Given a map of pipes connected to one each other, find out how far the water would spread if it was inserted into one of those pipes.

<image>

There are 7 type of pipes :

|  |  |  |
| --- | --- | --- |
| Type | Shape | Function |
| 1 |  | Connecting pipes to up, down, left, right pipes |
| 2 |  | Connecting up and down pipes |
| 3 |  | Connecting left and right pipes |
| 4 |  | Connecting up-to-right pipes |
| 5 |  | Connecting down-to-right pipes |
| 6 |  | Connecting down-to-left pipes |
| 7 |  | Connecting up-to-left pipes |