Discrete Assignment-11.9.1-11

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Problem Statement

Write the first five terms in the sequence:

$$x_0 = 3$$
$$x_n = 3x_{n-1} + 2 \quad \text{for } n > 1$$

Solution

Table 1: Input Parameters: First Term and General Formula

Term	**Value**
x_0	3
x_n	$3x_{n-1} + 2$ for $n > 1$

Let's find the first 5 terms of the sequence:

$$x_1 = 3x_0 + 2 = 3 \times 3 + 2 = 11 \tag{1}$$
$$x_2 = 3x_1 + 2 = 3 \times 11 + 2 = 35 \tag{2}$$
$$x_3 = 3x_2 + 2 = 3 \times 35 + 2 = 107 \tag{3}$$
$$x_4 = 3x_3 + 2 = 3 \times 107 + 2 = 323 \tag{4}$$
$$x_5 = 3x_4 + 2 = 3 \times 323 + 2 = 971 \tag{5}$$

So, the next 5 terms of the sequence are $11, 35, 107, 323, 971$.

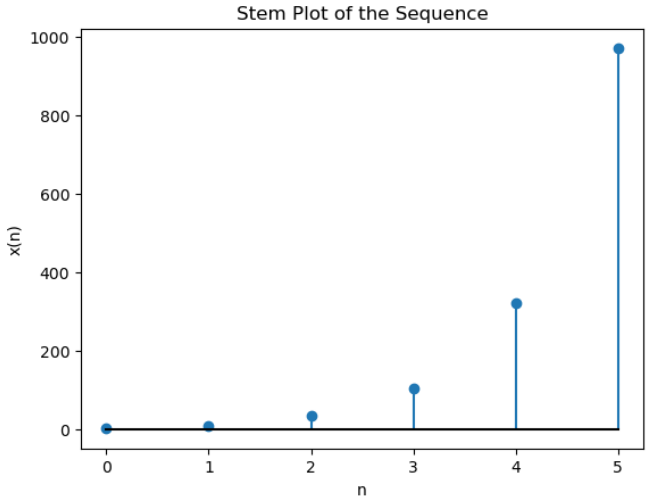

Figure 1: Sequence plot generated from Python script.