

Solution for "The Cow-Signal" Bronze December 2016

by Arnav Joshi

Let's examine a sample case:

```
5 4 2
XXX.
X..X
XXX.
X..X
XXX.
```

Here, we have a 5x4 grid, and we want to duplicate it horizontally and vertically. Duplicating it vertically is relatively simple because we just print each row 2 times. Now, to duplicate it horizontally, we must print each character within the row 2 times. Once we do this, we get the following:

```
XXXXXX..
XXXXXX..
XX....XX
XX....XX
XXXXXX..
XXXXXX..
XX....XX
XX....XX
XXXXXX..
XXXXXX..
```

To extend this solution to a general case, we read in the input row by row. With each row, we print it out again, but we print each character k times. We complete this process a total of k times for each row such that for each input row, we get a total of k output rows.

```
read r,c,k
for i from 1 through r:
    read row                                // read entire line
    for j from 1 through k:                  // duplicate row k times
        for a from 1 through c:
            for b from 1 through k          // duplicate character at position
                print row[a-1]              // a-1 k times
    print new line
```