1. **The Quest for the Holy Grail**

**Program Name: Quest.java Input File: quest.dat**

King Arthur is on a quest to find the Holy Grail. Obviously, he is having some trouble, and would like you to show him the path. However, there are some obstacles. King Arthur cannot traverse any location that is adjacent to a Killer Rabbit. He also cannot walk through canyons. All other spaces that are on the map can be traveled by King Arthur. Given a map with the location of the King Arthur, the obstacles, and the Holy Grail, show the shortest path to the grail with O’s.

K – killer rabbit: King Arthur cannot walk here or any space adjacent

# - canyon: King Arthur cannot walk here

. – empty space : King Arthur can walk here

A – King Arthur: King Arthur is currently standing here

H – the Holy Grail: King Arthur would like to be here.

Input

An integer N representing the number of data sets to follow and a 10x10 character matrix representing a map. Maps will be separated by a ‘-‘

Output

A 10x10 character matrix of the map with the highlighted path.

**Assumptions**

There will always be a Holy Grail and a King Arthur located on the map. There will always be a path to the Holy Grail. Adjacent is defined in this problem as the 4 characters surrounding K (neither King Arthur nor the Killer Rabbit can move diagonally). There can be multiple shortest paths, as long as it as one of the shortest, it is correct. Note, there may not always be a rabbit on the map.

Example Input File

2

..........

..A.......

..........

.....K..#.

........#.

######..#.

........#.

........#.

...H....#.

..........

-

......###.

..........

.###......

...#......

...#.....H

...#......

...K.#####

.........#

.#####...#

......A..#

Example Output To Screen

..........

..AOOOOO..

.......O..

.....K.O#.

......OO#.

######O.#.

...OOOO.#.

...O....#.

...H....#.

..........

......###.

OOOOOOOOOO

O###.....O

O..#.....O

O..#.....H

O..#......

O..K.#####

O........#

O#####...#

OOOOOOA..#