Lecture Notes

- Tetris due on Wednesday 11:59pm, Exam on Friday in lecture at 9am
    - Based on feedback we got this week
    - Mon-Wed: focus on Tetris
    - Thurs: study for exam
    - Lecture goal today: Get familiarized with animation code, and doing grid-based animations
    - Recitation will be more grid practice
    - Recitation will also start doing exam review problems throughout the week, so your review will be more spaced out.
- Tetris
    - Collaborative, you can work with up to 3-4 people in the class
    - Can look at, and debug each other's code
    - You must submit your own file though
    - Will discuss checkpoint + final at the end of class + how to pace yourself for the assignment
- Graphics style line limit: 25 lines
- Animations (15 mins)
    - Super cool, as we can now interact with our graphics!
    - Do so through three major functions
        - mousePressed, keyPressed, timerFired
        - Will be focusing on keyPressed and timerFired today
            - Most useful for Tetris
        - mousePressed will be covered in recitation today
    - MVC => model view controller
        - Model: stores all of our variables
        - View: draws our state on the canvas
        - Controller: changes our variables on input (mouse, keypressed, etc.)
    - Walk through of each function and how it works
        - Key concept: data => how all the functions communicate with each other
        - Init() => whatever you need, you can initialize it here
        - mousePressed => called whenever the user clicks the mouse
        - keyPressed => called whenever the user presses a key
        - timerFired => called with the passage of time (every 100 ms)
            - This function makes objects move on their own, essentially
        - Controllers update position of what we draw
        - redrawAll => simply takes these updated positions and draws them on the screen.
    - Basic example 1: circle on the screen (10 mins)
        - If I press "Up": it turns red
        - Every 100 ms, it will go up
        - Walkthrough of how to set up variables, and use the task description to figure out which controller to use
    - Big example today: Capture the flag (30 mins)

        - 10x10 grid, two players occupy a location on the grid
        - Yellow square => flag
        - First one to get to the square gets a point
        - First one to five wins
        - Takeaway: we can write some really cool games with our animation framework!
    - Class activity: circle collision (20 mins)
        - Write code to build off of the animation framework that does the following:
            - Circle 1 and circle 2 start off at random positions in the canvas
            - Every 100 ms, circle 1 moves 50 pixels down, and circle 2 moves 50 pixels to the right
            - If they collide, the game resets, and the circles turn blue. If they were already blue, they will now turn red.
    - Tetris walkthrough (5 mins)
        - Tetris has been posted
        - If you don't know who to collaborate with, please see me after class
        - Collaboration is optional, but highly recommended
            - Max group size 3-4 people
        - Writeup is split up into 7 steps
            - Checkpoint due tomorrow at 10pm: steps 1-4 done, and honest attempt on step 5 => 10 pts
            - Final checkpoint due Wed at 11:59pm: all 7 steps done
                - 90 pts
            - Bonus (step 8)
                - each bonus feature is worth 1 extra point
        - How to pace yourselves:
            - All steps can now be done after lecture today!
            - Only requires keyPressed and timerFired
            - Step 5 is the hardest part of the assignment
                - rotateFallingPiece => some math goes into figuring out center of the piece
                - Will give hint in lecture tomorrow
            - Come with your group to office hours to work!
                - Mine will be 12-3 again, so we've got 5 hours of OH every day!
                - 8-10 wasn't as packed, so we aren't doing those today, but we will have them tomorrow
                    - If we need them today, we will add them!
            - Good luck!
    - Attendance