# MAT-63506 Scientific Computing

## Exercise Set 6 16–22. 4. 2018

Look at the provived example GUIs `SimpleApp.mlapp` and `PlotFunction.mlapp`.

**Exercise 1.** Make a GUI that has text Edit Fields named `In` and `Out`. The GUI should function as follows: The string entered into the `In` Edit Field is written into the `Out` Edit Field when the user presses enter or clicks outside the field (and not before). Set the `Out` Edit Field to uneditable by unchecking the Editable check box in Properties.

The GUI should look like Figure 1.

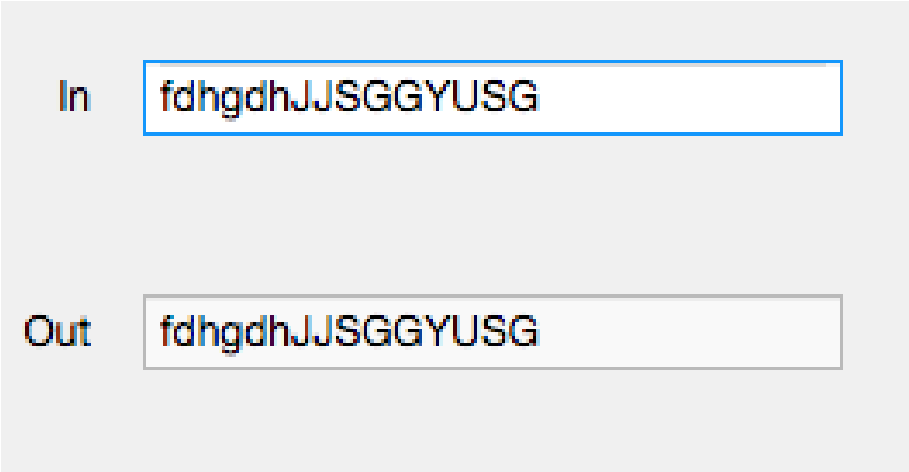


Figure 1: Exercise 1

**Exercise 2.** Add to the GUI of Exercise 1 a List Box containing all the system fonts from which the user can select the `Out` Edit Field font. The GUI should look like Figure 2 (of course your fonts are probably different).

To fill the List Box with the font names make a private `startupFcn` from the Callback menu in Code View. Then set the List Box `Items` property with the command `listfonts`, see `SimpleApp.mlapp`.

**Exercise 3.** Make a GUI that looks like Figure 3 for the random walk of Exercise Set 4. The necessary code (using a Start/Stop button) can be found in the file "Solutions04.mlx". The coordinates are written to the (uneditable) text Edit Fields `current X` and `current Y`.

The changes you need to make to the code are minor. Make a private Property named `Running`, which keeps track of the animation state. You can't use `gca`, so the statement `ha = gca` must be replaced with `ha = app.UIAxes`. You must also pass `app.UIAxes` as the first argument to `plot` and `axis`.

**Exercise 4.** Extend the GUI of Exercise 3 so it that looks like Figure 4. Plot the initial point in the `startupFcn` and store a handle to it in the private Property `Hplot`. Then you can change all the marker properties below using `Hplot`. Add the following components and put the Marker components into a Panel with slightly darker background color.

1. A Drop Down menu where the user can select the marker. Set the menu `Items` property to `'Circle'`, `'Plus'` etc and the `ItemsData` property to `'o'`, `'+'` etc in the `startupFcn`.

