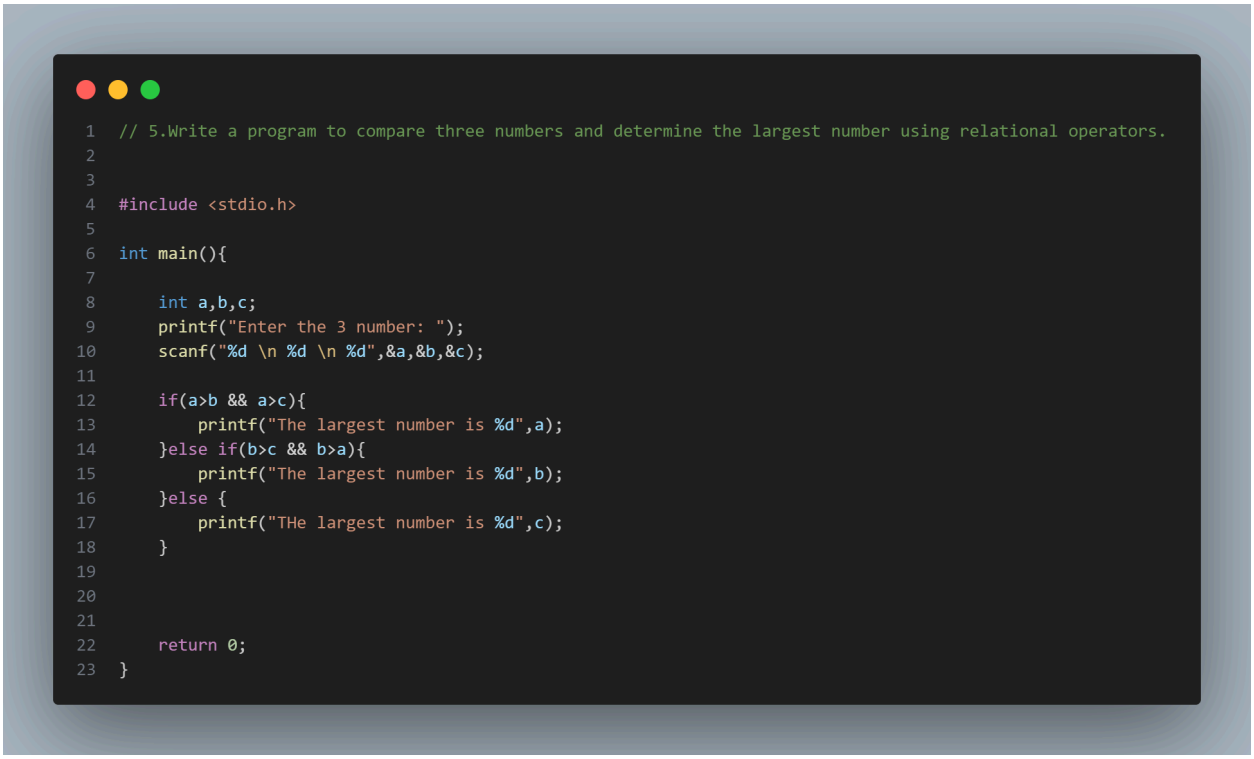
4. Compare the marks of two students to determine who scored higher, or if they have the same marks.



```c
// 4.Compare the marks of two students to determine who scored higher, or if they have the same marks.

#include <stdio.h>


int main(){

    int std1,std2;

    printf("Enter the mark of first student: ");
    scanf("%d",&std1);

    printf("Enter the mark of second student: ");
    scanf("%d",&std2);

    if(std1>std2){
        printf("The first student scored higher");
    }else if(std1<std2){
        printf("The second student scored higher");
    }
    else {
        printf("Both have the same score");
    }


    return 0;
}
```

Find the Largest of Three Numbers:

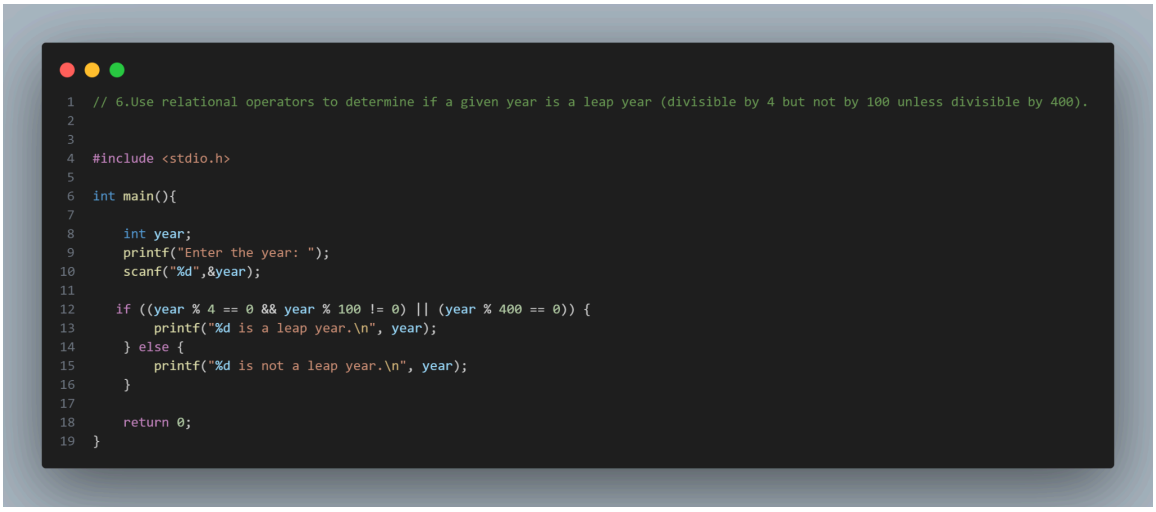
5. Write a program to compare three numbers and determine the largest number using relational operators.



```c
// 5.Write a program to compare three numbers and determine the largest number using relational operators.


#include <stdio.h>

int main(){

    int a,b,c;
    printf("Enter the 3 number: ");
    scanf("%d \n %d \n %d",&a,&b,&c);

    if(a>b && a>c){
        printf("The largest number is %d",a);
    }else if(b>c && b>a){
        printf("The largest number is %d",b);
    }else {
        printf("THe largest number is %d",c);
    }



    return 0;
}
```

Leap Year Check:

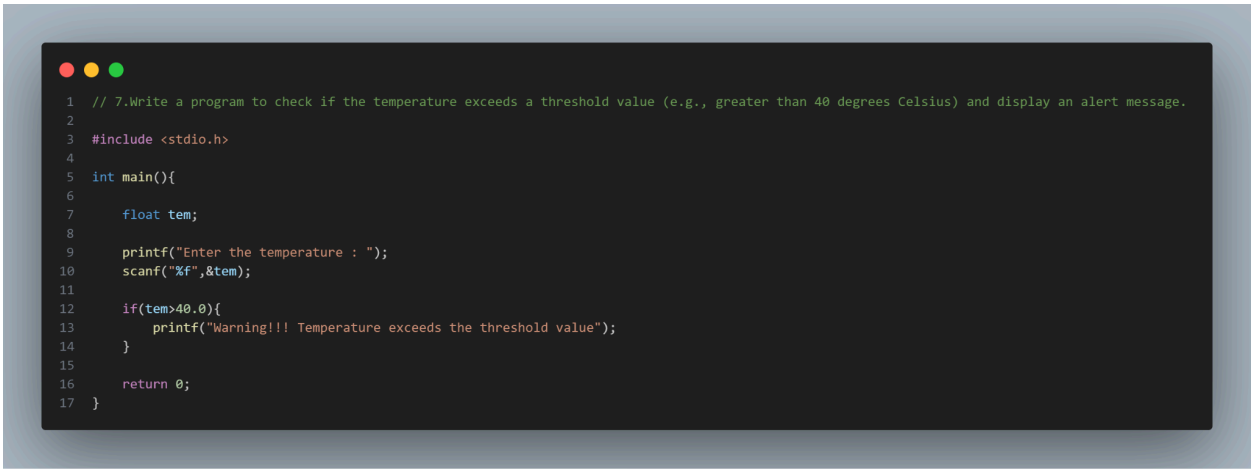
6. Use relational operators to determine if a given year is a leap year (divisible by 4 but not by 100 unless divisible by 400).



```c
// 6.Use relational operators to determine if a given year is a leap year (divisible by 4 but not by 100 unless divisible by 400).


#include <stdio.h>

int main(){

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

   if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
        printf("%d is a leap year.\n", year);
    } else {
        printf("%d is not a leap year.\n", year);
    }

    return 0;
}
```

Temperature Alert:

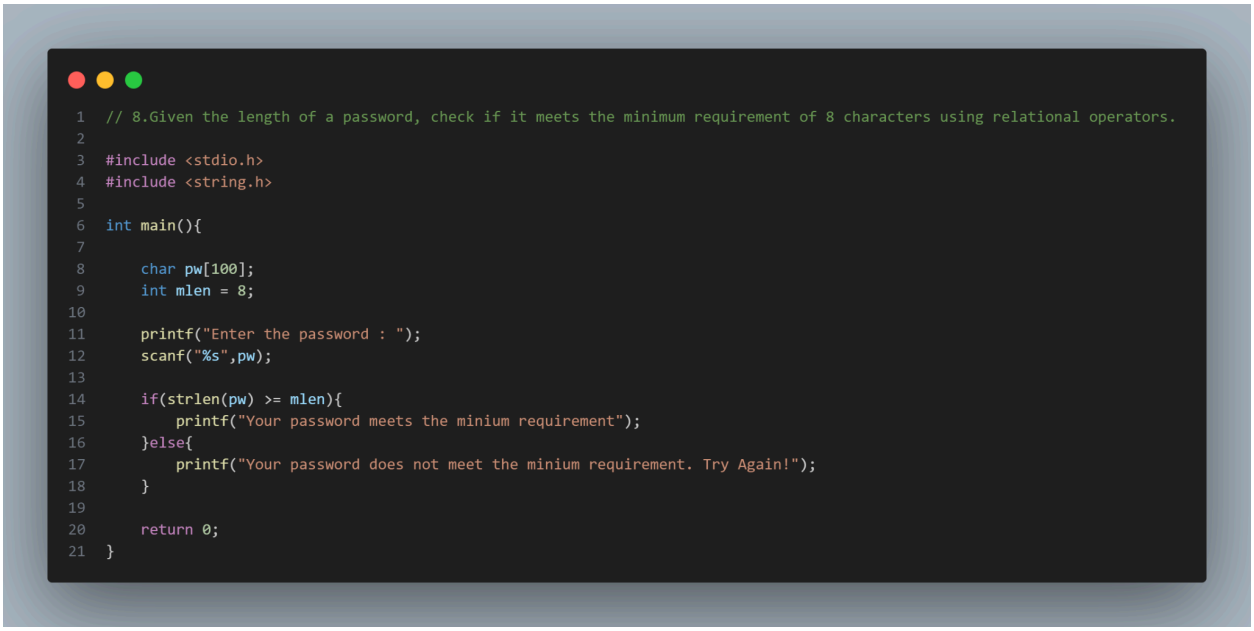
7. Write a program to check if the temperature exceeds a threshold value (e.g., greater than 40 degrees Celsius) and display an alert message.



```c
// 7.Write a program to check if the temperature exceeds a threshold value (e.g., greater than 40 degrees Celsius) and display an alert message.

#include <stdio.h>

int main(){

    float tem;

    printf("Enter the temperature : ");
    scanf("%f",&tem);

    if(tem>40.0){
        printf("Warning!!! Temperature exceeds the threshold value");
    }

    return 0;
}
```

Password Strength Validation:

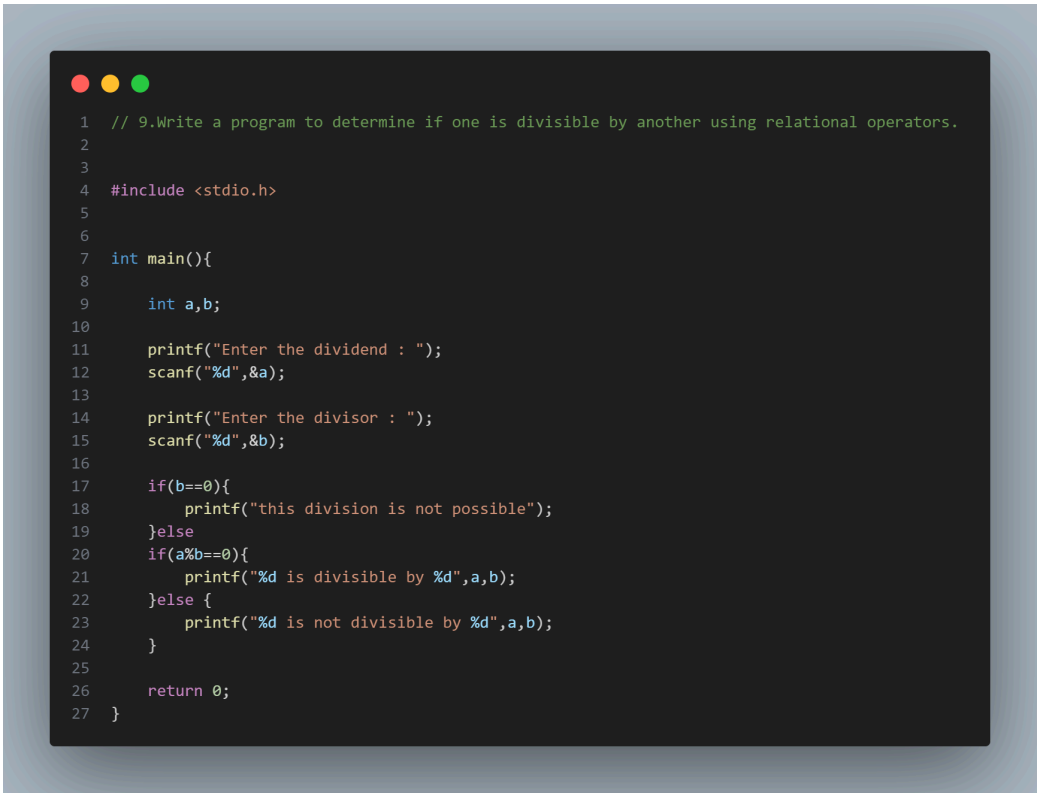
8. Given the length of a password, check if it meets the minimum requirement of 8 characters using relational operators.



```c
// 8.Given the length of a password, check if it meets the minimum requirement of 8 characters using relational operators.

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

int main(){

    char pw[100];
    int mlen = 8;

    printf("Enter the password : ");
    scanf("%s",pw);

    if(strlen(pw) >= mlen){
        printf("Your password meets the minium requirement");
    }else{
        printf("Your password does not meet the minium requirement. Try Again!");
    }

    return 0;
}
```

Check Divisibility:

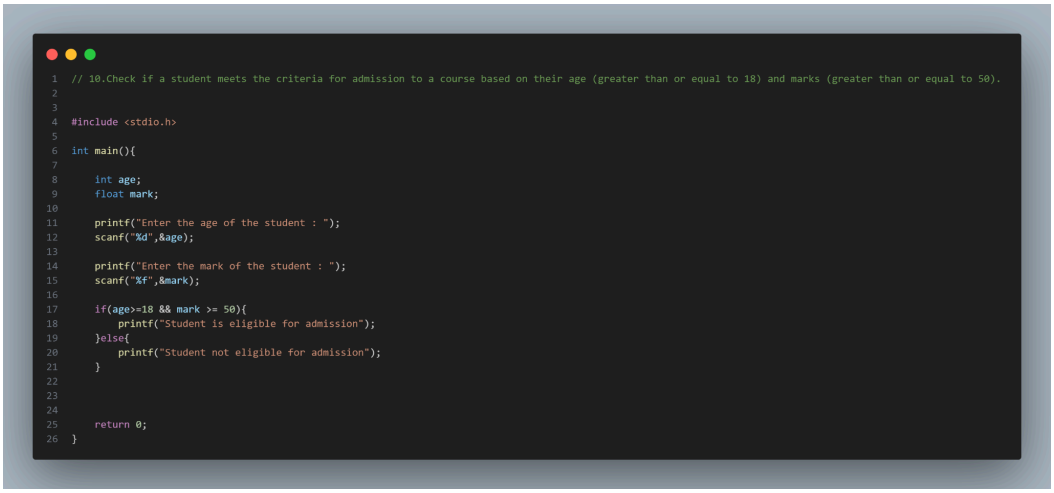
9. Write a program to determine if one number is divisible by another using relational operators.



```c
// 9.Write a program to determine if one is divisible by another using relational operators.


#include <stdio.h>


int main(){

    int a,b;

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

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

    if(b==0){
        printf("this division is not possible");
    }else
    if(a%b==0){
        printf("%d is divisible by %d",a,b);
    }else {
        printf("%d is not divisible by %d",a,b);
    }

    return 0;
}
```

Admission Criteria:

10. Check if a student meets the criteria for admission to a course based on their age (greater than or equal to 18) and marks (greater than or equal to 50).



```c
// 10.Check if a student meets the criteria for admission to a course based on their age (greater than or equal to 18) and marks (greater than or equal to 50).


#include <stdio.h>

int main(){

    int age;
    float mark;

    printf("Enter the age of the student : ");
    scanf("%d",&age);

    printf("Enter the mark of the student : ");
    scanf("%f",&mark);

    if(age>=18 && mark >= 50){
        printf("Student is eligible for admission");
    }else{
        printf("Student not eligible for admission");
    }



    return 0;
}
```