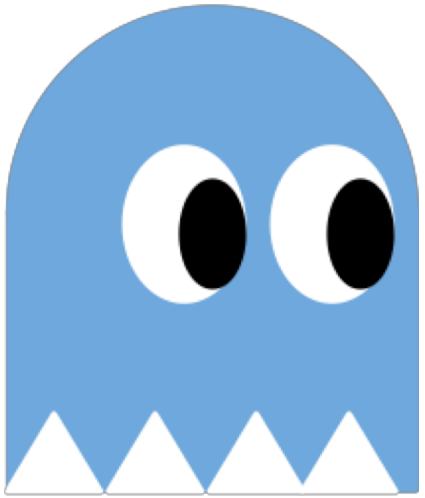
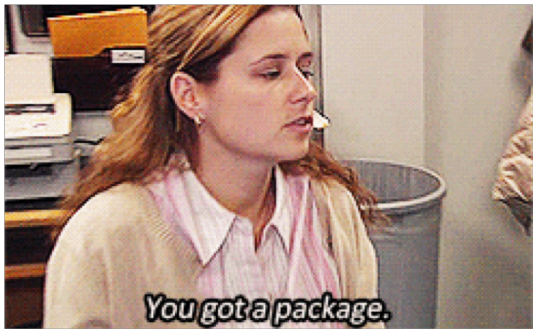
Cartoon Help Slides



Topics

- Shape package
- Design
- Layout Panes
- Graphical and Logical Containment
- EventHandler
- Timeline
- Why isn’t my key input working?
- Step by Step (coding incrementally)
- Helpful Documentation

`shape` package



- To use a shape from the `shape` package type `import javafx.scene.shape.<shapename>;`
  - For example: `import javafx.scene.shape.Rectangle;`

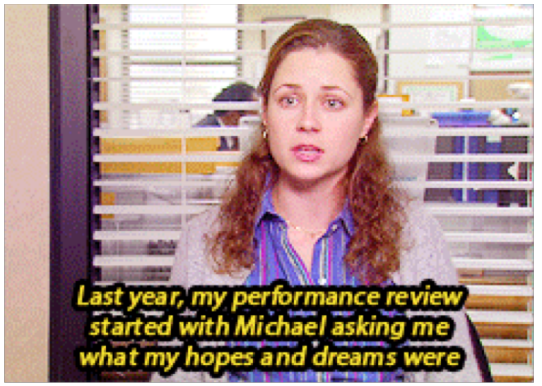
- Ex. instantiating a new rectangle:

```
Rectangle rectangle = new Rectangle(100, 200, Color.BLACK);
```

- Look at Graphics II lecture for reference on how to set properties of shapes

- Also, check out the JavaFX Shapes Documentation on our website

Design (Part 1)



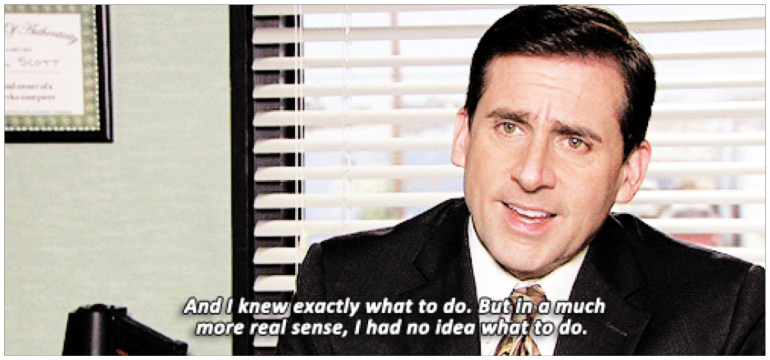
- What do you want your Cartoon to do?
- Draw a picture of what it will look like
  - This is part of the mini-assignment!
- Think about the classes you'll need
  - which can just be JavaFX components?
  - which will you need to create?
- Consider what warrants `public` vs. `private` methods and classes
  - remember - split up your constructor into helper methods. Should these be `public` or `private`?

