Reminders

- An email has been broadcasted with grading scheme changes and dates for the completion of the remaining deliverables.
- Assn 4 is due March 23, 7pm.
- Quiz 3 March 26 – to be confirmed.
- Assn 5 due last day of term – April 3, 7pm.
- Final Exam, written in onQ – date to be confirmed, but expect the same date as used by the old written exam schedule.

This Video

- More JavaFX Containers and Their Layout Managers:
  - AnchorPane.
  - FlowPane.
  - GridPane.

AnchorPane

- Components are anchored at a specified distance from the edge of the Pane using the static methods:
  - setLeftAnchor
  - setTopAnchor
  - setRightAnchor
  - setBottomAnchor

- “value” is in pixels as a distance from the border of the pane. Why a double?

AnchorPane, Cont.

- Note the effect of window re-sizing.
- Note how two or more anchors can combine to change the size of the control away from its calculated/preferred size.
- This is another relatively crude layout manager that might be best used to lay panes out in a window.

Aside – Pane “Children”

- Nodes added to a pane are also called “Children”.
- Add nodes to a pane by invoking the .add() or .addAll() methods on the children collection owned by the pane. The .addAll() method can also accept a Collection<? extends Node> object.
- The .getChildren() method of the pane object “exposes” its children collection.
FlowPane

- Piles children into the pane in the order in which they are added from left to right (by default).
- The children wrap around if the available space is full.
- See FXProjectFlowPane. See what happens when you re-size the window. Play with gaps, padding, default sizes and alignment.
- Note the use of an ArrayList<Button> to hold buttons.
- Why are some buttons larger than others?

GridPane

- (My favourite…)
- Possibly the hardest Pane to use but it offers the most control. Easiest to use SceneBuilder with this one.
- Grid based – you need to choose which position in the grid you will use for your component.
- A column is sized to the widest component in that column.
- Similarly the height of a row is determined by the tallest component in the row.

GridPane, Cont.

- You can add internal gaps between rows and columns using .setHgap() and .setVgap().
- Set gaps on the outside of the pane using .setPadding() and supply an Insets object.
- The pane has two .add() methods you can use, one at a time, to add components:
  - .add(node, column#, row#)
  - .add(node, column#, row#, columnspan, rowspan)

GridPane, Cont.

- During development invoke .setGridLinesVisible(true) to see the lines in the grid.
- See FXProjectGridPane
- Play with grid positioning, gaps in the grid, column spanning and alignment.