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 $11, 35, 107, 323, 971$.

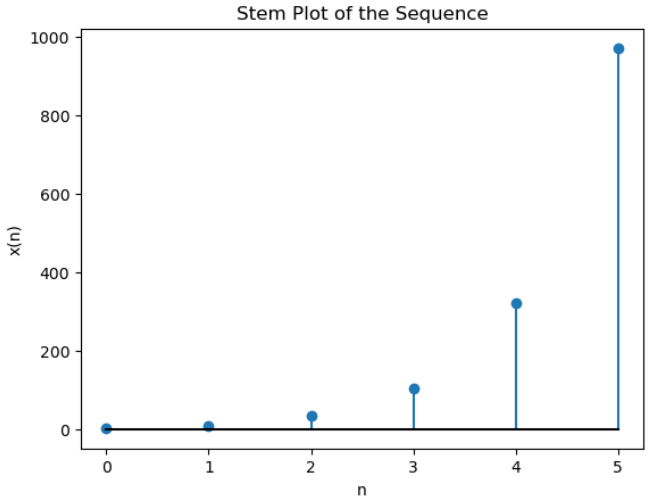

Figure 1: Sequence plot generated from Python script.