Design (Part 2)

- How will you contain your classes graphically?
  - remember the scene graph

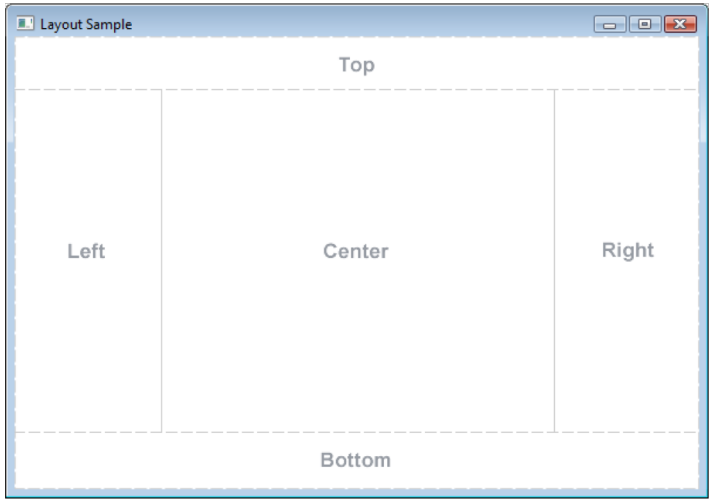
- Determine what each of your classes should do

- Determine which classes need to know about other classes
  - this should impact your *logical* containment. More later...



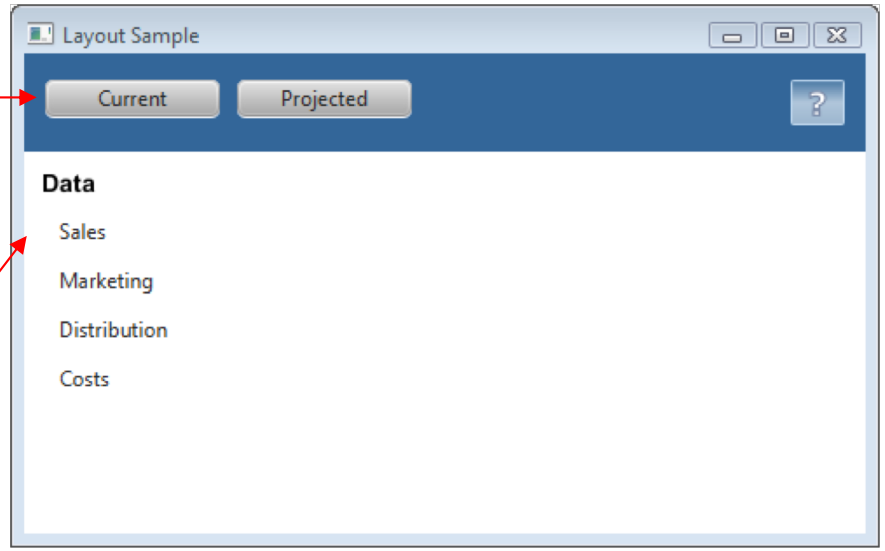
Layout Panes (Part 1)

- `BorderPane borderPane = new BorderPane();`
  - arranges components in five regions
    - Top, Left, Center, Right, Bottom
    - unused regions are collapsed - they don't show up!



Layout Panes (Part 2)

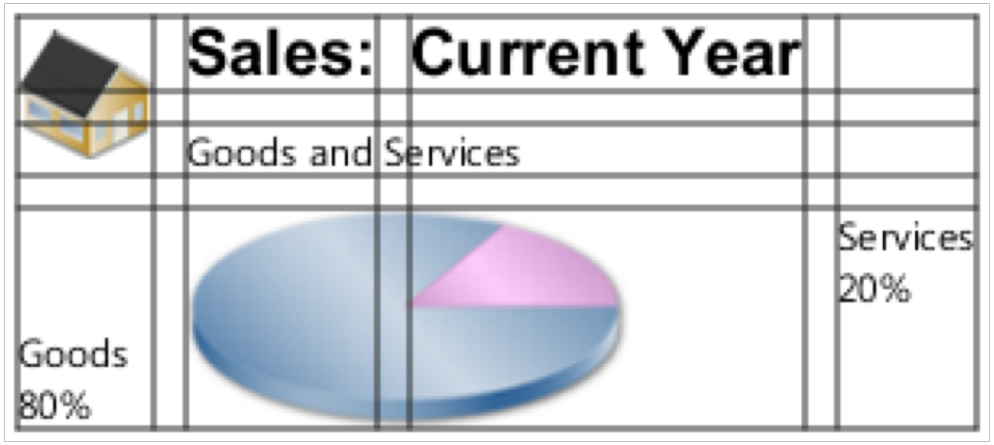
- `HBox hBox = new HBox();`
  - horizontally aligns nodes
- `VBox vBox = new VBox();`
  - vertically aligns nodes



