

Implementing IQ Link

COMP1110 Assignment 2

thu11l

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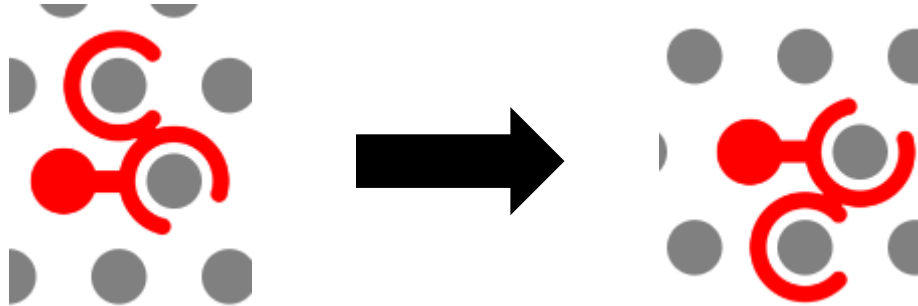
Outline

- Feature
- Play the Demo
- Design
- Problem and Solution

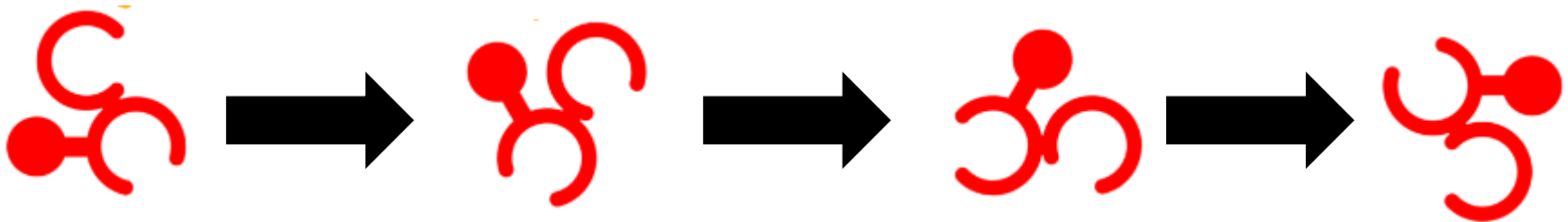


Feature

- Flip – Right click



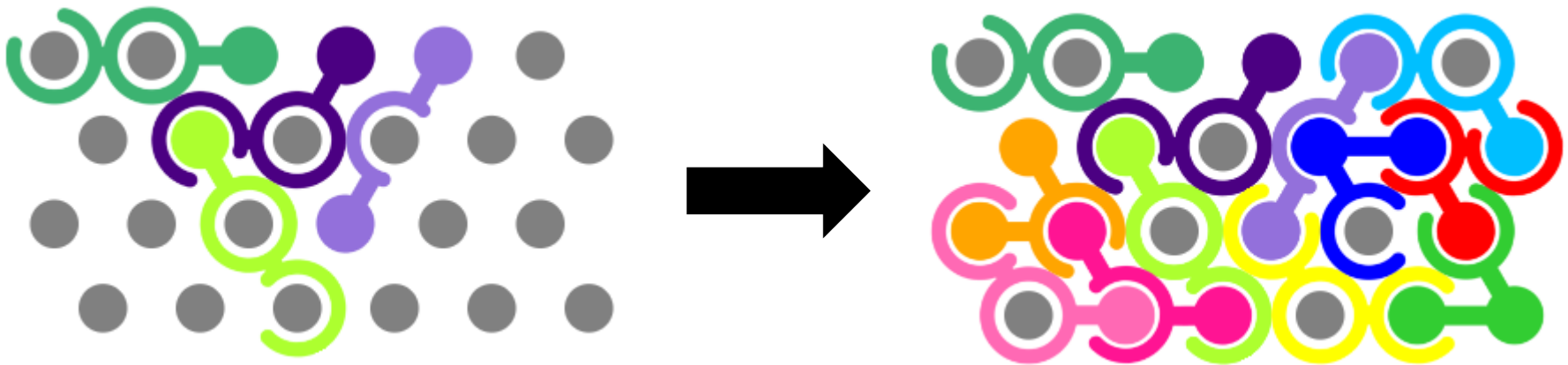
- Rotate – Scroll up/down



- Drag, Snap & Check – Drag by left mouse button

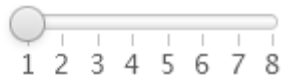


- Hint – Press “/” Key

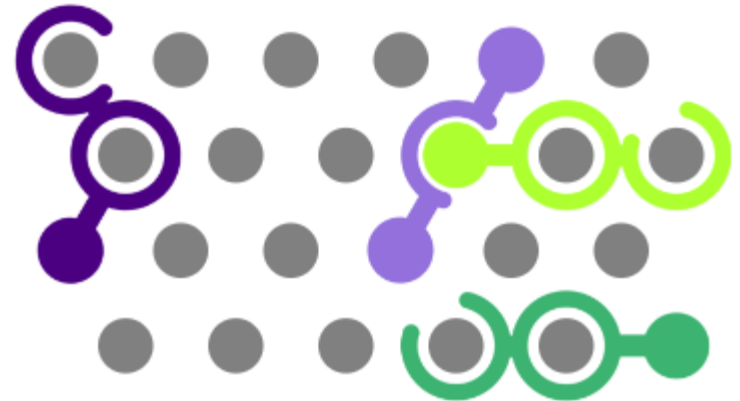
