Problem 1: Discount Eligibility

Scenario: You are tasked with creating a program to determine if a customer is eligible for a discount. The program should check the total amount a customer has spent and decide if they qualify for a discount.

Instructions:

1. Write a program that takes the total spending amount as input.
2. If the customer has spent $100 or more, print "10% discount applied."
3. If the customer has spent less than $100, print "No discount."

Define the Problem:

We need to determine whether a customer qualifies for a discount based on their total spending.

Identify Key Processes:

1. **Input the Total Spending Amount** – to make a decision.
2. **Check the Spending Condition** – whether it is $100 or more.
3. **Output the Result** – either apply a discount or not.

Decide on an Algorithm Structure:

- **Are there multiple conditions?** No, only one condition: ≥ $100.
- **Is the decision binary?** Yes, either "discount" or "no discount."
- **Appropriate structure?** A simple **if/else** binary decision.

Pseudocode:

Create variable totalAmount and set it to the value of the user input for "Enter total spending amount:

```
IF totalAmount is greater than or equal to 100 THEN
    Display to user "10% discount applied."
Otherwise
    Display to user "No discount."
```

Problem 2: Book Categorization

Scenario: A library needs to categorize books based on their genre. You need to develop a program that helps categorize each book correctly.

Instructions:

1. Write a program that takes the genre of a book as input.
2. If the genre is "Fiction," print "Category: Fiction."
3. If the genre is "Non-Fiction," print "Category: Non-Fiction."
4. If the genre is "Science Fiction," print "Category: Science Fiction."
5. If the genre does not match any of these, print "Category: Unknown."

Define the Problem:

The goal is to classify books into categories based on the genre provided by the user.

Identify Key Processes:

1. **Input the Genre** – get the genre name from the user.
2. **Check the Genre Against Known Categories** – compare the input to predefined options.
3. **Output the Category** – show the appropriate classification.

Decide on an Algorithm Structure:

- **Are there multiple conditions?** Yes, several genres.
- **Is the decision binary?** No, more than two outcomes.
- **Does it involve classification?** Yes.
- **Appropriate structure?** A sequence of **if/else if/else** statements.

Pseudocode:

```
Create variable genre and set it to the value of the user input for
"Enter the genre of the book:"
IF genre is equal to "Fiction" THEN
    Display to user "Category: Fiction."
Otherwise IF genre is equal to "Non-Fiction" THEN
    Display to user "Category: Non-Fiction."
Otherwise IF genre is equal to "Science Fiction" THEN
    Display to user "Category: Science Fiction."
```

```
Otherwise
    Display to user "Category: Unknown."
```

Problem 3: Even or Odd Number

Scenario: You need to create a program that determines whether a given number is even or odd.

Instructions:

1. Write a program that takes a number as input.
2. If the number is even, print "Even number."
3. If the number is odd, print "Odd number."

Define the Problem:

Determine if the user-provided number is even or odd.

Identify Key Processes:

1. **Input the Number** – get a whole number from the user.
2. **Check Even or Odd** – use the modulo operator to check if divisible by 2.
3. **Output the Result** – print whether it's even or odd.

Decide on an Algorithm Structure:

- **Are there multiple conditions?** No, only one: divisible by 2 or not.
- **Is the decision binary?** Yes.
- **Appropriate structure?** A binary **if/else** decision.

Pseudocode:

```
Create variable number and set it to the value of the user input for
"Enter a number:"

IF number modulo 2 is equal to 0 THEN
    Display to user "Even number."
Otherwise
    Display to user "Odd number."
```