Project 3: Conquer the square

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Abstract

In this project, you will be competing with other teams to design a tileset that will conquer as much positions as possible of a $n \times n$ square.

Getting the software. First, you will need the following software:

1. Download `ISU TAS` aTam and kTam simulator at:

   `http://self-assembly.net/wiki/index.php?title=ISU_TAS`

2. Then learn how to use design and run simulation of a tile set at:

   `http://self-assembly.net/wiki/index.php?title=ISU_TAS_Tutorials`

The project: Conquer the square. The goal is to design a tile set that will place as much tiles as possible in a $n \times n$ square in presence of an other tile set designer by a competing team. Your tile sets will be run one against the other at the end of the school.

The rules. The $n \times n$ square arena is delimited in the seed by a square of $(n+2) \times (n+2)$ tiles with strength-1 glues labelled 0 on the sides. Your tile set must verify:

1. No more than 20 tile types labelled from A to T

2. No more than 20 glues labelled from 1 to 20

3. At most 20 strength-2 glues might appear in total in your tile set

4. Only one seed tile, located either at the lower-left corner or at the upper-right corner. *You should provide two files: one for starting in the lower-left corner, one (rotated by 180° and using glues renumbered from 21 to 40) for starting from the upper-right corner.*[1]

5. The battle will be run in both mode aTam and kTam. *You may have more than one tile set for each mode.*

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[1] Note that the `ISU TAS` format is a text file which can be very easily edited to implement the renumbering and rotation of the tiles

6. The winner of a run is the tile set which has conquered the more positions after $1000n^2$ steps.

7. The winner will be determined after 11 runs.