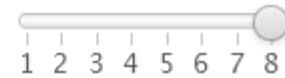


- Difficulty

Difficulty:



Difficulty:

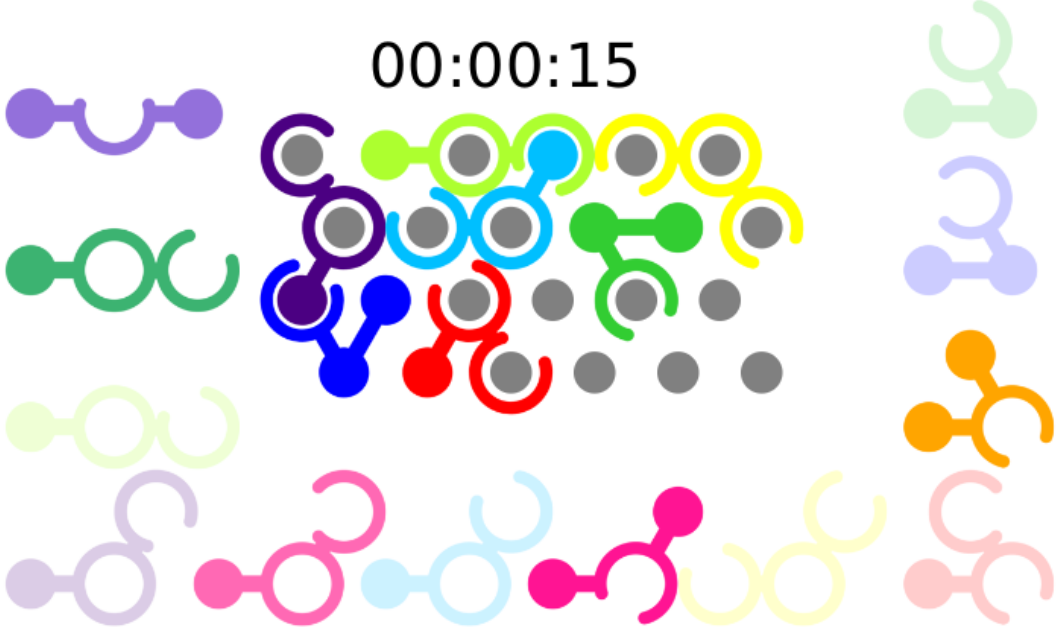




New Extension

• Timer & Help for New Users

00:00:15




HELP: training mode

I. operation

1. transparent ones are not draggable.
2. drag the piece to move and snap
3. right click to flip
4. scroll to rotate
5. press "\" for hint.
6. press restart btn to restart.
7. press newGame btn for a new game.
8. use slider for other difficulty
9. press adventure btn to adventure mode.