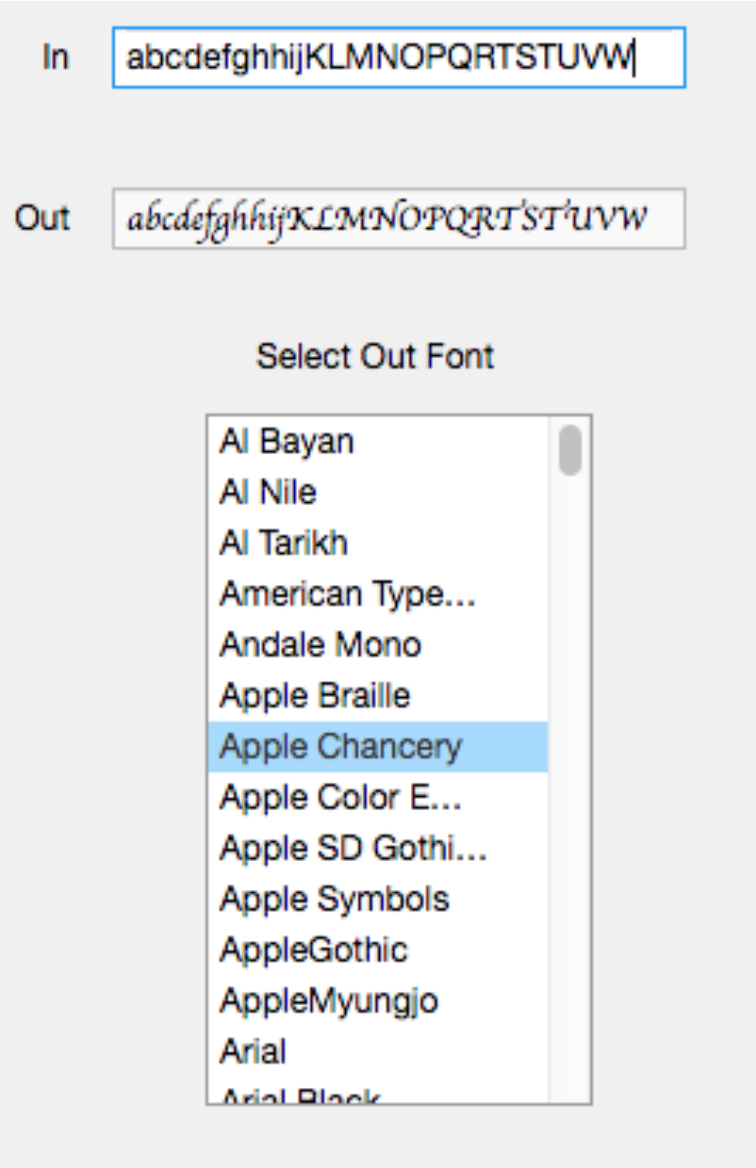


Figure 2: Exercise 2

2. A Spinner for setting the Marker size. Set the minimum to 2 and maximum to 50 with increment 1 and Display set to `Integers`.

3. A button for setting the `MarkerFaceColor`. Use the command `uisetcolor`.

4. A continuous Knob for setting `Delta`, the amount to change the axes limits. Make `Delta` a private Property. You can set the Knob major and minor ticks in the `startupFcn`. Set them for example to `2:2:20` and `0.5:0.5:20`, respectively.

5. A numeric Edit Field for setting the step size. Store it in a private Property `Step`. Set the minimum to 0, not inclusive, and maximum to 10, inclusive.

