

As you walk in

Quiz will start at the beginning of lecture

- Have pencil/pen ready
- Don't use your own scratch paper
 - We have some if you need it
- Silence phones



Quiz

Before we start

- Don't open until we start
- Make sure your name and Andrew ID are on the front
- Read instruction page
- No questions (unless clarification on English)

Additional info

- 20 min



15-112
Lecture 2

Week 6 Tue
Anim2: Grid Model

Instructor: Pat Virtue

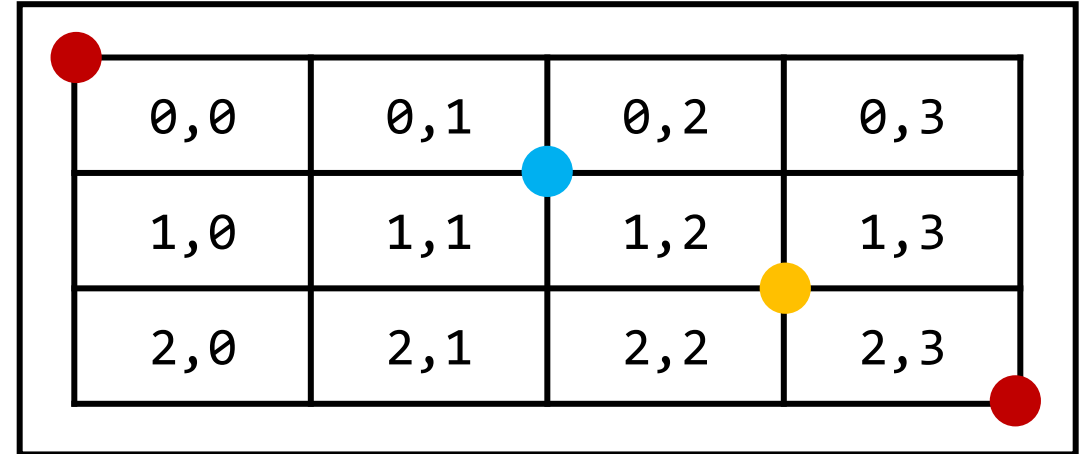
112 Graphics Grid Worksheet

Given:

app.width = 90
app.height = 55
app.margin = 5

Fill in the following grid with the value return for each call to:

`x0, y0, x1, y1 = getCellBounds(app, r, c)`



getCellBounds(app,0,0)

getCellBounds(app,0,1)

getCellBounds(app,0,2)

getCellBounds(app,0,3)

5, 5, ____, ____

getCellBounds(app,1,0)

getCellBounds(app,1,1)

getCellBounds(app,1,2)

getCellBounds(app,1,3)

____, ____, ____, ____

getCellBounds(app,2,0)

getCellBounds(app,2,1)

getCellBounds(app,2,2)

getCellBounds(app,2,3)

____, ____, 85, 50

Announcements

Pre-reading/checkpoint

None for next week

Midterm 1

Next Thursday

- Thu 10/13, in lecture

Midterm 2

Date change!

- Now: Thu 11/17
- See Piazza, especially if this causes a conflict (form due Tue 10/11)

Announcements

112 Puzzle Hunt!

This Sunday 10/9, 1:30 - 4:00 pm

- See Piazza for details including registration form, due tonight!

Animations 2: Grid Models

MVC

model

Control

Event Loop

View

runApp()

appStarted(app)

redrawAll(app, canvas)

clearCanvas(canvas)

mousePressed(app, event)

keyPressed(app, event)

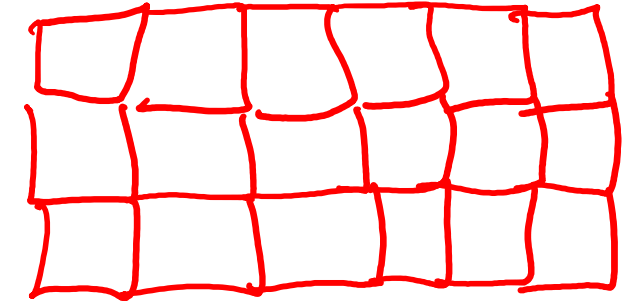
timerFired(app)