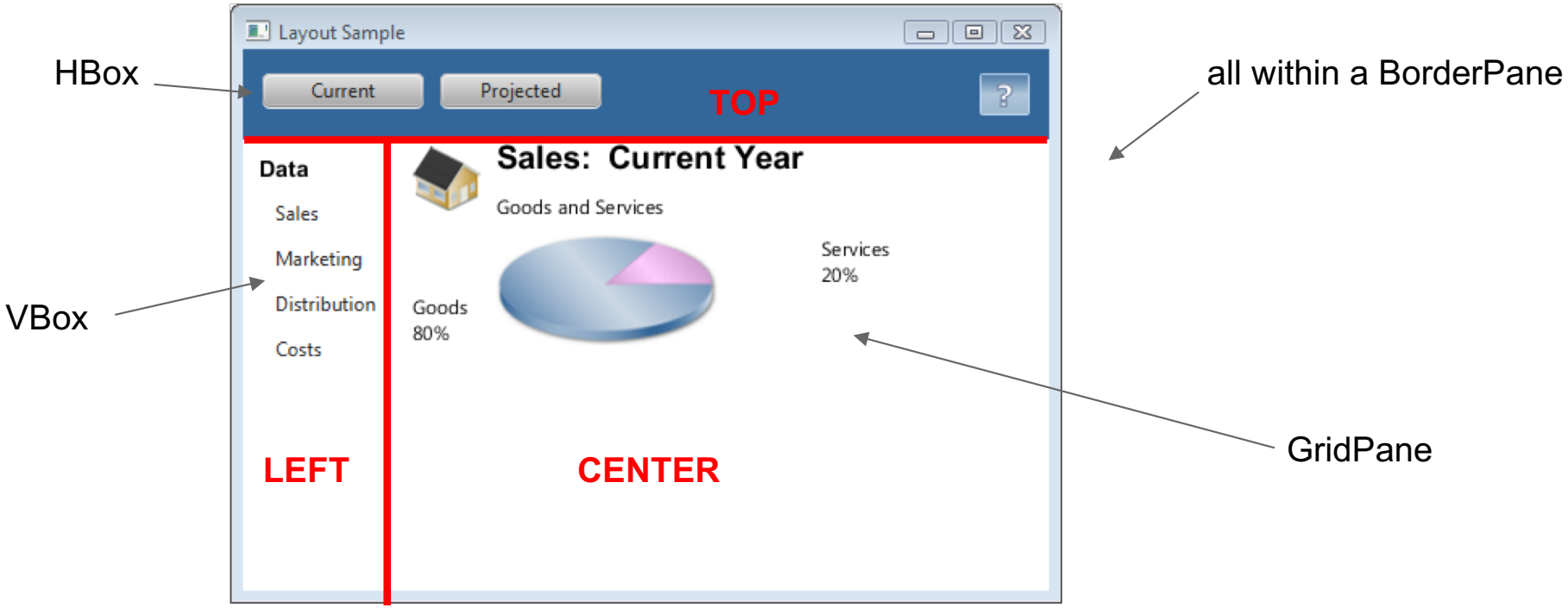
combined `HBox` and `VBox`

Layout Panes (Part 3)

- `GridPane gridPane = new GridPane();`
  - create a flexible grid of rows and columns in which to lay out nodes

