Create a classic state diagram for a Moore state machine that takes a 2-bit input (X_1X_0) representing a binary value (0, 1, 2, or 3), and asserts its single-bit output (Y) when the **cumulative sum of all previous input values** is divisible by three. At reset, assume that the cumulative sum is zero, which means that the Y output should be high after reset, because zero is divisible by three.

Here is a waveform showing how the state machine would behave with some **example** input values: