1. Identify the Employee Category
A company categorizes its employees based on their salaries:

Salary above ₹50,000 → "High Income"
Salary between ₹30,000 and ₹50,000 → "Medium Income"
Salary below ₹30,000 → "Low Income"
Write a Python program that takes an employee's salary as input and prints their category.

2 . Odd or Even Streetlight System

A city uses an even-odd rule to manage electricity usage in streetlights. Streetlights with even numbers are turned on at night, while odd-numbered lights remain off. Write a program that takes a streetlight number as input and prints whether it should be ON or OFF.

3. Imagine you are designing a basic ATM-like interface where users can:

1. **Check Balance**
2. **Deposit Money**
3. **Withdraw Money**
4. **Exit the System**

Your Task: Write a Python program that displays a menu, takes user input, and performs the respective operation based on the user's choice.

4. Counting Passengers in a Bus

A city bus stops at different stations, and passengers board at each stop. The bus conductor notes down the number of passengers at each stop for 5 stops. Write a Python program to take input for each stop and calculate the total number of passengers at the end.

5. ATM PIN Verification

A bank ATM allows a user to enter their PIN a maximum of 3 times. If the correct PIN (1234) is entered within 3 attempts, the user gains access; otherwise, the card is blocked. Write a Python program for this.

6. Reverse a Number

Write a Python program to reverse a given number. For example, if the input is 12345, the output should be 54321.

7. ATM Cash Dispensing Machine

An ATM machine dispenses only ₹500 and ₹2000 notes. Write a Python program that takes an amount as input and prints how many ₹2000 and ₹500 notes will be given, assuming the amount is a multiple of 500.

8. Shopping Cart - List Operations

📌 *You are creating a shopping cart program. Users should be able to add items to the cart and view the final list. Implement a program that allows a user to add items (names of products) until they type "done" and then prints all the items in the cart*

9. Student Grades - Tuple

📌 *A university stores student grades in tuples because they are immutable. Write a program that takes a student's grades for 5 subjects and prints the highest, lowest, and average grade.*

10 . Movie Collection - Dictionary

📌 *You are maintaining a movie collection where each movie has a rating (out of 10). Write a program to add movies, update ratings, and display all movies with their ratings.*

11. Removing Duplicates from a List - Set

📌 *A librarian is digitizing book records but some book titles are repeated. Write a program to remove duplicates from a list using a set.*

12. ATM Transaction System

📌 *You are designing an ATM system where users can check their balance, withdraw money, or deposit money. Implement this using functions.*

13. Student Grade Calculator

📌 *Create a function that takes a student's marks and returns their grade based on the following criteria:*

- *90-100: A*
- *80-89: B*
- *70-79: C*
- *60-69: D*
- *Below 60: F*

14. Simple Calculator Using Functions

📌 *Write a calculator function that takes two numbers and an operator (+, -, , /) and returns the result.*

15. Find the Maximum of Three Numbers

📌 *Write a function that takes three numbers as input and returns the maximum of the three*

16. Create a Student Class

📌 *Create a class `Student` with attributes `name` and `marks`. Add a method to check if the student has passed (pass mark: 40).*

17. Bank Account Class

📌 *Create a class `BankAccount` with attributes `account_holder` and `balance`. Add a method `deposit()` to add money and `withdraw()` to deduct money.*

18. Create a Book Class

📌 *Create a class `Book` with attributes `title` and `author`. Add a method to display book details.*

19. Create a Rectangle Class

📌 *Create a class `Rectangle` with attributes `length` and `width`. Add a method `area()` and `perimeter()` to calculate the area and perimeter.*

20. Create a Shape Class and a Derived Circle Class

📌 *Create a base class `Shape` with a method `area()`. Create a subclass `Circle` that overrides the method to return the area of a circle.*

21. Create a Movie Class

📌 *Create a class `Movie` with attributes `title`, `genre`, and `rating`. Add a method to display movie details.*

22. Student and Teacher Classes

📌 *Create a base class `Person` with attributes `name` and `age`. Create subclasses `Student` and `Teacher` with additional attributes (`grade` for Student and `subject` for Teacher).*

23. E-Commerce Product Management

📌 *Create a class `Product` with attributes `name`, `price`, and `stock`. Add a method `purchase()` that reduces stock if available.*

24. Create a Traffic Light Simulation

📌 *Create a class `TrafficLight` with attributes `color`. Add a method `next_light()` to change between Red → Green → Yellow.*

25. Employee Salary Increment System

📌 *Create a class `Employee` with attributes `name` and `salary`. Add a method `apply_raise()` that increases the salary by a given percentage.*

26. Age Calculator

📌 *Create an age calculator where the user enters their birth year, clicks a button, and sees their age.*

27. Create a Simple "Hello, World!" Window

📌 *Create a Tkinter window that displays "Hello, World!" in a label.*

28. Create a Simple Login Form

📌 *Create a Tkinter form with entry fields for "Username" and "Password" and a "Login" button. Display entered username on login.*

29. Simple Counter App

📌 *Create a GUI with a button that increases a counter each time it is clicked.*

30. Temperature Converter (Celsius to Fahrenheit)

📌 *Create a GUI where the user enters a temperature in Celsius, clicks a button, and sees the converted Fahrenheit temperature.*