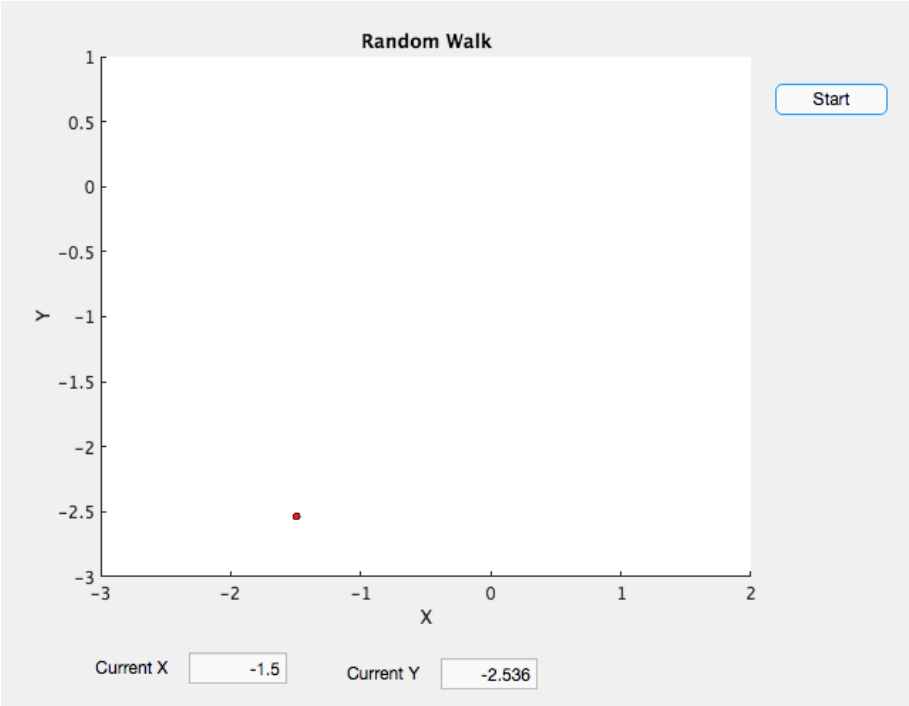


Figure 3: Exercise 3

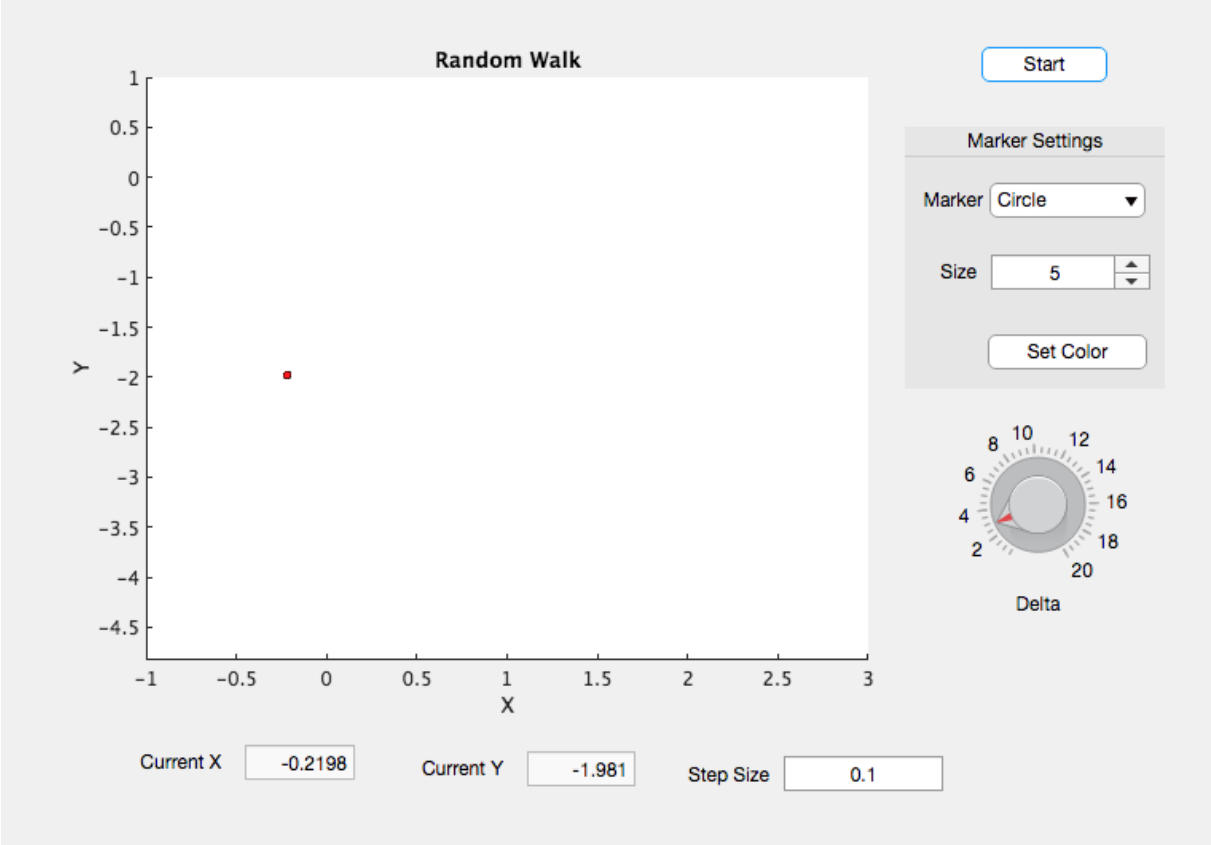


Figure 4: Exercise 4