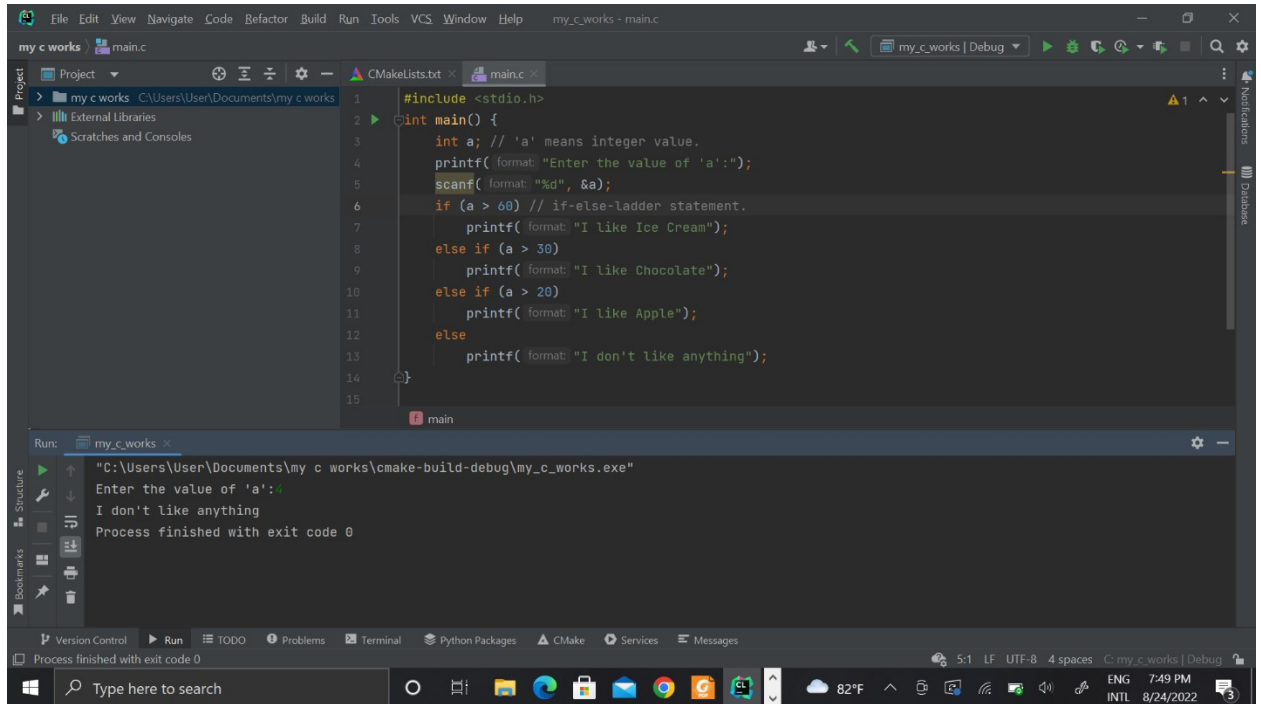


Selections in C. (Control Structure.)

-> Exercise_01

01)



```
#include <stdio.h>

int main() {
    int a; // 'a' means integer value.
    printf( format: "Enter the value of 'a':");
    scanf( format: "%d", &a);
    if (a > 60) // if-else-ladder statement.
        printf( format: "I like Ice Cream");
    else if (a > 30)
        printf( format: "I like Chocolate");
    else if (a > 20)
        printf( format: "I like Apple");
    else
        printf( format: "I don't like anything");
}
```