II. matching rules



Ada	00:01:40
Bob	00:03:20
Cindy	00:06:40
David	00:13:20
Emma	00:26:40
Flin	00:53:20
God	01:46:40
Hind	03:33:20
Iris	07:06:40
Jane	14:13:20

Difficulty:

1 2 3 4 5 6 7 8

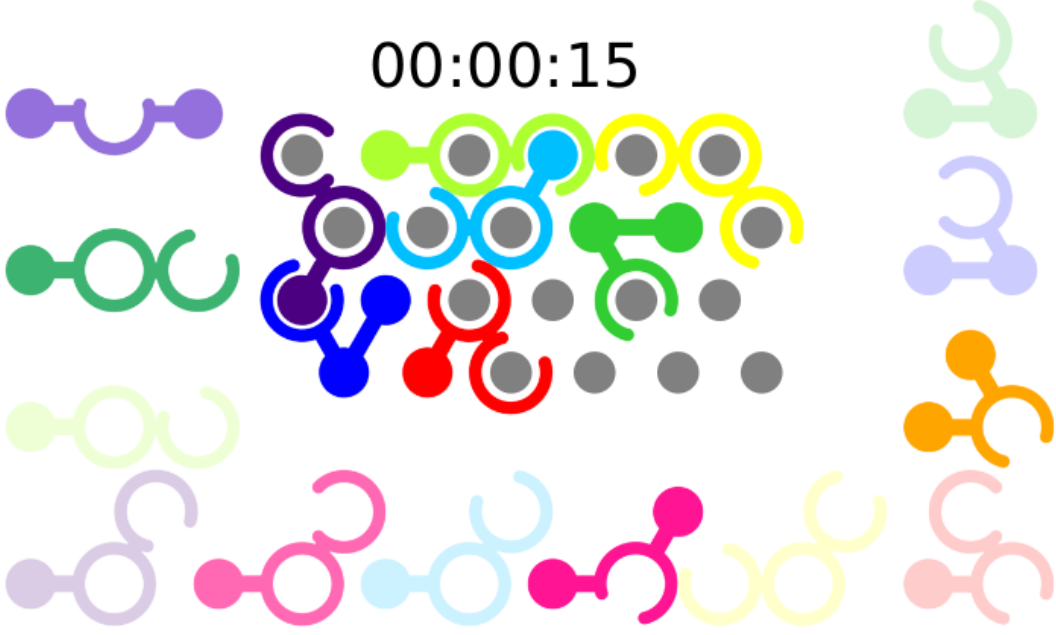
New Game

Restart

Adventure

• Training Mode & Adventure Mode

00:00:15




HELP: training mode

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Jane	14:13:20

Difficulty:
5

1 2 3 4 5 6 7 8


New Game

Restart

Adventure

• Training Mode & Adventure Mode

00:29:11



LEVEL 2

New Adventure
Training

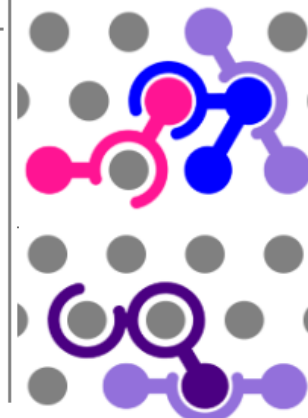
HELP: adventure mode.

IT'S COUNTING DOWN!

