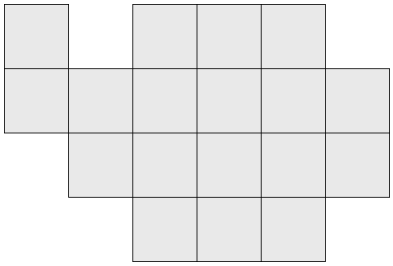
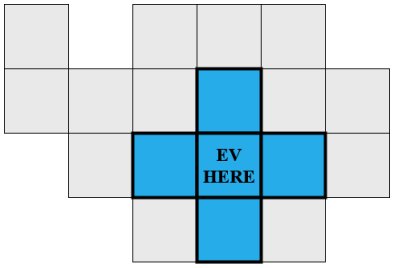
What Is Optimal?

- **Description**. There are many things that go into the placement of EV stations. First and foremost, they should be easily accessible for drivers regardless of where they are in a city. Of course, this isn't the only factor that makes for good charging station placement. At the start of this task, you will brainstorm three other factors that go into good charging station placement. For the rest of this challenge, we will just worry about EV charging station placement. We will think of the city as a grid, as illustrated in the following picture.



We can place charging stations on the grid. To keep things simple, we will pretend that charging stations will only provide coverage for the adjacent squares as illustrated below.



Turning a complicated city map into an optimization problem is a really tedious task. Usually, people would write classical computer programs to do this for them. In this challenge, we will just use a simple grid that is easy to solve by hand.

A	**B**
C	**D**

We can think of each location as a qubit. Then, a solution will be four qubits $|ABCD\rangle$. For example, $|1010\rangle$ says that only squares A and C

will have EV charging stations. Try to write down all of the rules your placement would have to satisfy. For example, for square A to have coverage, either A or B or C would need to have an EV charging station. You should end up with four rules. Can you find a solution with only two EV stations?

- **Submission**. A page with your three factors, your four rules, and a picture of your solution.