Run: my_c_works x

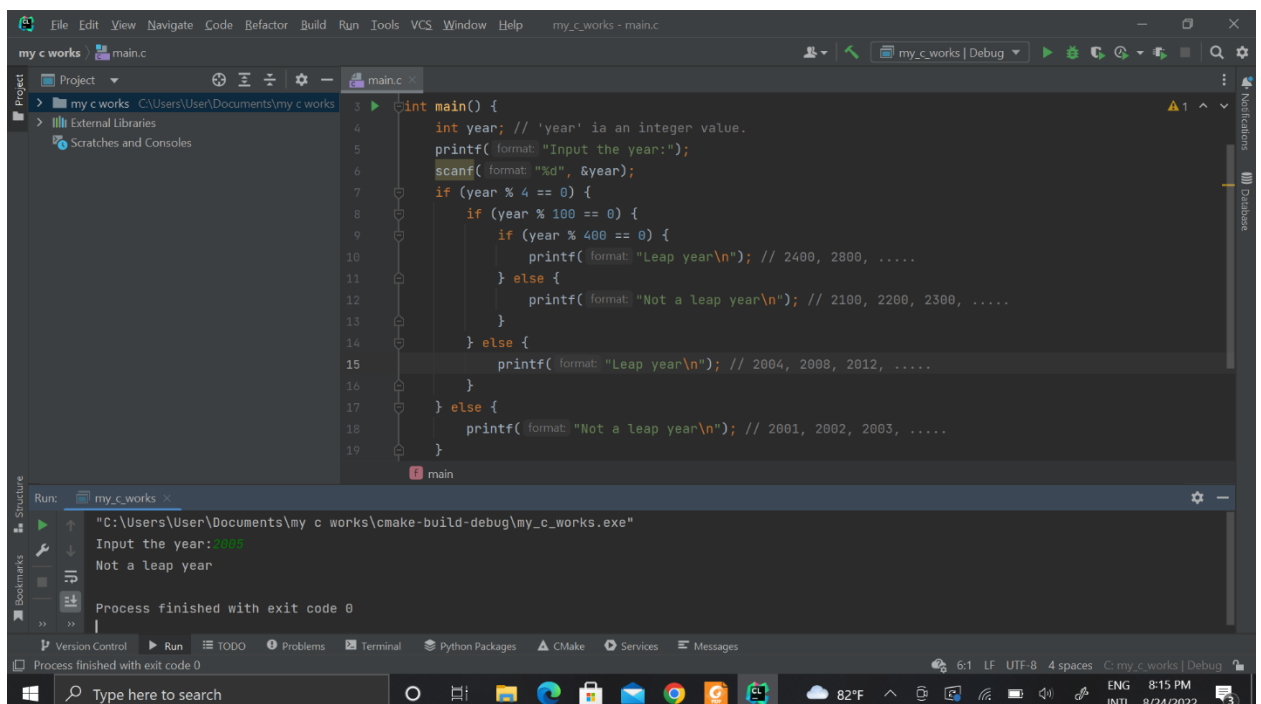
"C:\Users\User\Documents\my c works\cmake-build-debug\my_c_works.exe"

Enter the value of 'a':

I don't like anything

Process finished with exit code 0

02) a)



```
int main() {
    int year; // 'year' is an integer value.
    printf( format: "Input the year:");
    scanf( format: "%d", &year);
    if (year % 4 == 0) {
        if (year % 100 == 0) {
            if (year % 400 == 0) {
                printf( format: "Leap year\n"); // 2400, 2800, .....
            } else {
                printf( format: "Not a leap year\n"); // 2100, 2200, 2300, .....
            }
        } else {
            printf( format: "Leap year\n"); // 2004, 2008, 2012, .....
        }
    } else {
        printf( format: "Not a leap year\n"); // 2001, 2002, 2003, .....
    }
}
```

Run: my_c_works x

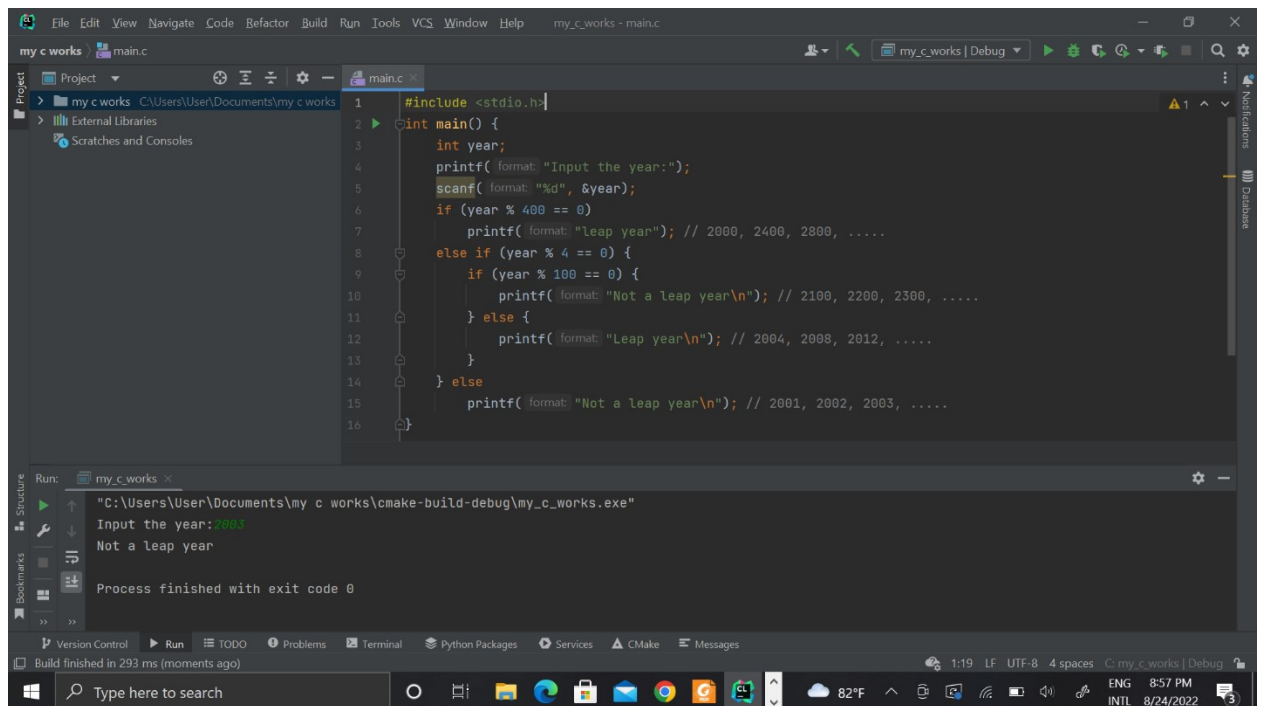
"C:\Users\User\Documents\my c works\cmake-build-debug\my_c_works.exe"

