Python Assignments: For Loop, While Loop, and List Comprehension

# 1. For Loop – Assignments

1. 1. Write a program to print the first 10 natural numbers using a for loop.
2. 2. Calculate the sum of all numbers from 1 to 100.
3. 3. Print the multiplication table of a given number (e.g., 5).
4. 4. Find the factorial of a given number using a for loop.
5. 5. Print all even numbers between 1 and 50.
6. 6. Print the reverse of a given string using a for loop.
7. 7. Write a program to print the Fibonacci series up to 10 terms.
8. 8. Count the number of vowels in a given string.
9. 9. Print the square of each number in a given list.
10. 10. Print a pattern like this using a loop:  
     \*  
     \*\*  
     \*\*\*  
     \*\*\*\*  
     \*\*\*\*\*

# 2. While Loop – Assignments

1. 1. Print numbers from 1 to 10 using a while loop.
2. 2. Print all even numbers from 1 to 50 using while loop.
3. 3. Write a program to reverse a number (e.g., input: 123 → output: 321).
4. 4. Find the sum of digits of a given number.
5. 5. Print the multiplication table of a given number using a while loop.
6. 6. Check whether a number is a palindrome or not (e.g., 121).
7. 7. Keep asking the user to enter a number until they enter 0. Then print the sum of all entered numbers.
8. 8. Find and print the first 10 Fibonacci numbers using while.
9. 9. Guessing game: Ask the user to guess a number until they get it right.
10. 10. Print this pattern using while loop:  
     1  
     12  
     123  
     1234  
     12345

# 3. List Comprehension – Assignments

1. 1. Create a list of squares from 1 to 20.
2. 2. Generate a list of even numbers from 1 to 50.
3. 3. Convert all characters in a list to uppercase: ['cat', 'dog', 'elephant'].
4. 4. Extract all vowels from a given string.
5. 5. Create a list of words with more than 3 characters from a given list.
6. 6. Generate a list of numbers divisible by both 3 and 5 from 1 to 100.
7. 7. Given a list of integers, return a new list with only the positive numbers.
8. 8. Create a list of tuples (number, square) for numbers 1 to 10.
9. 9. Flatten a 2D list: [[1, 2], [3, 4], [5, 6]] → [1, 2, 3, 4, 5, 6].
10. 10. From a list of strings, get the list of strings that are palindromes.