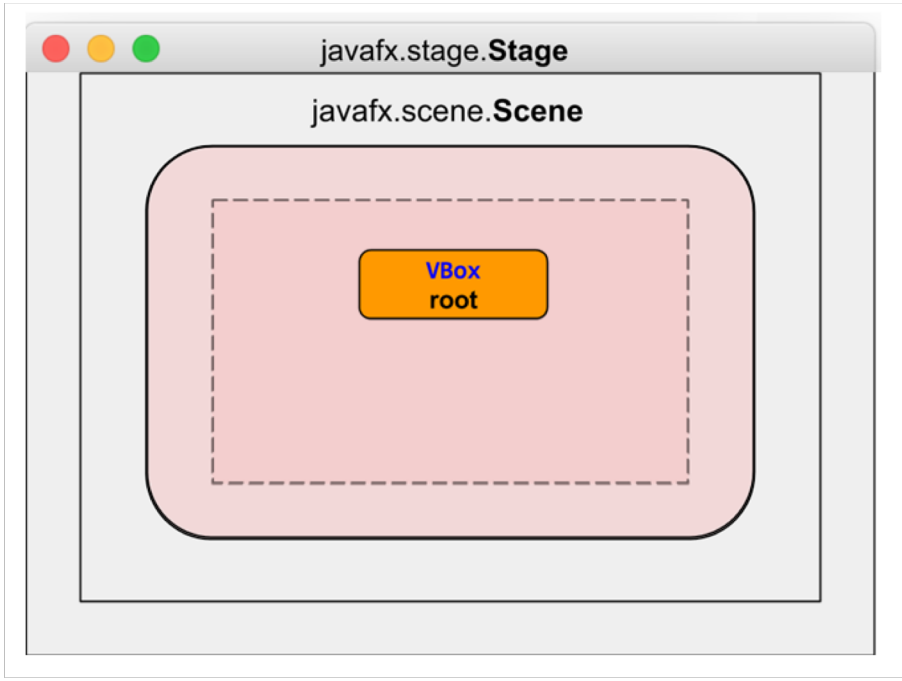


You Can Contain Multiple Panes



Note: Unused regions of the BorderPane are not shown; they are automatically hidden!

Graphical and Logical Containment



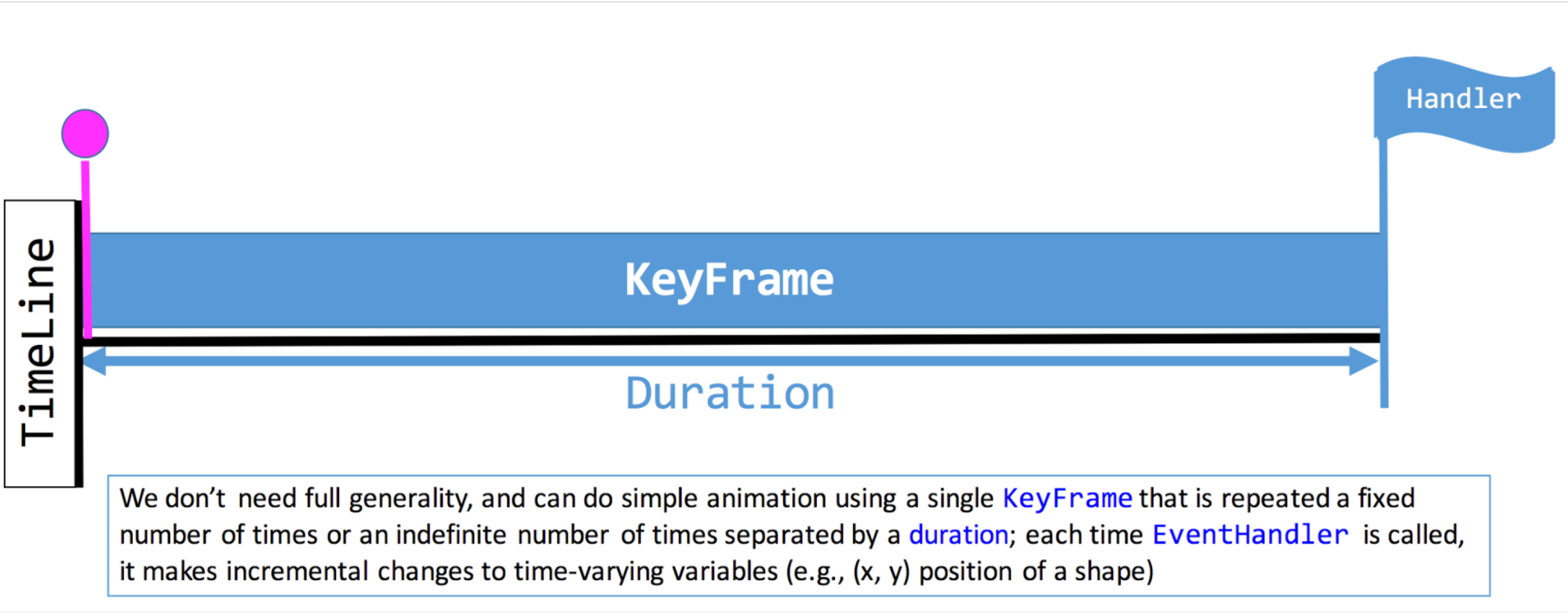
- What's the graphical containment of this program? How does this differ from logical containment? Consider scene graph!

