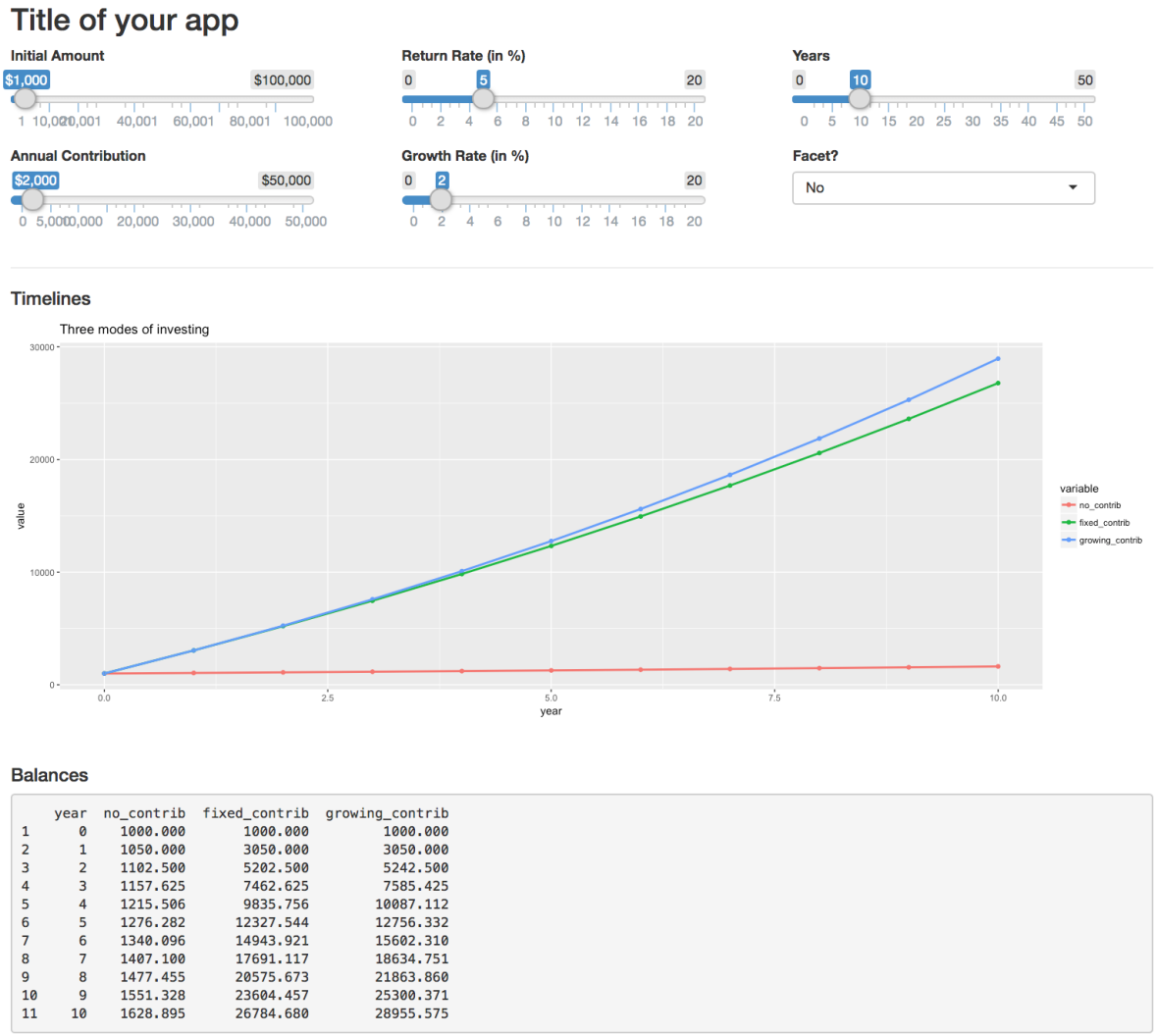
Workout 02: Shiny App

Stat 133, Spring 2019

The purpose of this assignment is to create a shiny app that allows you to visualize—in an interactive way—some of the saving/investing scenarios considered in warmup 6. Your app should have a similar appearance to the following screenshot:

