Solve : T(n) = T(sqrt(n) ) + 1. (Interview Qn. Beyond the scope)

Let n = 2^m.

T(2^m) = T(2^(m/2) )+ 1.

Let H(m) = T(2^m).

Note H(m) = H(m/2) + c.

Now you can apply Master Theorem with a = 1, b = 2 and k = 0.

a = b^k. The H(m) = Θ(log m). Since m = log n,

T(n) = Θ(loglog n).

Mystery Sequence

Define the nth term, n > 0,  as follows:

Diagram

Description automatically generated

1. What is the value for n = 1?
2. What is the value for n = 2?
3. What is the sum of (n-1)-st and the n-th term?
4. Have you seen this mystery sequence before?