- Reminder: Logical containment is like diagrams you've been making all along
- ex. what classes instantiate other classes (containment), and what classes know about other classes (association).

EventHandler

- How do we make a `Button` print out something?
  - create a new `Button`
  - create **one** class that implements `javafx.event.EventHandler<ActionEvent>`
    - What method must this class define? What would the body be?
  - what should this class have in its parameters?

Timeline (part 1)



We don't need full generality, and can do simple animation using a single `KeyFrame` that is repeated a fixed number of times or an indefinite number of times separated by a duration; each time `EventHandler` is called, it makes incremental changes to time-varying variables (e.g., (x, y) position of a shape)

link to lecture

Timeline (part 2)

1. Instantiate an instance of `KeyFrame`

```
KeyFrame kf = new KeyFrame(Duration.millis(1),
new ShapeHandler());
```

2. Write a "`ShapeHandler`", a class that implements `EventHandler<ActionEvent>`
    a. note that you don't *have* to name it `ShapeHandler`
    b. what method must this class have?

Timeline (part 3)

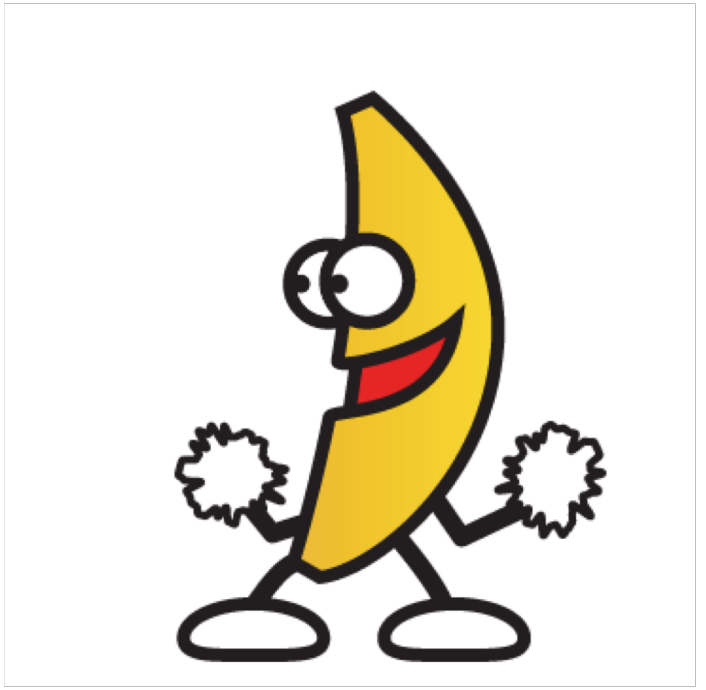
3. Then we instantiate a `Timeline` and pass in our `KeyFrame` and set the `CycleCount` to `INDEFINITE`

```
Timeline timeline = new Timeline(kf);
timeline.setCycleCount(Animation.INDEFINITE);
```