Input the year: 2001

Not a leap year

Process finished with exit code 0

b)



```
#include <stdio.h>

int main() {
    int year;
    printf( format: "Input the year:");
    scanf( format: "%d", &year);
    if (year % 400 == 0)
        printf( format: "leap year"); // 2000, 2400, 2800, .....
    else if (year % 4 == 0) {
        if (year % 100 == 0) {
            printf( format: "Not a leap year\n"); // 2100, 2200, 2300, .....
        } else {
            printf( format: "Leap year\n"); // 2004, 2008, 2012, .....
        }
    } else
        printf( format: "Not a leap year\n"); // 2001, 2002, 2003, .....
}
```

Run: my_c_works x

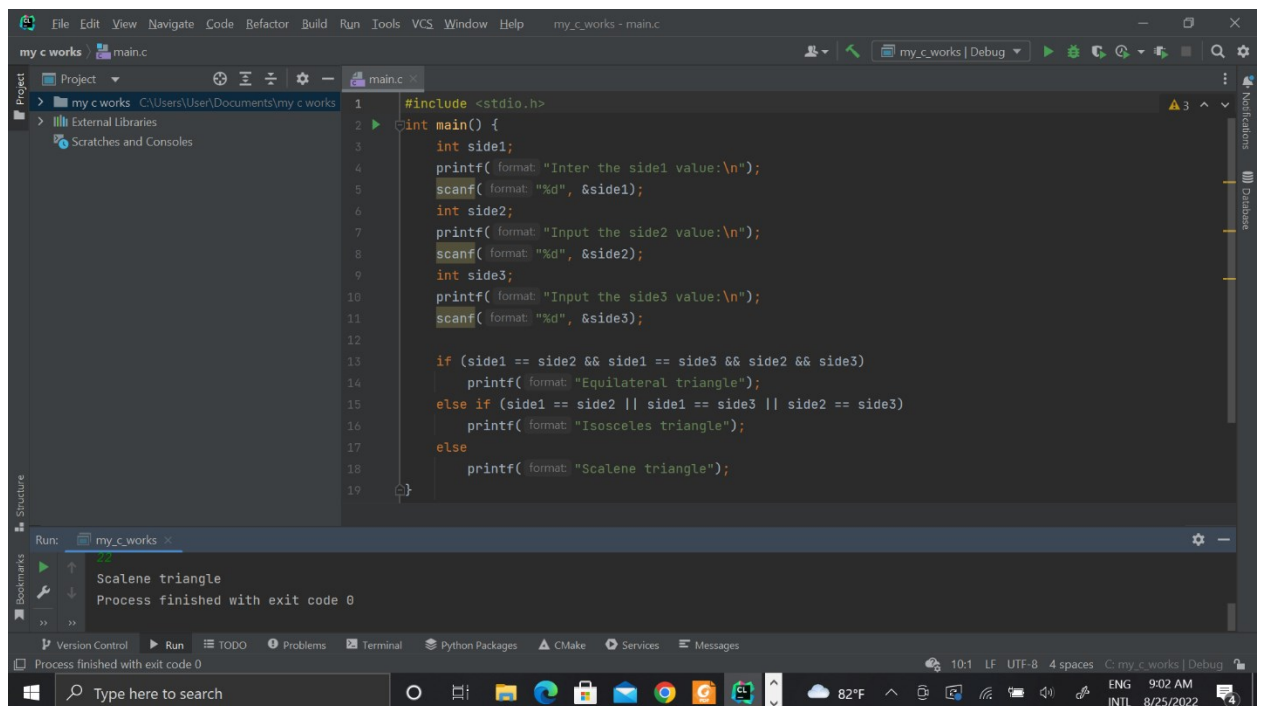
"C:\Users\User\Documents\my c works\cmake-build-debug\my_c_works.exe"

Input the year:2003

Not a leap year

Process finished with exit code 0

03) a)



```
#include <stdio.h>

int main() {
    int side1;
    printf( format: "Inter the side1 value:\n");
    scanf( format: "%d", &side1);
    int side2;
    printf( format: "Input the side2 value:\n");
    scanf( format: "%d", &side2);
    int side3;
    printf( format: "Input the side3 value:\n");
    scanf( format: "%d", &side3);

    if (side1 == side2 && side1 == side3 && side2 && side3)
        printf( format: "Equilateral triangle");
    else if (side1 == side2 || side1 == side3 || side2 == side3)
        printf( format: "Isosceles triangle");
    else
        printf( format: "Scalene triangle");
}
```

Run: my_c_works x

Scalene triangle

Process finished with exit code 0

b)