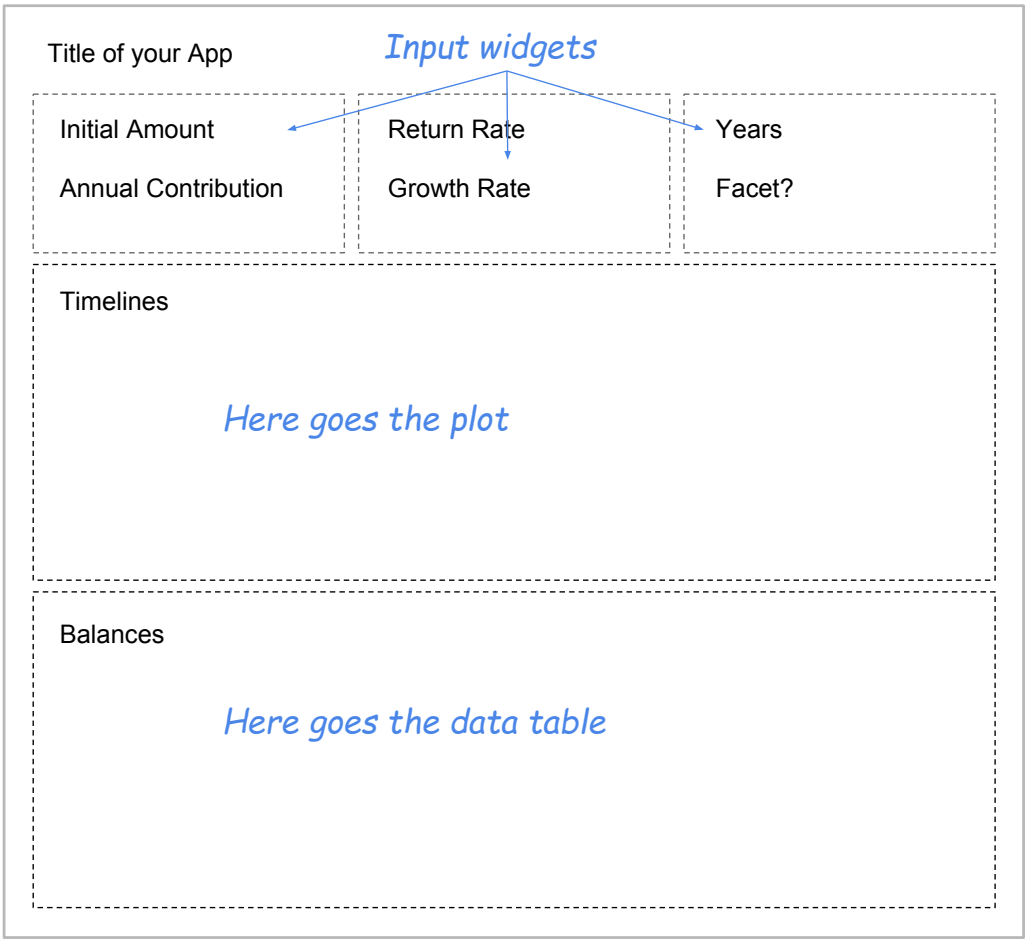


	year	no_contrib	fixed_contrib	growing_contrib
1	0	1000.000	1000.000	1000.000
2	1	1050.000	3050.000	3050.000
3	2	1102.500	5202.500	5242.500
4	3	1157.625	7462.625	7585.425
5	4	1215.506	9835.756	10087.112
6	5	1276.282	12327.544	12756.332
7	6	1340.096	14943.921	15602.310
8	7	1407.100	17691.117	18634.751
9	8	1477.455	20575.673	21863.860
10	9	1551.328	23604.457	25300.371
11	10	1628.895	26784.680	28955.575

The idea is to implement an app for the saving-investing modalities described in section 4 of warmup 6.

Shiny App Layout

Your app should have a layout like the following diagram (see specifications below).



As you can tell from the above diagram, the layout of the app involves four distinctive elements:

- title: main title for your app (give it a meaningful name)
- input widgets: 6 widgets arranged in three columns
- plot: an output graph to display the yearly saving balances
- table: an output table for the data frame with the yearly balances

Input widgets

- Slider input for *Initial Amount*, from \$0 to \$100,000, in steps of \$500. Default value of \$1,000.
- Slider input for *Annual Contribution*, from \$0 to \$50,000, in steps of \$500. Default value of \$2,000.

- Slider input for *Return Rate* in percentage, from 0% to 20%, in steps of 0.1%. Default value of 5%.
- Slider input for *Growth Rate* in percentage, from 0% to 20%, in steps of 0.1%. Default value of 2%.
- Slider input for *Years*, from 0 to 50, in steps of 1. Default value of 20.
- Select input for *Facet?*. Choices: "No", and "Yes".

Timeline Graphs

Below the input widgets, your app should display a plot for the timeline charts of each savings modality.

Balance Table

Below the output plot, your app should display the data frame with the yearly balance in each savings modality.