Timeline (part 4)

4. Start the `Timeline`!

```
timeline.play();
```

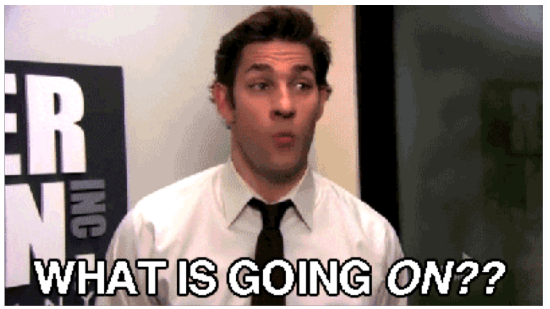


For More on Timelines

- See the Graphics II lecture
- Check out the `Timeline` section of the JavaFX Guide
- See the Javadocs for `Timeline`

Why isn't my key input working?

- The "focus" may be on the wrong pane!
- Check out the `setFocusTraversable()` method *wink wink*
- In order to have your program correctly respond to key input, focus must be set on the Pane that *listens* for your KeyEvents…
- Try setting focus traversable to be `true` on this Pane!



Key Input (part 2)

- To be doubly sure (make sure no other greedy Node is stealing the focus)… You can even explicitly set their Focus Traversables to be false!

Step by Step (Part 1)

Review the Graphics I - III lecture slides, the JavaFX guide, and the JavaFX lab before starting!

- Fill in your `App` to set the title of the `Stage`
- Instantiate an instance of top-level class `PaneOrganizer`
- Create a `Scene` with a reference to the root `Pane` (which is created in `PaneOrganizer`)
- Don't forget to set the `Stage`'s `Scene`!
- Show the `Stage`!

Step by Step (Part 2)

After *each* step, make sure your code compiles *and* runs!

- Instantiate an instance of your `Cartoon` class in `PaneOrganizer`
  - `Cartoon` can be totally empty at this point!
- Give `Cartoon` a root pane, and add it in the `PaneOrganizer`
- Get a quit button to work in `PaneOrganizer`
  - This should probably happen in a separate `VBox` or `HBox` contained in `PaneOrganizer`
- Add composite shape(s), label, and other necessary parts to `Cartoon`

Step by Step (Part 3)

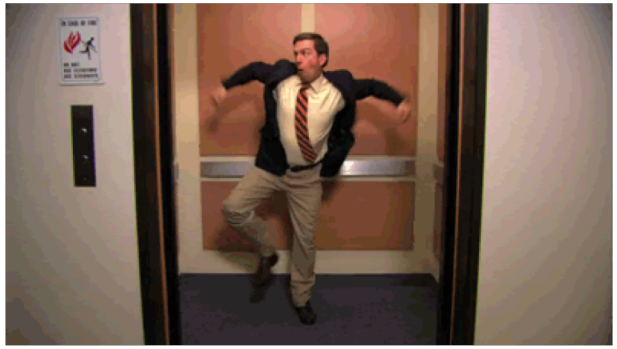
After *each* step, make sure your code compiles *and* runs!

- In your `Cartoon` class, add a `Timeline` and `EventHandler` to get your composite shape to move at a constant speed