The screenshot shows the Visual Studio Code editor with a C program in `main.c`. The program prompts the user to input three side values and classifies the triangle based on their equality. The Run window shows the output: "Scalene triangle".

```
#include <stdio.h>

int main() {
    int side1;
    printf( format: "Input the side1 value:\n");
    scanf( format: "%d,%d,%d", &side1);
    int side2;
    printf( format: "Input the side2 value:\n");
    scanf( format: "%d", &side2);
    int side3;
    printf( format: "Input the side3 value:\n");
    scanf( format: "%d", &side3);
    if (side1 == side2 || side1 == side3 || side2 == side3) {
        if (side1 == side2 && side1 == side3 && side2 == side3) {
            printf( format: "Equilateral triangle");
        } else {
            printf( format: "Isosceles triangle");
        }
    } else {
        printf( format: "Scalene triangle");
    }
}
```

Run: my_c_works <
Scalene triangle
Process finished with exit code 0

04)

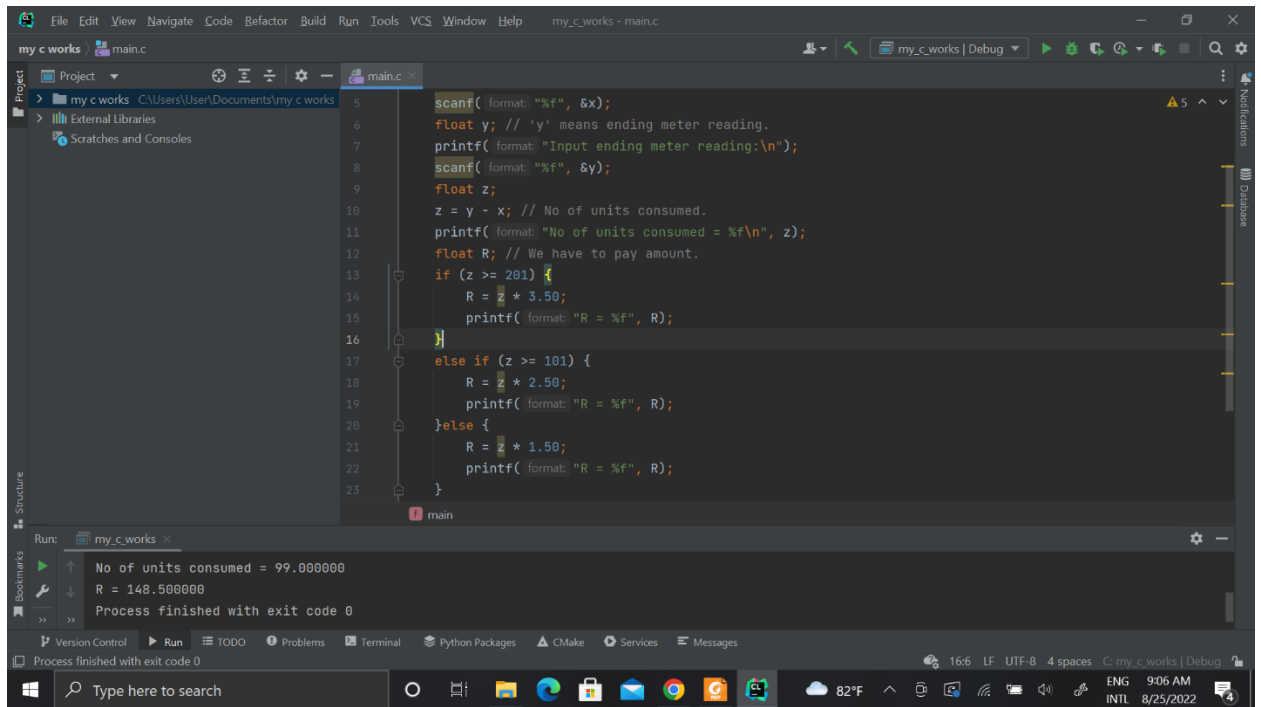
The screenshot shows the Visual Studio Code editor with a C program in `main.c`. The program prompts the user to enter a character and checks if it is an alphabet. The Run window shows the output: "character is not an alphabet".

```
#include <stdio.h>

int main() {
    char ch;
    printf( format: "Enter a character:\n");
    scanf( format: "%c", &ch);
    if ((ch > 'a' && ch < 'z') || (ch > 'A' && ch < 'Z')) { // ASCII value (a=97),(z=122),(A=65),(Z=90).
        printf( format: "character is an alphabet");
    } else {
        printf( format: "character is not an alphabet");
    }
    return 0;
}
```

Run: my_c_works <
"C:\Users\User\Documents\my c works\cmake-build-debug\my_c_works.exe"
Enter a character:
0
character is not an alphabet
Process finished with exit code 0

05)



