GRAPHS...

video-47

"let's make it easy too"

If you have tried my "Graph Concepts & Qns" playlist, these Qns, will seem very easy.
Do try it once :)

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752. Open the Lock

Medium 3941 159 Add to List Share

You have a lock in front of you with 4 circular wheels. Each wheel has 10 slots: '0', '1', '2', '3', '4', '5', '6', '7'

`'8'`, `'9'`. The wheels can rotate freely and wrap around: for example we can turn `'9'` to be `'0'`, or `'0'` to be `'9'`. Each move consists of turning one wheel one slot.

The lock initially starts at `'0000'`, a string representing the state of the 4 wheels.

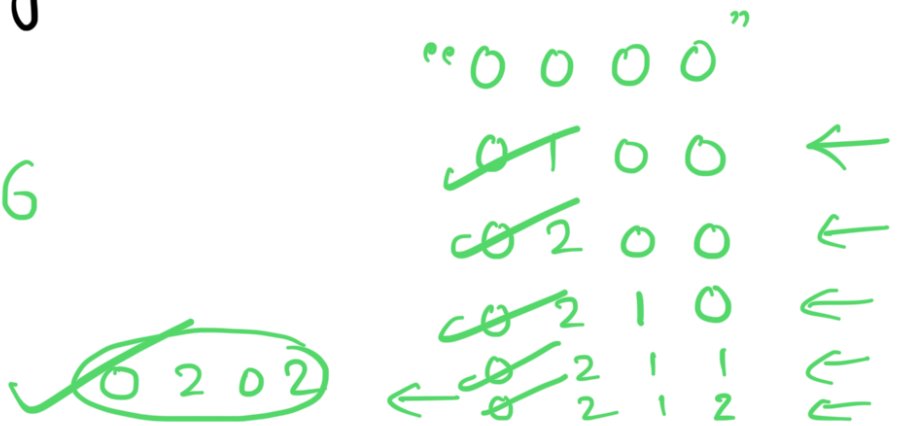
You are given a list of `deadends` dead ends, meaning if the lock displays any of these codes, the wheels of the lock will stop turning and you will be unable to open it.

Given a `target` representing the value of the wheels that will unlock the lock, return the minimum total number of turns required to open the lock, or -1 if it is impossible.

Example :- deadends = {"0201", "0101", "0102", "1212", "2002"}

target = "0202"

Output = 6



Understand this Pattern

(*) Word ladder ✓ (Leetcode)

(*) Find all jumping numbers less than x ✓ (GFG)

(*) Open the lock ✓

B

(*) Asks about number or word

F

S

- Each digit or character can be changed.
- You have to reach a target word/number in minimum moves.
- List of words/numbers allowed/denied.

99

Why BFS ?

"0000"

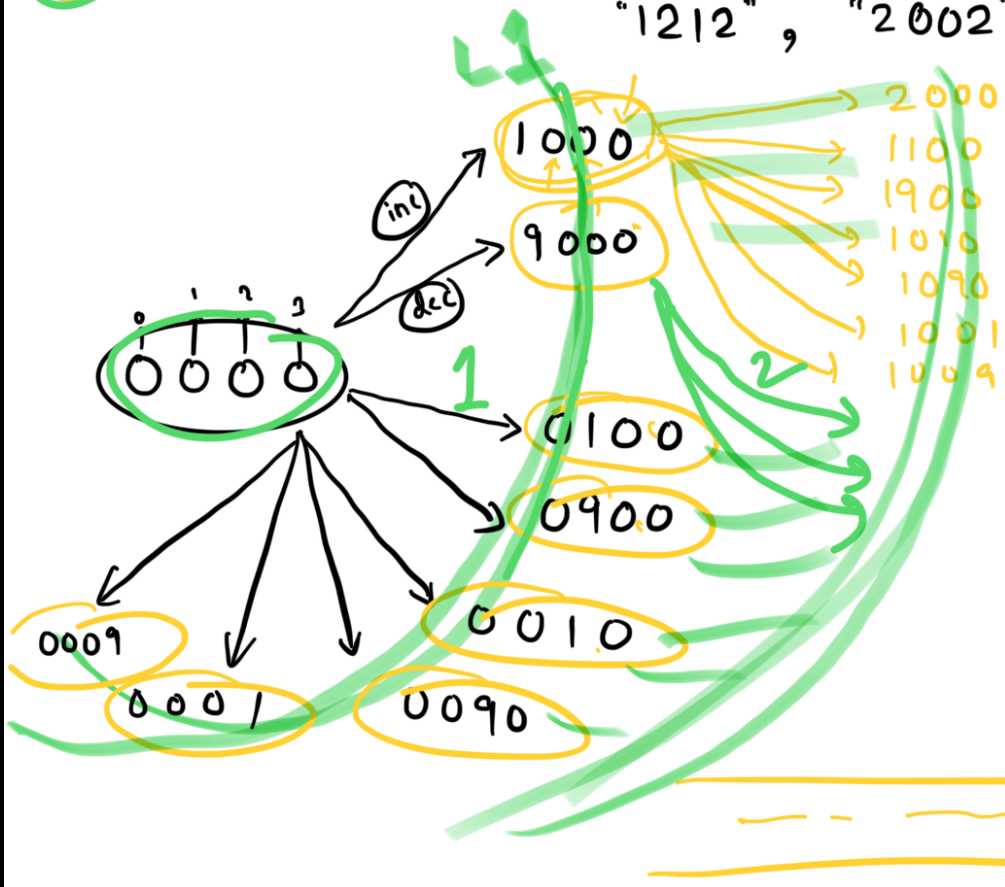
Graph.

