1. A company gives a **bonus of 10%** of salary if the employee has completed more than 5 years in the company. Write a program that uses **arithmetic and relational operators** to calculate the bonus.
2. A mobile recharge company gives a discount:  
     
   * If recharge amount > 500, 20% discount.
   * If 200 ≤ amount ≤ 500, 10% discount.
   * Otherwise, no discount.  
      Use **conditional operators** to compute final amount.
3. Two friends want to compare their exam scores. Write a program using **logical operators** to decide who scored higher and whether both have passed (marks ≥ 40).
4. A sports academy wants to calculate the **average score of three matches** for a cricket player. Use arithmetic operators.
5. Write a program to **find whether a given year is a leap year** using relational and logical operators.
6. A shopkeeper gives a **flat ₹50 discount if bill > 1000, else no discount**. Use conditional operator.
7. A student’s roll number is even → goes to section A, if odd → section B. Use modulus operator.
8. Write a program to demonstrate the effect of **pre-increment and post-increment operators** in calculating a sequence of numbers.
9. A gym charges a monthly fee of ₹1000. If a member’s age is less than 18, they get a 20% discount. Use arithmetic and relational operators.
10. A shopkeeper wants to check if a bill number is divisible by both 3 and 5 (like a lucky coupon). Use logical operators.
11. A taxi service calculates fare:

* ₹50 base + ₹10/km for first 5 km
* ₹8/km afterwards  
   Use arithmetic operators to calculate total fare.

1. A program to simulate an **e-voting machine** where two candidates get votes and you display who won using conditional operator.
2. Demonstrate bitwise operators by checking whether a number is **even or odd** using num & 1.

**2. Loops**

1. A school wants to print a **multiplication table** for a given student’s favorite number. Write a program using a **for loop**.
2. A shopkeeper wants to know the **sum of digits** of bill numbers entered by the user. Write a program using a **while loop**.
3. A parking system charges ₹20 for the first 2 hours and ₹10 for every additional hour. Write a program using a **loop** to calculate parking charges for multiple vehicles entered by the user.

Write a program that keeps asking the user to enter a password until the correct password is entered. (Use while).

A library issues late fees as follows:

* 1–5 days → ₹2/day
* 6–10 days → ₹3/day
* 10 days → ₹5/day  
   Use a loop to calculate fine for multiple students.

Print the **first 10 Fibonacci numbers** using a loop.

A school bus has 40 seats. Write a program using a loop to allocate seat numbers to students until the bus is full.

A program to find the **factorial** of a given number using a loop.

Write a program to print all prime numbers between 1 and 100.

A banking app gives compound interest every year for n years. Use a loop to compute final amount.

A movie hall has 30 rows with 10 seats each. Use nested loops to allocate seats to customers.

Write a program to reverse a number using loops (e.g., input 1234 → output 4321).

A program that asks the user to guess a secret number. Keep looping until the guess is correct.

**3. Switch Case**

1. A restaurant menu system where the user enters a choice:  
    1 → Pizza, 2 → Burger, 3 → Pasta, 4 → Exit.  
    Use a **switch case** to print the selected item and price.
2. A simple **calculator program** using switch: user enters two numbers and chooses operation (+, -, \*, /).
3. A student enters a number 1–7. Use a switch to print the **day of the week**.
4. An electricity board charges:

* Domestic: ₹5/unit
* Commercial: ₹10/unit
* Industrial: ₹15/unit  
   Write a program using switch where user selects category and enters units consumed.

1. An ATM system where user selects:

* 1 → Withdraw
* 2 → Deposit
* 3 → Balance Enquiry
* 4 → Exit  
   Use switch to display the operation.

1. A grading system where user enters marks and a switch decides grade:

* 90–100 → A
* 75–89 → B
* 50–74 → C
* <50 → Fail

1. A program where a user enters a month number (1–12) and switch prints the number of days in that month.
2. A traffic light system where:

* 1 → Red (Stop)
* 2 → Yellow (Ready)
* 3 → Green (Go)

A railway booking system:

* 1 → Sleeper
* 2 → AC
* 3 → General
* 4 → Exit  
   Use switch to display ticket type.

1. A currency converter: user enters choice

* 1 → USD to INR
* 2 → INR to USD
* 3 → INR to Euro
* 4 → Exit  
   Use switch for conversion.

1. Write a program to simulate a **basic music player** where choices are: Play, Pause, Next, Previous, Exit.
2. A weather app where user selects season number:

* 1 → Summer
* 2 → Rainy
* 3 → Winter
* 4 → Spring  
   Switch prints activities suitable for that season.

1. A program where user enters a grade (A–F) and switch displays remarks (Excellent, Good, Average, Fail).