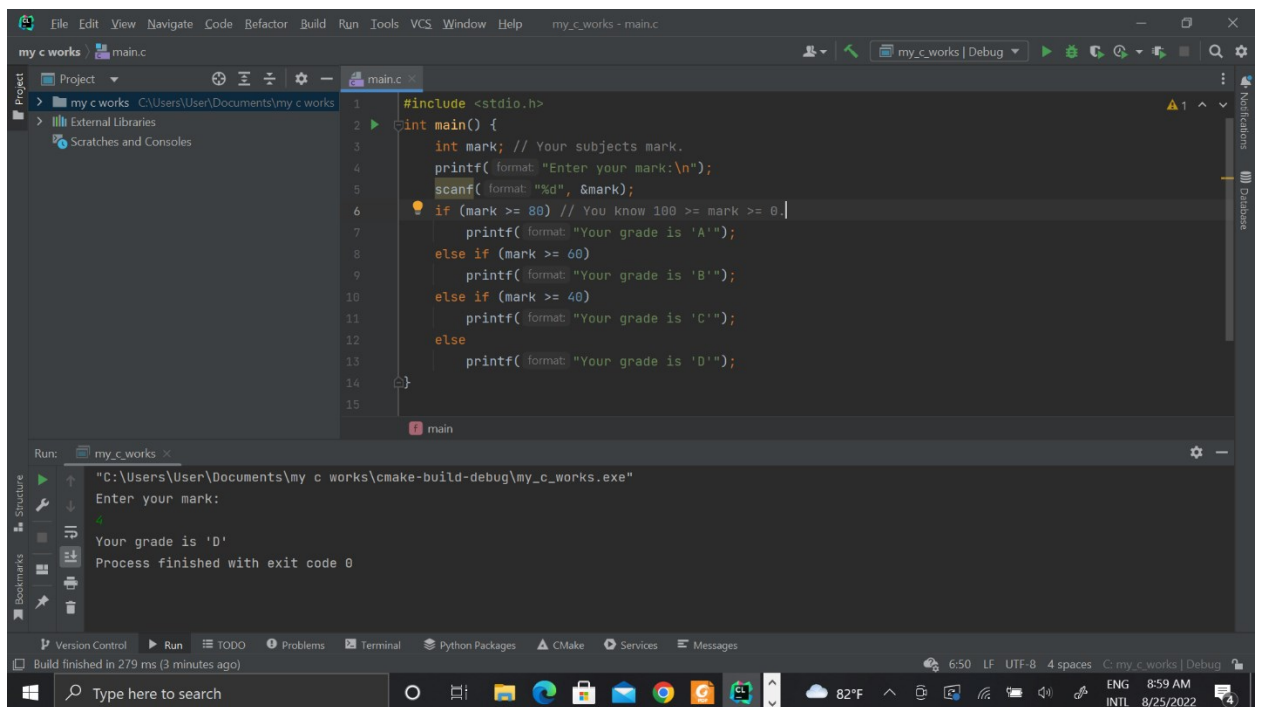
The screenshot shows the Visual Studio Code editor with a C program named `main.c` in the `my_c_works` project. The code calculates the amount of units consumed (`z`) and the corresponding rate (`R`) based on the number of units consumed (`x`).

```
5 scanf( format: "%f", &x);
6 float y; // 'y' means ending meter reading.
7 printf( format: "Input ending meter reading:\n");
8 scanf( format: "%f", &y);
9 float z;
10 z = y - x; // No of units consumed.
11 printf( format: "No of units consumed = %f\n", z);
12 float R; // We have to pay amount.
13 if (z >= 201) {
14     R = z * 3.50;
15     printf( format: "R = %f", R);
16 }
17 else if (z >= 101) {
18     R = z * 2.50;
19     printf( format: "R = %f", R);
20 }
21 else {
22     R = z * 1.50;
23     printf( format: "R = %f", R);
24 }
```

The Run console shows the output of the program:

```
Run: my_c_works
No of units consumed = 99.000000
R = 148.500000
Process finished with exit code 0
```

06) a)