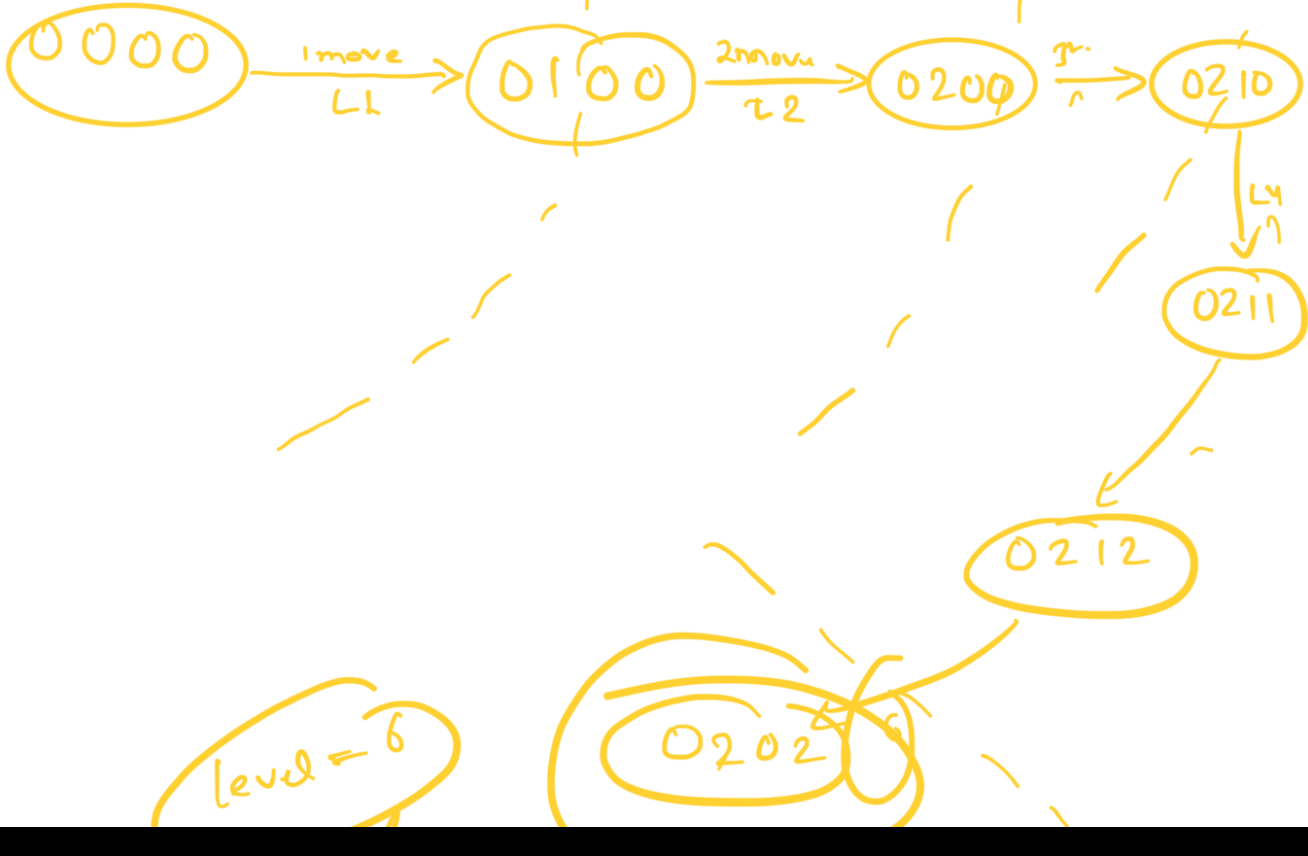
nodes = state

BFS.

target
0202

deadends = {"0201", "0101", "0102",
"1212", "2002", "0000"}





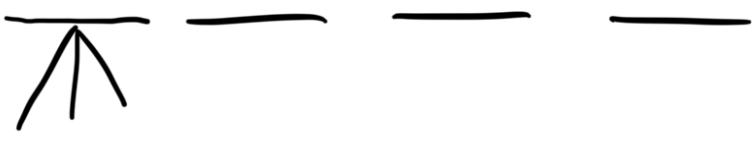
curr = "0000"


```
for (i=0; i<4; i++) {
    ch = curr[i]; // '0'
    inc = ch+1; // '1'
    curr[i] = inc; // "1000"
    que.push(1000)
    deadend(1000);
    dec = ch=='0' ? '9' : ch-1;
    curr[i] = dec; // "9000"
    que.push(1000)
    deadend(1000);
    curr[i] = ch;
```

```
}

int size = que.size();
while (size--) {

}

level++;
}
```

standard BFS

Time & Space :-



wheels (w) = ?

$n = 10$

total combinations = n^w