View

Uses the information in the model (app) to draw things on the canvas

Starts with a call to `redrawAll(app, canvas)`

- Includes any helper functions that are called
- Any function that uses canvas is part of the view



Example: `drawGrid`

```
def redrawAll(app, canvas):  
    drawGrid(app, canvas)
```

```
def drawGrid(app, canvas):
```

```
    for r in range(←):  
        for c in range(←):  
            drawCell(app, canvas,  
                    r, c)
```

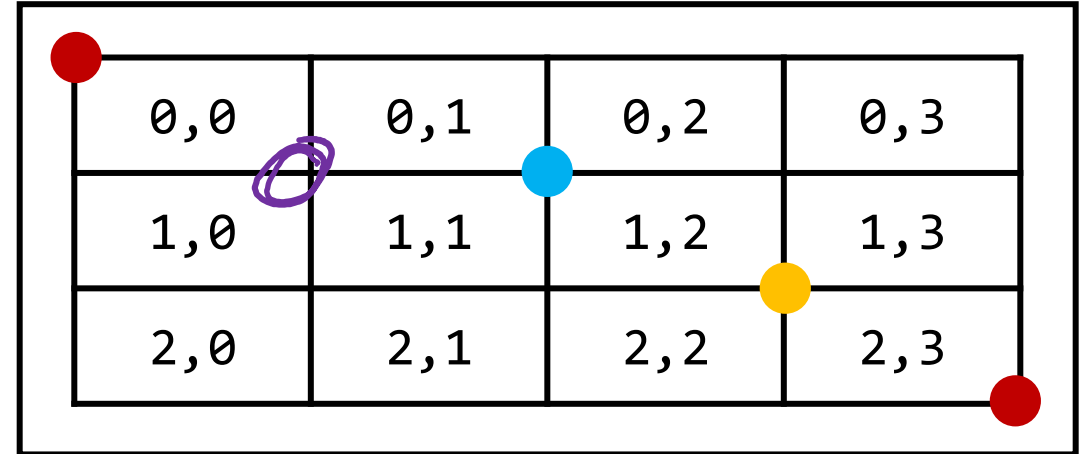
112 Graphics Grid Worksheet

Given:

app.width = 90
app.height = 55
app.margin = 5

Fill in the following grid with the value return for each call to:

`x0, y0, x1, y1 = getCellBounds(app, r, c)`



getCellBounds(app,0,0) 5, 5, __, __	getCellBounds(app,0,1)	getCellBounds(app,0,2)	getCellBounds(app,0,3)
getCellBounds(app,1,0)	getCellBounds(app,1,1)	getCellBounds(app,1,2) __, __, __, __	getCellBounds(app,1,3)
getCellBounds(app,2,0)	getCellBounds(app,2,1)	getCellBounds(app,2,2)	getCellBounds(app,2,3) 65, 35, 85, 50

Worksheet: Exercise 1

Answer form linked on Piazza

```
getCellBounds(app, 0, 0)
```

```
5, 5, _____, _____
```

$x1$
25

$y1$
20

0,0	0,1	0,2	0,3
1,0	1,1	1,2	1,3
2,0	2,1	2,2	2,3

112 Graphics Grid Worksheet

Given:

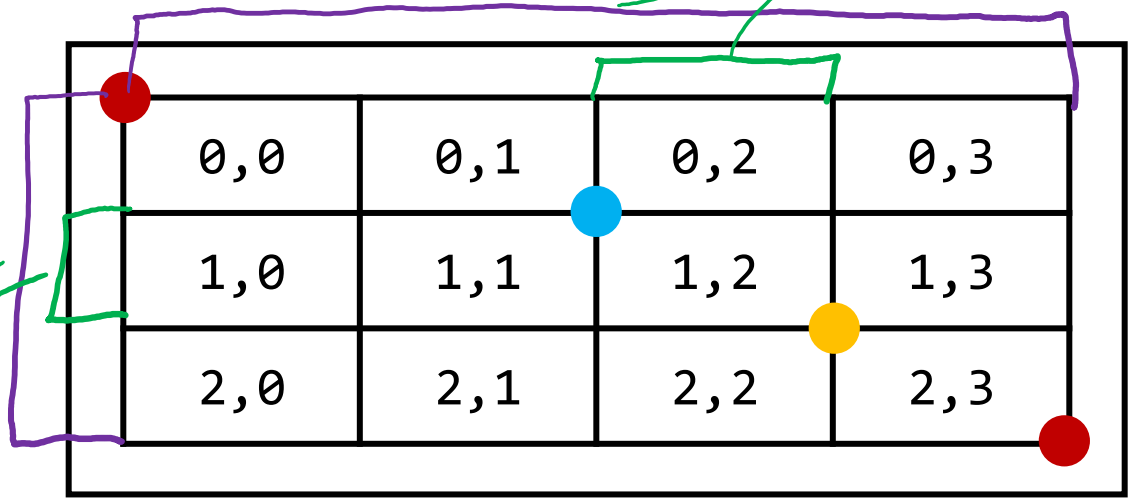
app.width = 90
 app.height = 55
 app.margin = 5

Fill in the following grid with the value return for each call to:

$x_0, y_0, x_1, y_1 = \text{getCellBounds}(\text{app}, r, c)$

$55 - 2 * 5 = 45$
 $45 / 3 = 15$

$90 - 2 * 5 = 80$
 $80 / 4 = 20$



$\text{getCellBounds}(\text{app}, 0, 0)$	$\text{getCellBounds}(\text{app}, 0, 1)$	$\text{getCellBounds}(\text{app}, 0, 2)$	$\text{getCellBounds}(\text{app}, 0, 3)$
5, 5, ____, ____			
$\text{getCellBounds}(\text{app}, 1, 0)$	$\text{getCellBounds}(\text{app}, 1, 1)$	$\text{getCellBounds}(\text{app}, 1, 2)$	$\text{getCellBounds}(\text{app}, 1, 3)$
		____, ____, ____, ____	
$\text{getCellBounds}(\text{app}, 2, 0)$	$\text{getCellBounds}(\text{app}, 2, 1)$	$\text{getCellBounds}(\text{app}, 2, 2)$	$\text{getCellBounds}(\text{app}, 2, 3)$
			____, ____, 85, 50

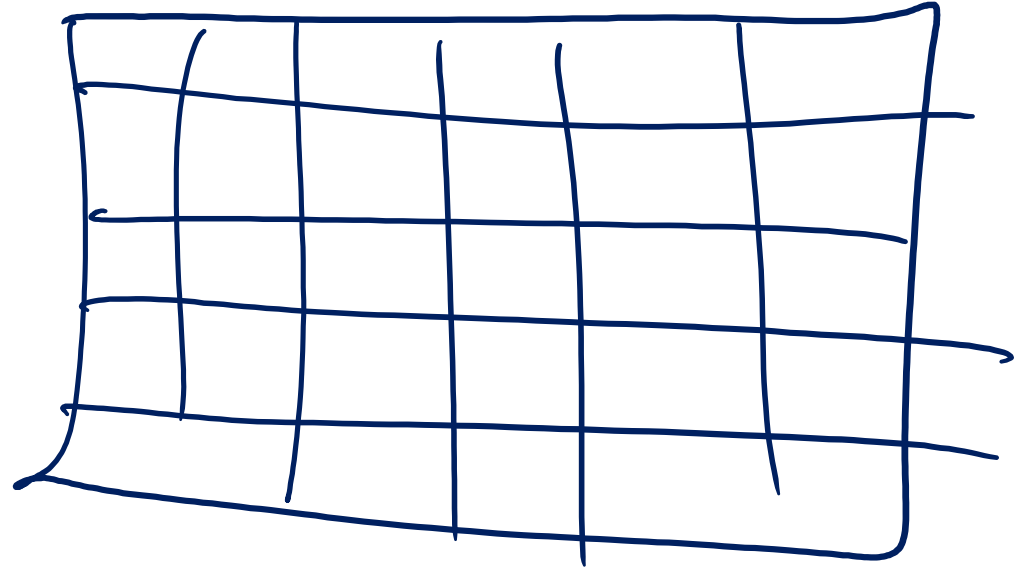
Model to view

FR practice!

