LAB ASSIGNMENTS ON CHAPTER-1

1. Take marks as input (0–100). Use if-elif-else to print the grade:
   90–100 → A
   75–89 → B
   50–74 → C
   Below 50 → Fail
2. Accept a number from the user and use a while loop to find the sum of its digits.
3. Write a function is_prime(n) that returns True if a number is prime, otherwise False. Test it for multiple values.
4. Define a function is_palindrome(word) that checks whether a string is a palindrome or not. Example: "madam" → Palindrome.
5. Create two 3×3 matrices and perform:
   a) Matrix multiplication
   b) Determinant of a matrix
   c) Inverse of a matrix (if possible)
   Verify that multiplying a matrix with its inverse gives an identity matrix.
6. Generate two NumPy arrays of 10 random integers each. Perform element-wise comparison (>, <, ==). Count how many times values in the first array are greater than the second.
7. Suppose you have exam marks of 10 students stored in a Python list. Convert it into a NumPy array and compute:
   a) Average marks of the class
   b) Students who scored above average
8. Create a 4×4 NumPy array with values from 1 to 16. Perform the following:
   a) Extract the second row
   b) Extract the third column
   c) Slice the sub-matrix of shape (2×2) from the bottom-right corner
9. Create a (3×4) array with consecutive numbers from 1 to 12. Demonstrate the difference between reshape() and ravel().
10. Simulate rolling a six-sided dice 1,000 times using NumPy's random.randint(). Count the frequency of each outcome and display it as a dictionary (face → count).