The Mad Jailer



One night, the jailer at the Kingston Penitentiary went crazy.

The 100 cells began like this (u=unlocked, l=locked):

After all of the inmates were deeply asleep, the jailer walked down the aisle of 100 cells in the prison and unlocked every one.

The doors looked like (u=unlocked, l=locked):

 ${f u}$

Then the jailor walks down the row locking every 2nd cell.

The cells then look like:

Then the jailor walks down the row unlocking every 3rd cell if it is locked or locking the cell if it is unlocked.

The cells then look like:

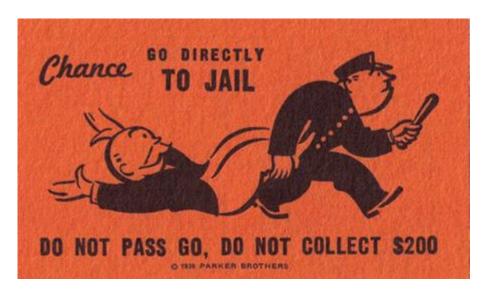
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Then the jailor walks down the row unlocking every 4th cell if it is locked or locking the cell if it is unlocked.

The cells then look like:

The jailor continues walking down the row unlocking or relocking every 5th, 6th, 7th ... 99th, 100th cell. He continued until he had passed the cells 100 times stopping to lock or unlock each one.

Assuming that the prisoners stayed asleep all night, at the end of the night, which cells were closed and which were opened?



Write a program that:

- Use a char array to store how many times each door has its key turned by the jailer (u for unlocked and l for locked).
- After each run of key turning, print the array values to the screen.
- At the end of the program, print the index numbers of the cells that are unlocked. Put a space between each index number. What is the pattern? Why is that?