Given:

app:

.width, .height, .margin



At the bottom of your worksheet implement:

```
def getCellBounds(app, r, c):
```

for a generic grid

Model to view

FR practice!

Given:

app:

`.width, .height, .margin , .numRows, .numCols`

At the bottom of your worksheet implement:

```
def getCellBounds(app, r, c):
```

for a generic grid

Poll 1

Given:

app:

.width, .height, .margin, .numRows, .numCols

What temporary variables should we create in `getCellBounds(app, r, c)`?

i.e., what temporary values do we need to create?

Select ALL that apply.

A. cellWidth

B. cellHeight

C. cellDiagonalDist

D. gridWidth

E. gridHeight

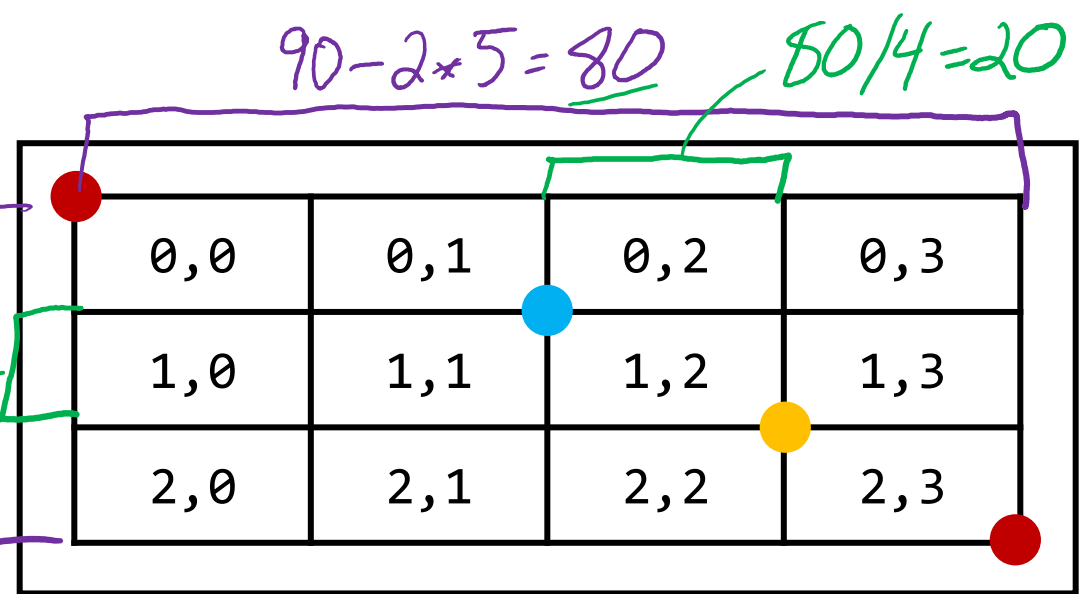
F. gridDiagonalDist

112 Graphics Grid Worksheet

Given:

app.width = 90
 app.height = 55
 app.margin = 5

$gridHeight = 55 - 2 * 5 = 45$
 $cellHeight = 45 / 3 = 15$



Fill in the following grid with the value return for each call to:

$x0, y0, x1, y1 = getCellBounds(app, r, c)$

getCellBounds(app,0,0) 5, 5, 25, 20	getCellBounds(app,0,1) 25, 5, 45, 20	getCellBounds(app,0,2) 45, 5, 65, 5	getCellBounds(app,0,3) 65, 5, 85, 5
getCellBounds(app,1,0) 5, 20, 25, 35	getCellBounds(app,1,1) 25, 20, 45, 35	getCellBounds(app,1,2) 45, 20, 65, 35	getCellBounds(app,1,3) 65, 20, 85, 35
getCellBounds(app,2,0) 5, 35, 25, 50	getCellBounds(app,2,1) 25, 35, 45, 50	getCellBounds(app,2,2) 45, 35, 65, 50	getCellBounds(app,2,3) 65, 35, 85, 50

Grid Example

See notes for equivalent example:

[Animations Part 2: Case Studies](#)

MVC

Event Loop

