Exercise I: Python Programming

1. **Problem Statement:** Write a program to create two variables a = 10, b = 20 and display them.

2. **Problem Statement:** Write a program to store roll number (integer), name (string), and percentage (float) in variables, and print them.

3. **Problem Statement:** Create variables to store your name, age, and city. Print them.

4. **Problem Statement:** Write a program to assign values to three variables in a single line and print them.

   Example:
   Name: Alex
   Age: 20
   City: Delhi

5. **Problem Statement:** Write a program to create a variable num = 10, print it, then change its value to 20 and print again.

   Example:
   Before change: 10
   After change: 20

6. **Problem Statement:** Take your name as input and print a greeting.
   Example: Input → "RAJ" → Output → "HELLO RAJ!"

7. **Problem Statement:** Take two numbers and print:
   - Sum
   - Difference
   - Product
   - Quotient
   - Remainder

8. **Problem Statement:** Write a program to calculate the total bill for 3 items.

   Example:
   item1 = 50, item2 = 30, item3 = 20

9. **Problem Statement:** Find the square and cube of a number.

10. **Problem Statement:** Write a program to convert Celsius temperature into Fahrenheit.
    Formula: F = (C * 9/5) + 32

11. **Problem Statement:** Store marks of 5 subjects: Hindi, Math, Science, English, IT and calculate total.

12. **Problem Statement:** Write a program to print a sentence using three variables.

Example:

Input:
word1 = "Python"
word2 = "is"
word3 = "fun"

Output: Python is fun

13. **Problem Statement:** Write a program to calculate the perimeter of a square.
Formula: Perimeter = 4 * side

14. **Problem Statement:** Calculate Simple Interest.
Formula: SI = P * R * T / 100

Example:
Input- P=1000, R=5, T=2
Output- SI = 100.0

15. **Problem Statement:** Write a program to create a simple *Personal Information Card* using variables in Python. The program should store a person's details such as **Name, Age, Gender, College, Course, Roll Number, Contact Number, and Address** in separate variables. Finally, print all the information in a properly formatted way so that it looks like an identity card.

Example

```
------------------------------
      PERSONAL INFO CARD
------------------------------
Name        : Sam
Age         : 19
Gender      : Male
College     : XYZ University
Course      : B.Tech CSE
Roll No.    : 101
Contact No.: 9876543210
Address     : Jammu, India
------------------------------
```

16. **Problem Statement:** Given a number, check whether it is **positive, negative, or zero**.

17. **Problem Statement:** Age Check (Voting Eligibility)-Input age and check eligibility. If eligible print the message "You are eligible to vote", otherwise print "Not Eligible".

18. **Problem Statement:** Take as input marks of a subject. Print "Pass" if marks ≥ 40, otherwise "Fail".
    Input Format: Integer (marks).
    Output Format: "Pass"/"Fail".

19. **Problem Statement:** Check if a number is divisible by both 3 and 5.

20. **Problem Statement:** Given a character, check if it is a **vowel or consonant**.
    Example:

Input: e Output: Vowel

21. **Problem Statement:** Write a Python program to check if a given number is even or odd.

22. **Problem Statement:** Given a student's marks (out of 100), print the grade:

90-100: "A+" **80-89:** "A" **70-79:** "B" **60-69:** "C" **50-59:** "D" **Below 50:** "Fail"

23. **Problem Statement:** Given three sides of a triangle, determine its type:
    a. If **all three sides are equal**, print "Equilateral"
    b. If **two sides are equal**, print "Isosceles"
    c. If **all three sides are different**, print "Scalene"
    d. If it **does not form a valid triangle**, print "Not a Triangle"

Input: 5 5 8 **Output:** Isosceles

24. **Problem Statement:** Write a program that simulates a simple login system. The system should:
    a. Allow **only three usernames** ("admin", "user", "guest")
    b. If the username is "admin", print "Welcome Admin!"
    c. If "user", print "Welcome User!"
    d. If "guest", print "Welcome Guest!"
    e. If an unknown username is entered, print "Access Denied"

Input: admin **Output:** Welcome Admin!

25. **Problem Statement:** A year is a **leap year** if:
    a. It is divisible by **400**, or

b. It is divisible by **4** but not by **100**.

Write a Python program to check if a given year is a leap year.