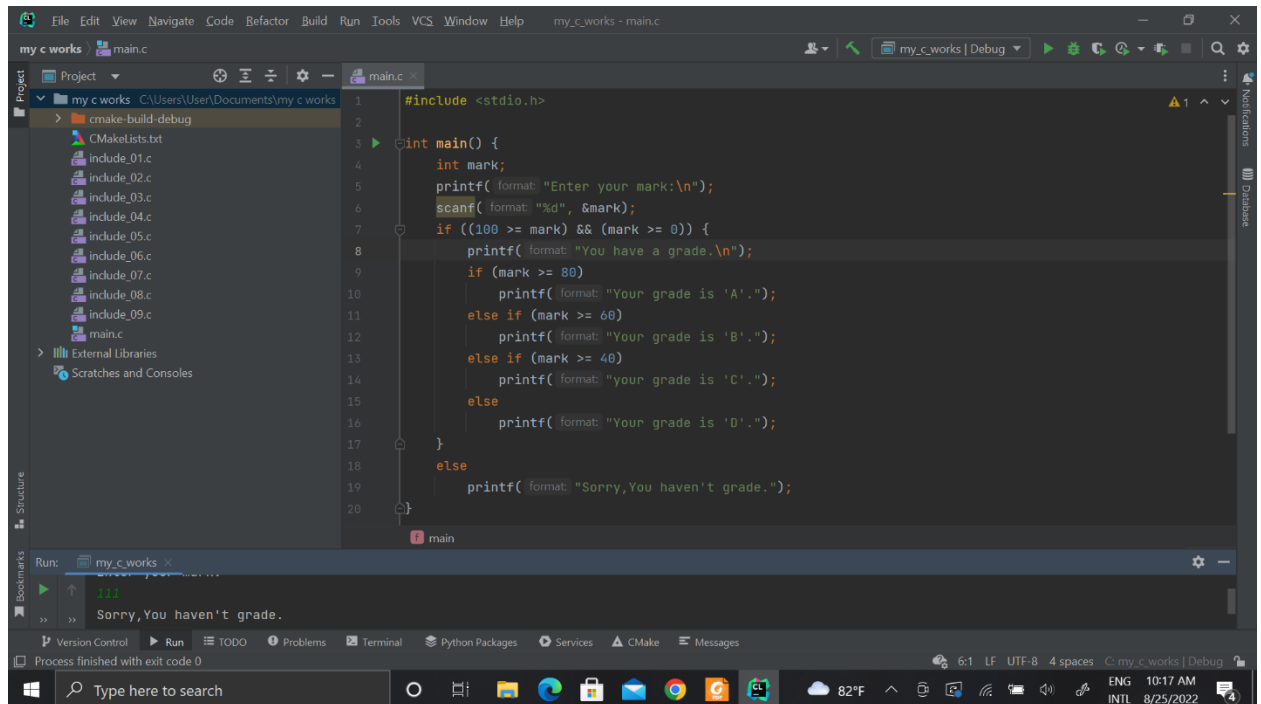
The screenshot shows the Visual Studio Code editor with a C program named `main.c` in the `my_c_works` project. The code calculates the grade based on the mark obtained.

```
1 #include <stdio.h>
2 int main() {
3     int mark; // Your subjects mark.
4     printf( format: "Enter your mark:\n");
5     scanf( format: "%d", &mark);
6     if (mark >= 80) // You know 100 >= mark >= 0.
7         printf( format: "Your grade is 'A'");
8     else if (mark >= 60)
9         printf( format: "Your grade is 'B'");
10    else if (mark >= 40)
11        printf( format: "Your grade is 'C'");
12    else
13        printf( format: "Your grade is 'D'");
14 }
```

The Run console shows the output of the program:

```
Run: my_c_works
"C:\Users\User\Documents\my_c_works\cmake-build-debug\my_c_works.exe"
Enter your mark:
4
Your grade is 'D'
Process finished with exit code 0
```

b)