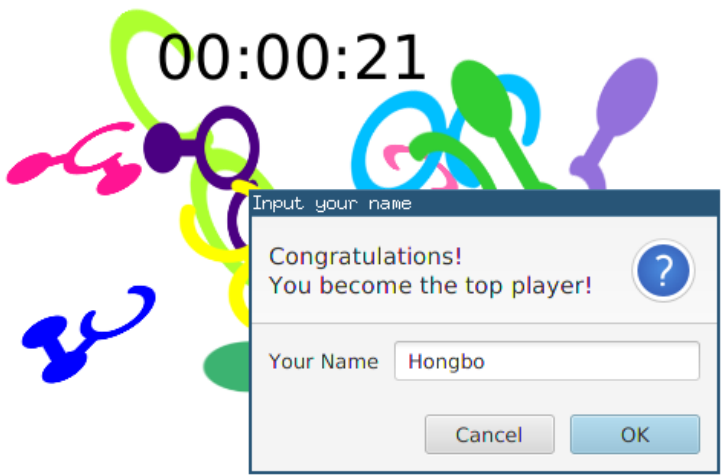
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6. press new adventure t to restart.
7. press training btn to training mode.

II. matching rules



• Score System

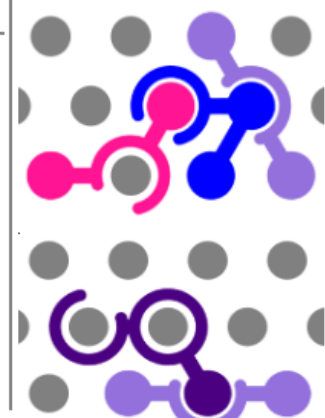


HELP: training mode

I. operation

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2. drag the piece to move and snap
3. right click to flip
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II. matching rules



Ada	00:00:20
Bob	00:00:40
Cindy	00:01:20
David	00:02:40
Emma	00:05:20
Flin	00:10:40
God	00:21:20
Hind	00:42:40
Iris	01:25:20
Jane	02:50:40

Congratulation!

Difficulty:

- Clearance Animation



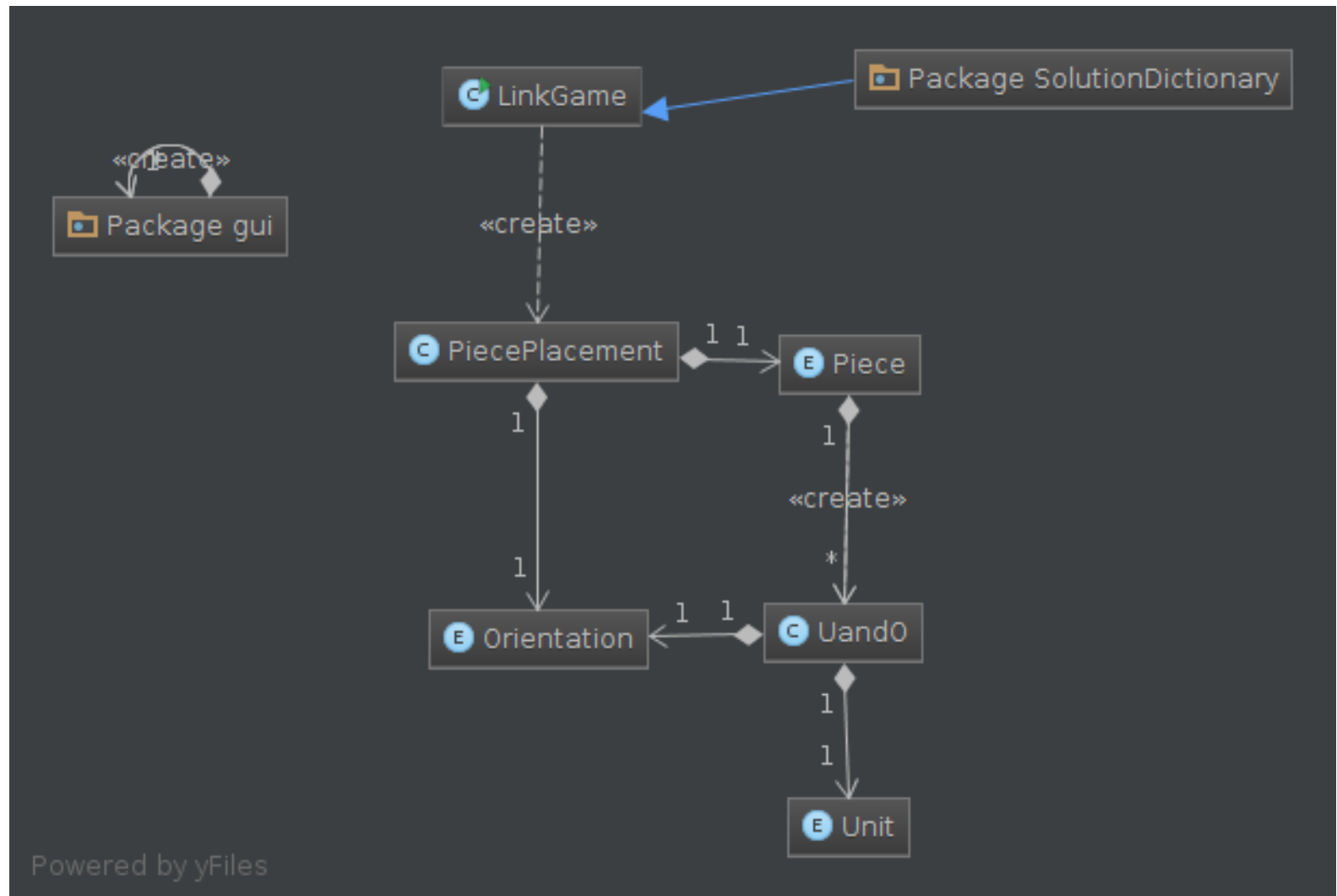


Play the Demo

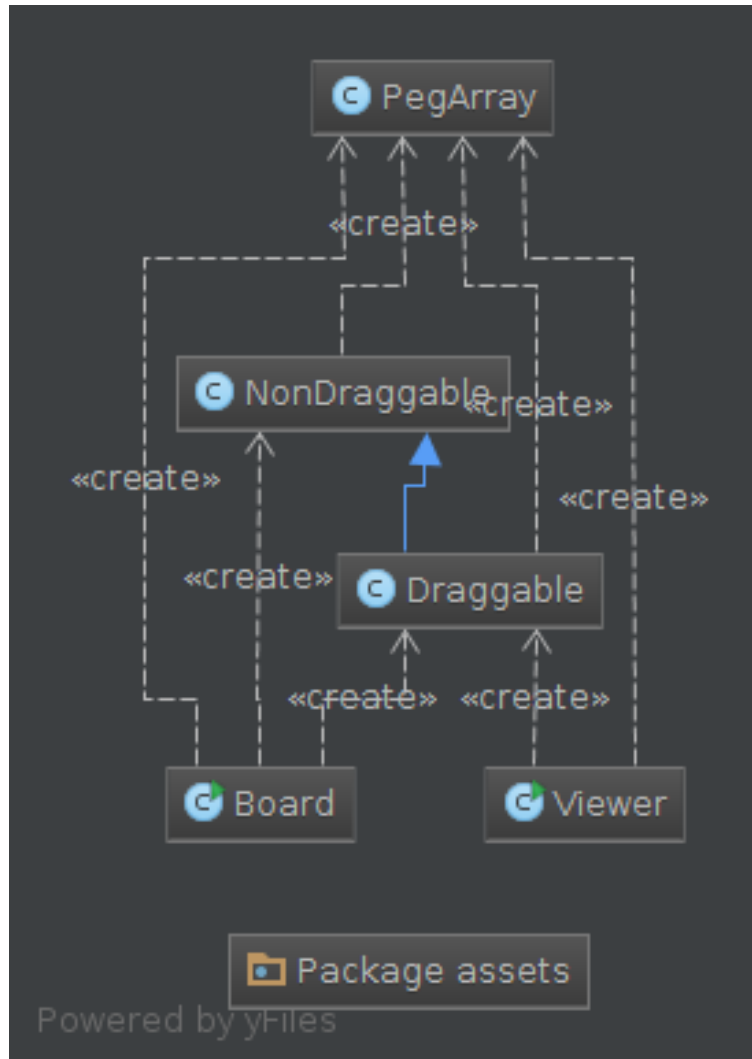


Design

- UML: logical part

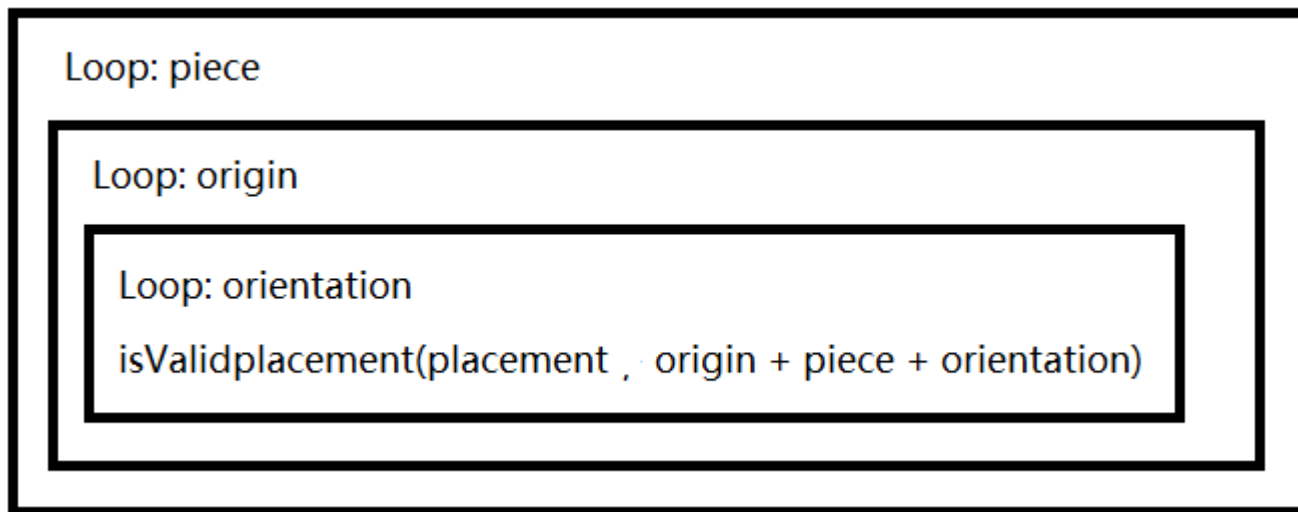


