**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."