Design
Discussion
Ice breaker

Hi, I'm date Mike. Nice to meet me.
Containment and Game Design

What objects are in the Game?

What classes do we need?

What other design options are there?

- Rectangles vs. Wrapper Square class
- Factory Pattern class vs. Method in Game
- Data structures of the board
Check point: TimeHandler class

What is the TimeHandler class used for?

Which class contains the private inner class TimeHandler?

A. PaneOrganizer
B. Game
C. Piece
D. Pane

Correct Answer: Game
Piece design

- What are the similarities and differences between different pieces?
## Piece design

<table>
<thead>
<tr>
<th>Similarities</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Pieces are made up of exactly 4 TetrisSquares</td>
<td>● Piece layout</td>
</tr>
<tr>
<td>● Can be moved [left, right, down], rotated, and dropped in exactly the same way (note: square piece doesn’t rotate graphically)</td>
<td>● Color</td>
</tr>
<tr>
<td>● TetrisSquares are connected</td>
<td></td>
</tr>
<tr>
<td>● Center of Rotation</td>
<td></td>
</tr>
</tbody>
</table>
Piece design

- How should we model the similarities between pieces?
How should we randomize which piece is generated?

Factory Pattern!
Move validity

- Should the piece or the Game check if a piece can move or rotate?
When do you need to check for move validity?

1. Before a piece falls: Yes
2. After a piece falls: No
3. Before a piece rotates: Yes
4. After a piece rotates: No
5. Before a piece is created: Yes
Line clearing

What needs to happen when clearing lines?

1. Check if each square is occupied in that row
2. Graphically remove the full row
3. Graphically move each row above it down by one
4. Logically remove the full row
5. Logically move each row above it down by one
method clearLines:
  for each row from top to bottom:
    if rowIsFull(row):
      for each column:
        graphically remove node at that row and column
        logically remove node at that row and column

  for each row from cleared row to top of board:
    for each column:
      move square above down graphically
      move square above down logically
The key takeaways from this pseudocode are:

- Squares must be removed both graphically and logically
- Loop through the lines to clear more than one at a time
- Clear lines from top to bottom!
- Hand-simulate and come up with test cases
Any last questions?

Otherwise, Good luck!
Ethics Activity: Moral Decision Making for Autonomous Vehicles
Description of task: (work together as a section)!

You will be presented with random moral dilemmas that a machine is facing.

The car detects that the brakes failed, leaving it with two options: keep going and hit the pedestrians ahead of it, or swerve and hit the pedestrians on the other lane.

You are outside watching the scene, watching it from afar. Nothing will happen to you, but you are tasked with choosing what the car should do. Make a selection, based on what you think is the more morally “correct” solution.
Link to Task:
(click “start judging”)

http://moralmachine.mit.edu/
Discussion Questions

● Who should be given the power to decide what should be prioritized when making a critical moral decision?

● Does this change your view on autonomous vehicles in general? What are some decisions that have to be made about the technology that you were previously unaware of?