- UML: GUI part



Main Problem

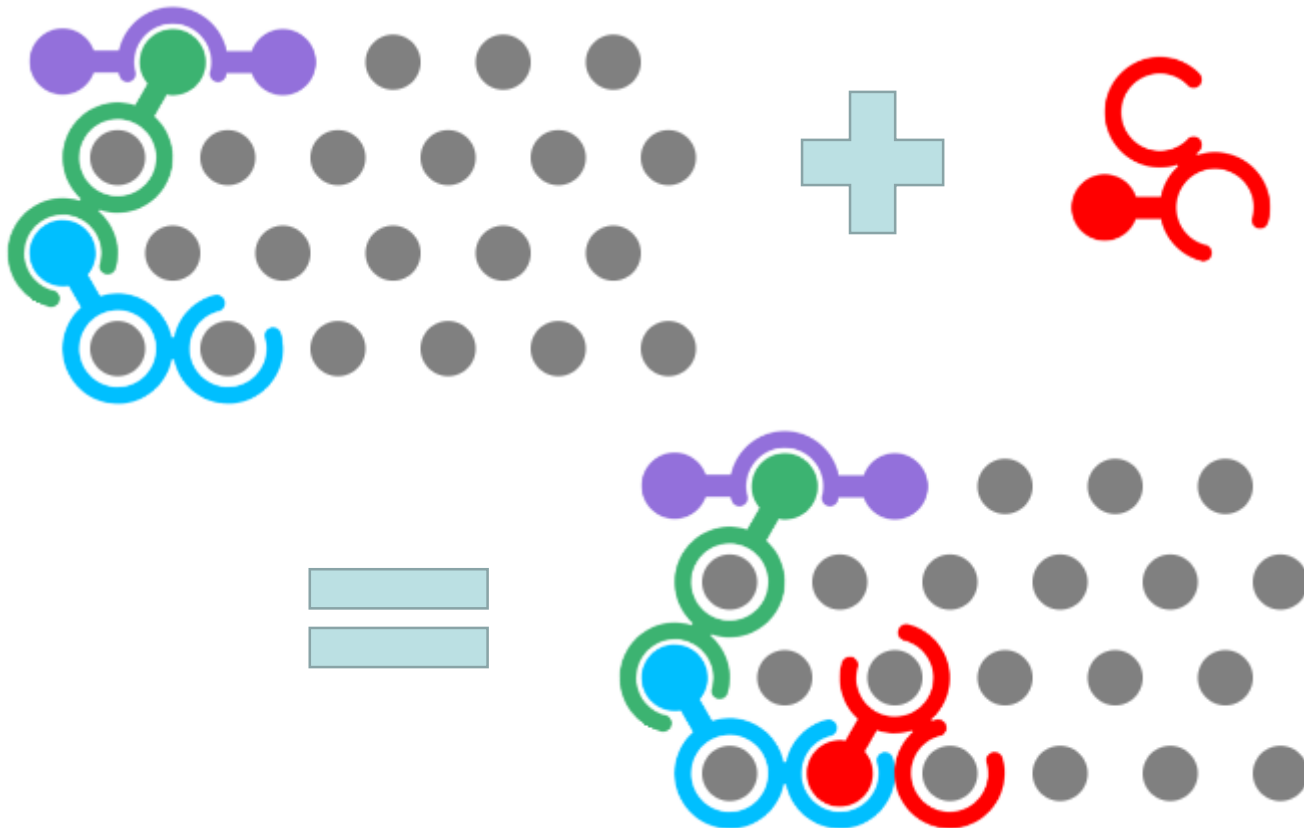
The method “`getSolution(placement)`”
spend a long time



Optimize:

1. Record the data from last call of the function.
Such as placement, occupation, peg index.

a. Only check the pegs occupied by the last piece



2. Pruning

- Neighbours of a piece
- Shape of a piece
- Unit in a piece

b. <Neighbor> Dead Point:

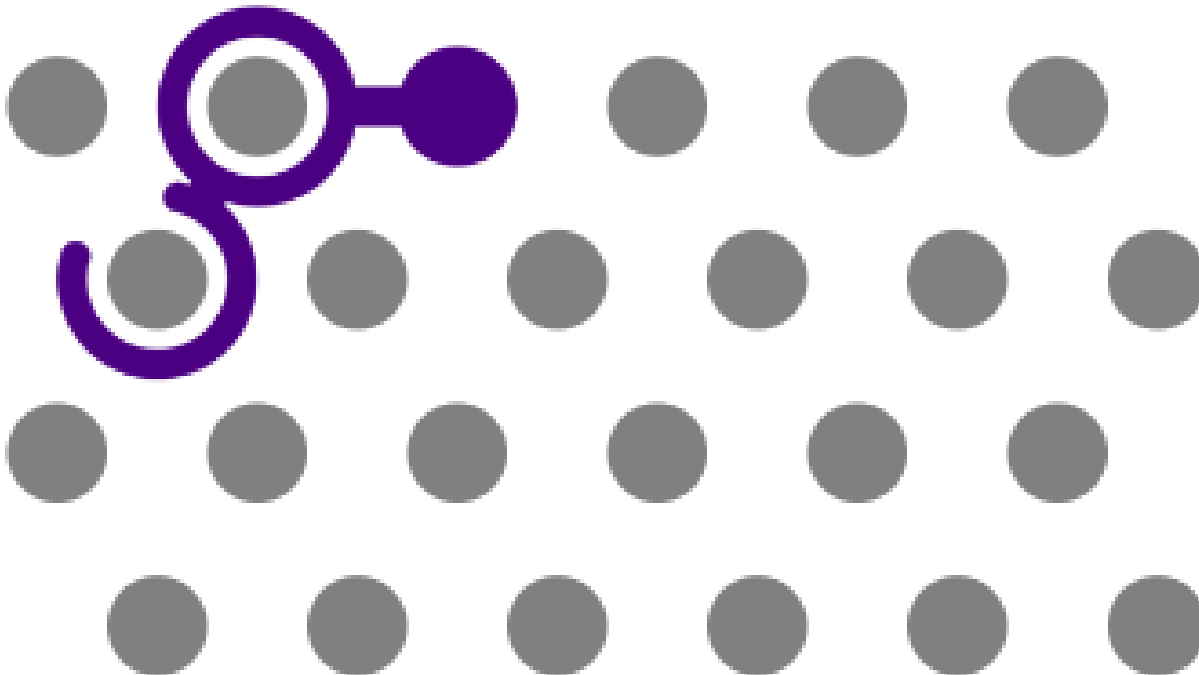
Check the neighbors

Number of the available peg < 2 ,
this peg is invalid (Dead Point)



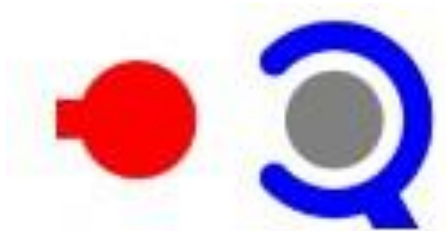
c. <Neighbor> Neighbor Dead Point.

Placing a piece on a peg will also affect the validity of its neighbors.



d. <Neighbor> Ring with one opening

Available but invalid peg:



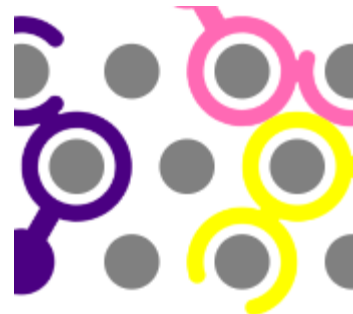
e. <Shape> Peg Neighbor & Shape

Straight angle: 

Valid:



Invalid:



e. <Shape> Peg Neighbor & Shape

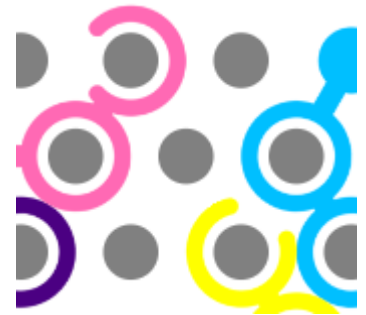
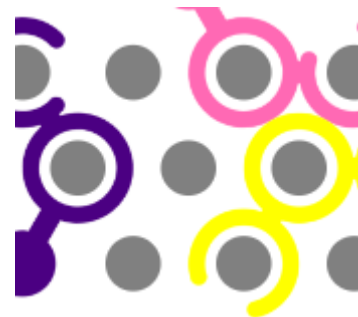
Acute angle:



Valid:



Invalid:



e. <Shape> Peg Neighbor & Shape

Obtuse angle:



Valid:



Invalid:



f. <Shape> Valid orientation:

















For example: Piece C

Piece C only has two orientation can fit this placement. Which are C and K.



g. <Unit> Valid origin
centre of the piece:

Valid origin:

Summary

- Required features
- Extensions
- Object Oriented
- Partially optimized, still have space to improve



Thanks