Resources

You may want to take a look at the Shiny gallery: https://shiny.rstudio.com/gallery/

To learn about how to organize widgets in columns, take a look at the User Interface of the following app:

https://shiny.rstudio.com/gallery/basic-datatable.html

To learn about how to display the contents of a data frame, take a look at the User Interface of the follwoing app:

https://shiny.rstudio.com/gallery/widgets.html

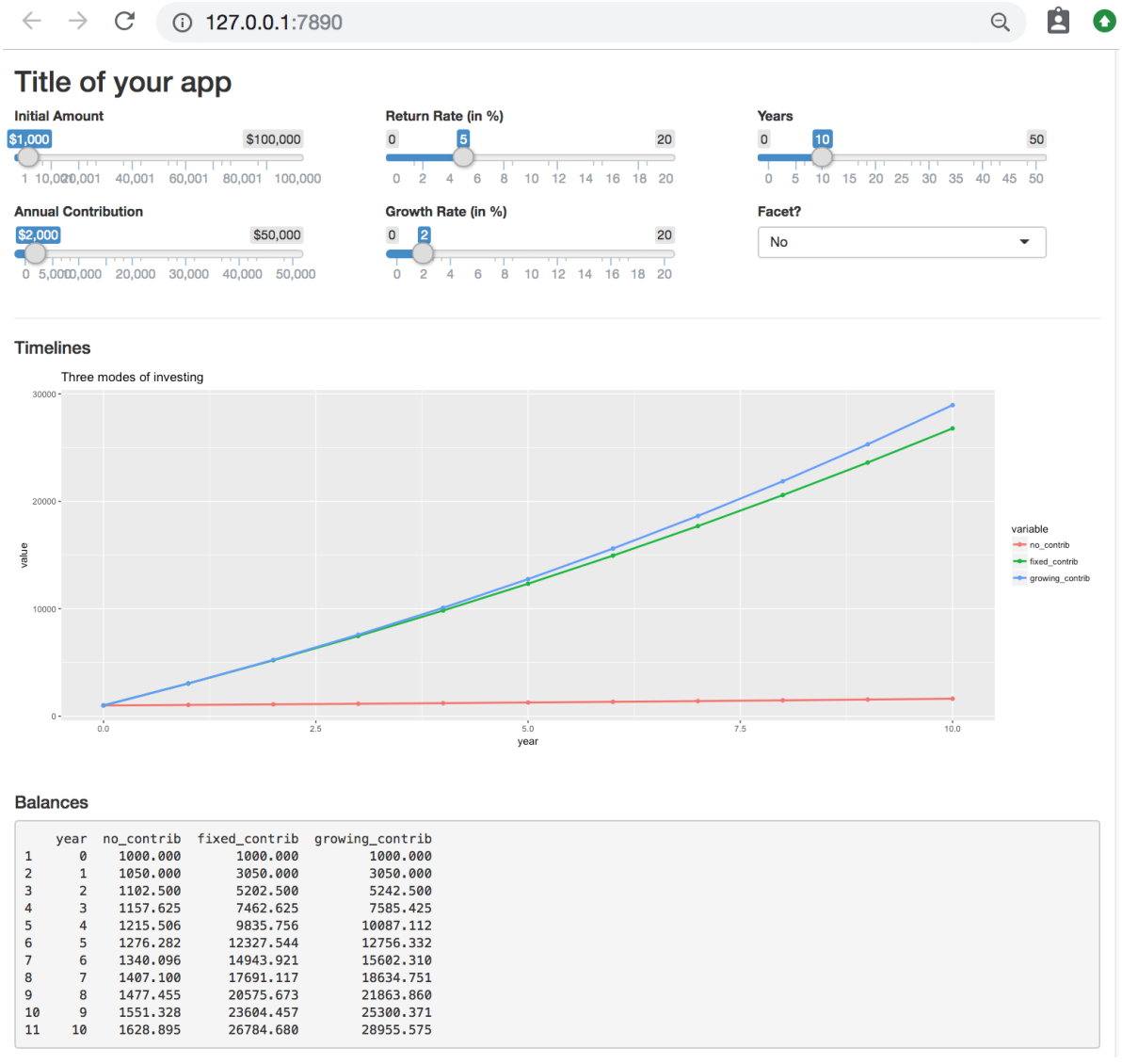
Of course, you can take a look at other apps displayed in the Shiny gallery to get some inspiration.

Facet?

One of the input widgets involves a select option to determine whether the timeline graphs should be facetted or not.