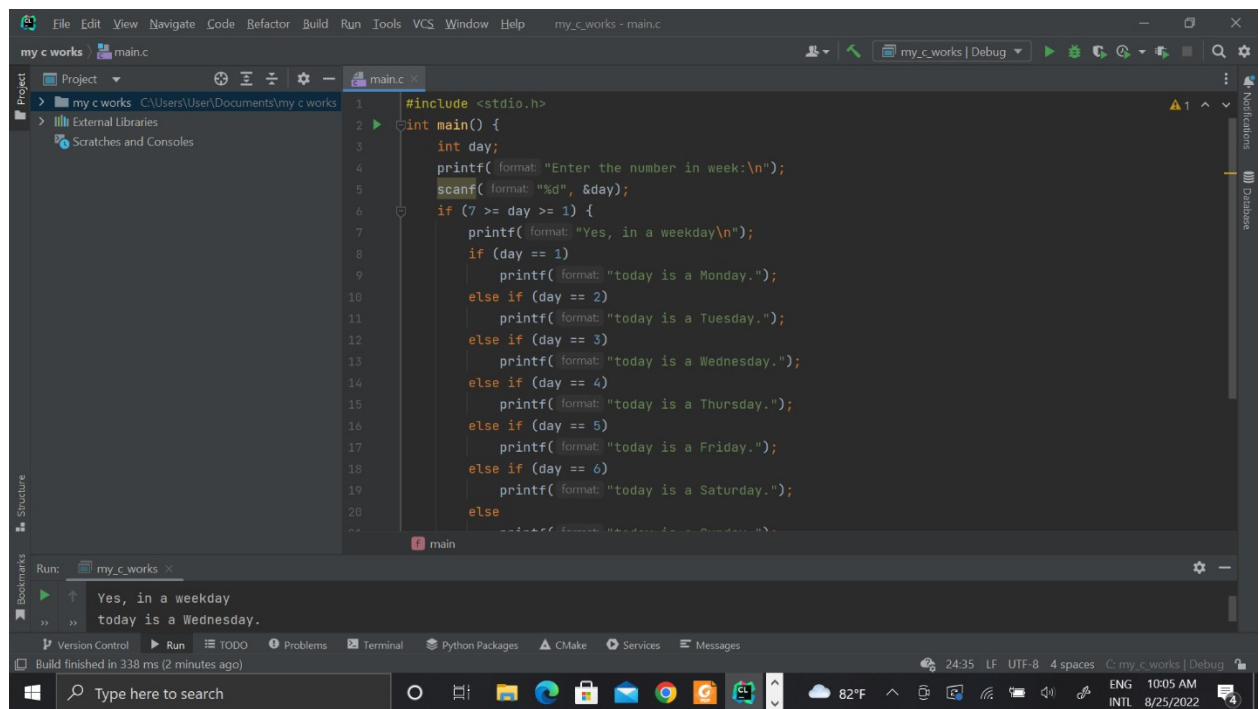


The screenshot shows the Visual Studio Code editor with a C program in `main.c`. The program prompts the user to enter a mark and then prints the corresponding grade based on the mark value.

```
1 #include <stdio.h>
2
3 int main() {
4     int mark;
5     printf( format: "Enter your mark:\n");
6     scanf( format: "%d", &mark);
7     if ((100 >= mark) && (mark >= 0)) {
8         printf( format: "You have a grade.\n");
9         if (mark >= 80)
10            printf( format: "Your grade is 'A'.");
11        else if (mark >= 60)
12            printf( format: "Your grade is 'B'.");
13        else if (mark >= 40)
14            printf( format: "your grade is 'C'.");
15        else
16            printf( format: "Your grade is 'D'.");
17    }
18    else
19        printf( format: "Sorry,You haven't grade.");
20 }
```

The Run and Debug console shows the output: "Sorry,You haven't grade."

07)

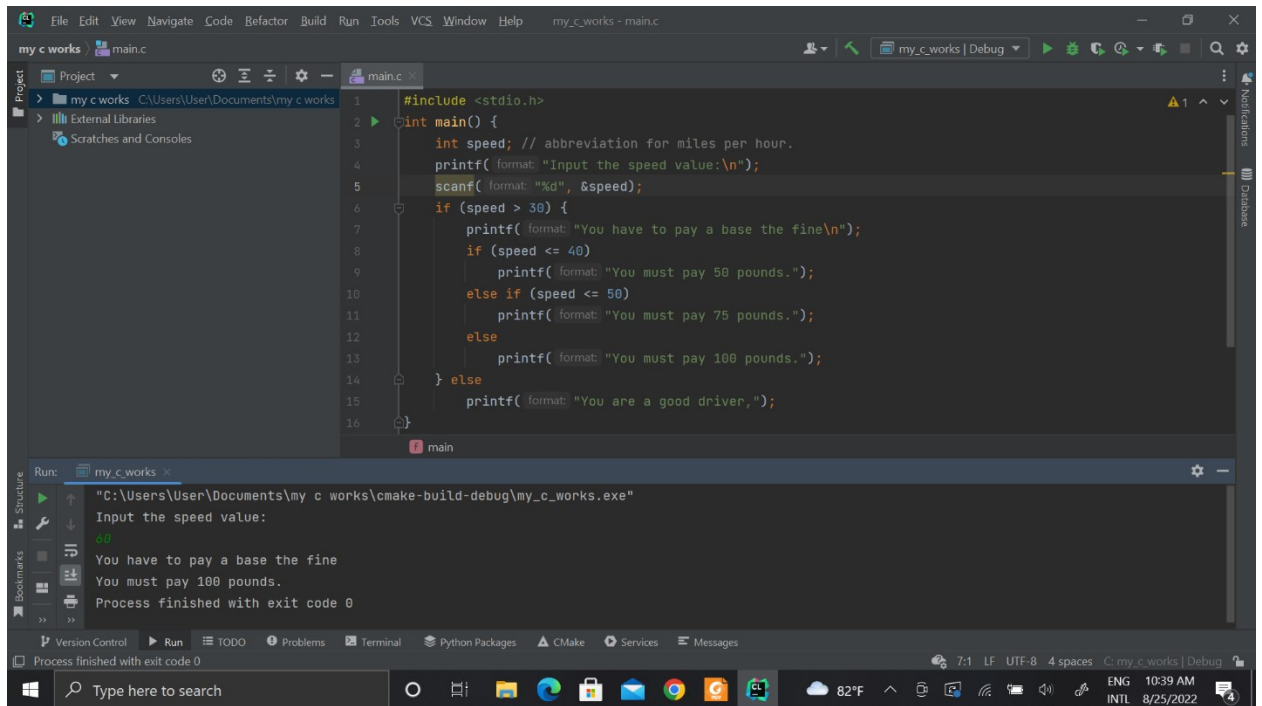


The screenshot shows the Visual Studio Code editor with a C program in `main.c`. The program prompts the user to enter the number of the day (1-7) and then prints the corresponding day of the week.

```
1 #include <stdio.h>
2 int main() {
3     int day;
4     printf( format: "Enter the number in week:\n");
5     scanf( format: "%d", &day);
6     if (7 >= day >= 1) {
7         printf( format: "Yes, in a weekday\n");
8         if (day == 1)
9             printf( format: "today is a Monday.");
10        else if (day == 2)
11            printf( format: "today is a Tuesday.");
12        else if (day == 3)
13            printf( format: "today is a Wednesday.");
14        else if (day == 4)
15            printf( format: "today is a Thursday.");
16        else if (day == 5)
17            printf( format: "today is a Friday.");
18        else if (day == 6)
19            printf( format: "today is a Saturday.");
20        else
21            printf( format: "today is a Sunday.");
22    }
23 }
```

The Run and Debug console shows the output: "Yes, in a weekday" and "today is a Wednesday."

