

Karel the Robot and Algorithms (Karel4)

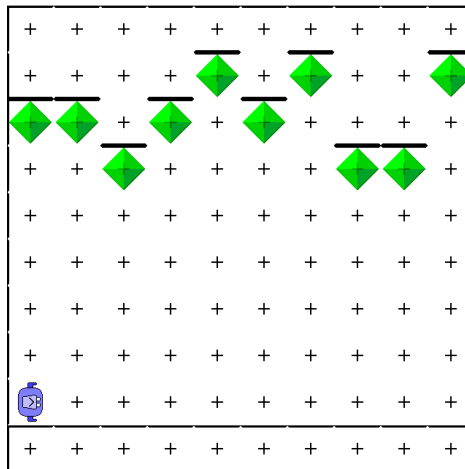
Objective: To be creative and solve more challenging Karel problems.

Background:

You now have the tools to solve complex problems using the Karel environment. This will instill a “think outside of the box” methodology that will help you in the AP Computer Science A projects.

Assignment:

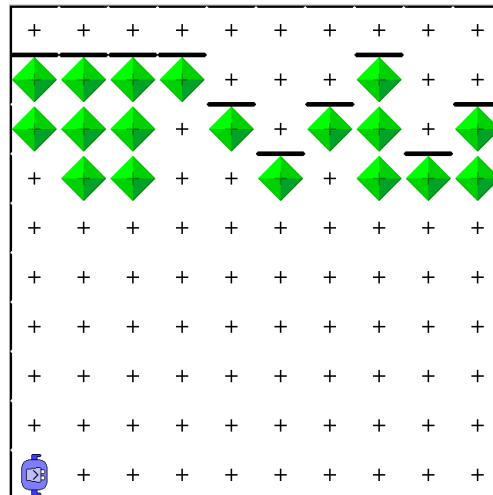
1. Solve the problem **fetchTheStars** (3.1.2). In this problem you get an extra challenge. Consider the world below:



The beepers represent stars to be fetched by Karel. Unfortunately, beneath Karel is a frozen lake that cannot be broken. If Karel is facing the lake the conditional **frontIsClear()** will not detect the lake (returns true). This is not helpful. Somehow Karel must figure out how to retrieve the stars and return to the lake without breaking through. Again, check your code with all configurations to get an “OK” from the interface.

And like before, save your file by moving and renaming the **karel.txt** file containing your solution.

- Solve the problem **secureTheCave** (3.2.1). Karel must take the stalactites on the ceiling and place them on the floor as stalagmites. This requires counting using an algorithmic strategy.



- Solve the problem **layAndRemoveTiles** (3.2.2). Laying tiles might be a breeze now that you have done so much Karel programming. Hit “goal” and watch how Karel works. No problem, right? Then watch as he picks up the tiles. This is not so easy. Think how you would do this algorithmically.