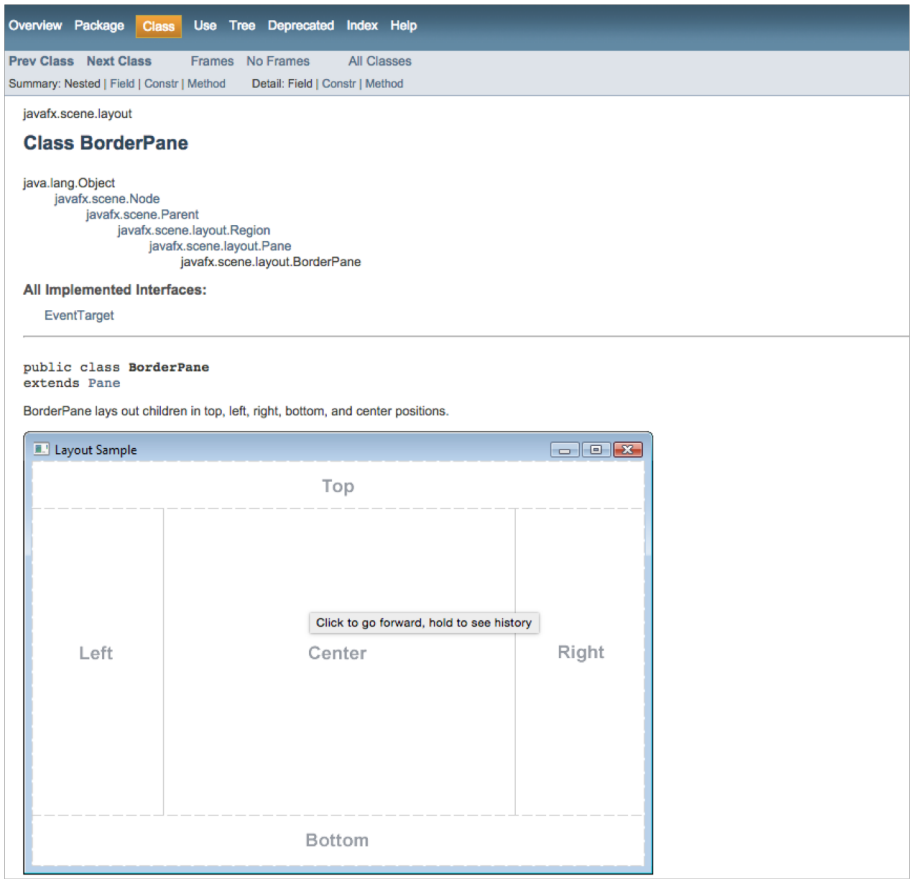
- In your `Cartoon` class, add an `EventHandler` to allow your user to change something visually based on key input

- Make sure you've met all of the requirements
  - e.g. does your `Label` update based on the Cartoon?

- Do a little dance cuz u earned it!!



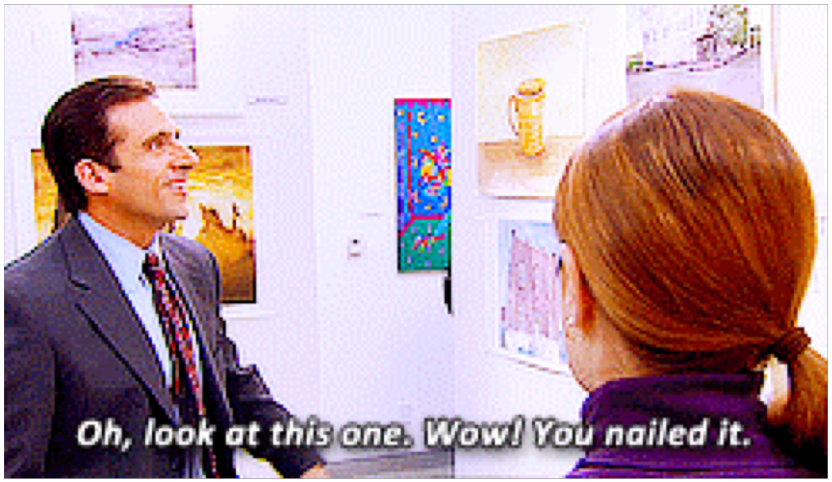
Helpful Documentation



- We have prepared a lot of useful documentation for you!
- JavaFX Shape Docs
- JavaFX Guide

- Javadocs also contain lots of helpful information
  - you will learn more about these in lab next week!
- Whenever you want to find Javadocs of any class, we recommend to Google “<class> Javafx Javadocs”

Good luck!



- Happy painting! Be creative, and as always…

Start early

Start today

Start yesterday!