Facet option: No

The default facet option is **No**, meaning no facetting, like in the figure below:



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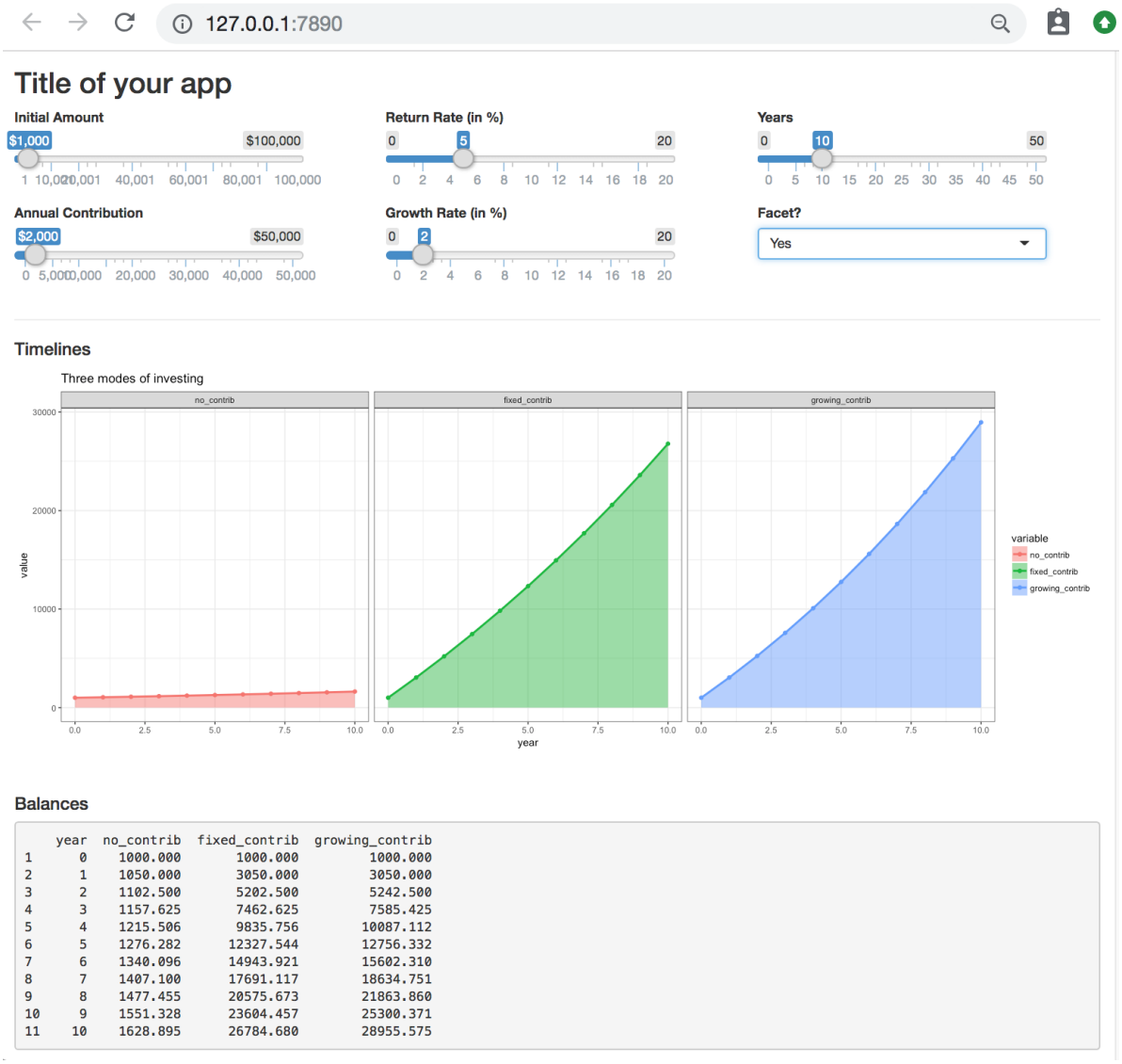
Facet option: Yes

When the user selects the facet option **Yes**, then the plot should display a facetted graph with an area below the timeline, like in the following screenshot.



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Sharing Your App

You will have to publish (i.e. deploy) your shiny app with the free version of shinyapps.io. This is a self-service platform (hosted in the cloud by RStudio) that makes it easy for you to share your shiny applications on the web in just a few minutes.

https://www.shinyapps.io/

For more information and details see the guide:

https://docs.rstudio.com/shinyapps.io/index.html

Submission

Upload the file(s) of your shiny app to GitHub. You can use a repository in your own personal github account, or use the github classroom repository.

You will have to submit the links of both: your github repo, and your shiny app to bCourses (in the corresponding assignment).