08)



```
#include <stdio.h>

int main() {
    int speed; // abbreviation for miles per hour.
    printf( format: "Input the speed value:\n");
    scanf( format: "%d", &speed);
    if (speed > 30) {
        printf( format: "You have to pay a base the fine\n");
        if (speed <= 40)
            printf( format: "You must pay 50 pounds.");
        else if (speed <= 50)
            printf( format: "You must pay 75 pounds.");
        else
            printf( format: "You must pay 100 pounds.");
    } else
        printf( format: "You are a good driver,");
}
```

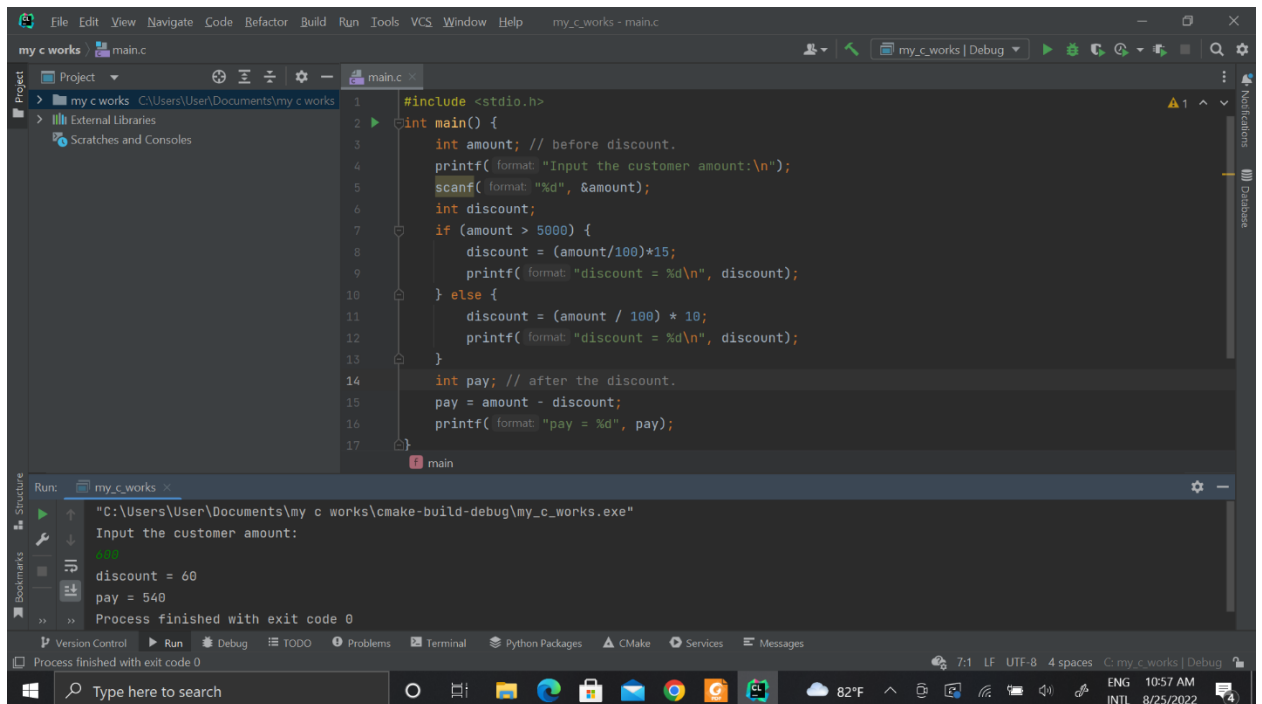
Run: my_c_works x

"C:\Users\User\Documents\my_c_works\cmake-build-debug\my_c_works.exe"

Input the speed value:
60

You have to pay a base the fine
You must pay 100 pounds.
Process finished with exit code 0

09)



```
#include <stdio.h>

int main() {
    int amount; // before discount.
    printf( format: "Input the customer amount:\n");
    scanf( format: "%d", &amount);
    int discount;
    if (amount > 5000) {
        discount = (amount/100)*15;
        printf( format: "discount = %d\n", discount);
    } else {
        discount = (amount / 100) * 10;
        printf( format: "discount = %d\n", discount);
    }
    int pay; // after the discount.
    pay = amount - discount;
    printf( format: "pay = %d", pay);
}
```

Run: my_c_works x

"C:\Users\User\Documents\my_c_works\cmake-build-debug\my_c_works.exe"

Input the customer amount:
600

discount = 60
pay = 540
Process finished with exit code 0

