***Simplex Lock***



You see here a lock made by the Simplex Company. They advertise "thousands of combinations." Are they telling the truth? A combination is a sequence of 0-5 pushes. The pushes must follow these rules:

* You can push any number of buttons, from 0 to 5
* Once a button is pushed, it stays in (so it cannot be re-used in a later push).

Some possible combinations:

* {1 2 3} {4 5} (push 1, 2, 3 together, then push 4 and 5 together)
* {4 5} {1 2 3} (the order of pushes counts, but the order inside a push doesn’t)
* {1}{3}{4, 5} (you don’t have to use every button)
* {1 2 3 4 5} (push all the buttons at the same time)
* {1} {3} {2} {5} {4} (using all five buttons in five pushes)
* {} (no combination; the door is unlocked)