Binary prime catacomb

Imagine a catacomb in which each room is identified with a prime number. There is a path from A to B if you can change exactly 1 digit in the binary representation of A to obtain the binary representation of B, including the first leading 0. For instance, $2 = 10_2$ is connected to $3 = 11_2$ and vice versa, since you can change the last digit. We can also change the first 0 in $3 = 011_2$ to get $7 = 111_2$, or change the leading 1 to go back. Notice $19 = 10011_2$ can change to $3 = 11_2$ by changing the leading 1, but there is no direct path from 3 to 19.

(1) Are there any numbers which can be reached starting from 2, but cannot return to 2?

(2) Can 11 be reached starting from 2?

(3) Does the catacomb reach infinitely many numbers, starting from 2?