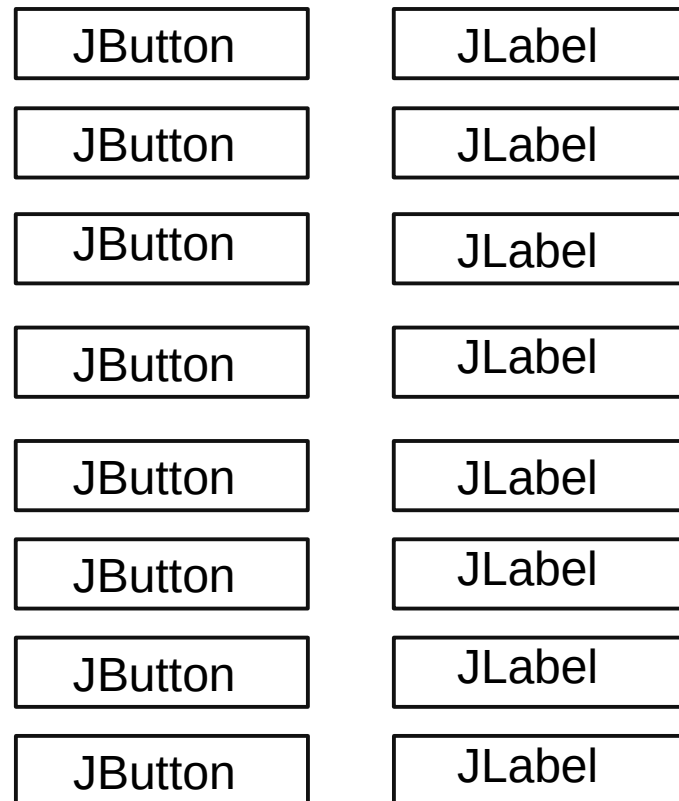# The GUI

JFrame f

JPanel mainPanel (BorderLayout)
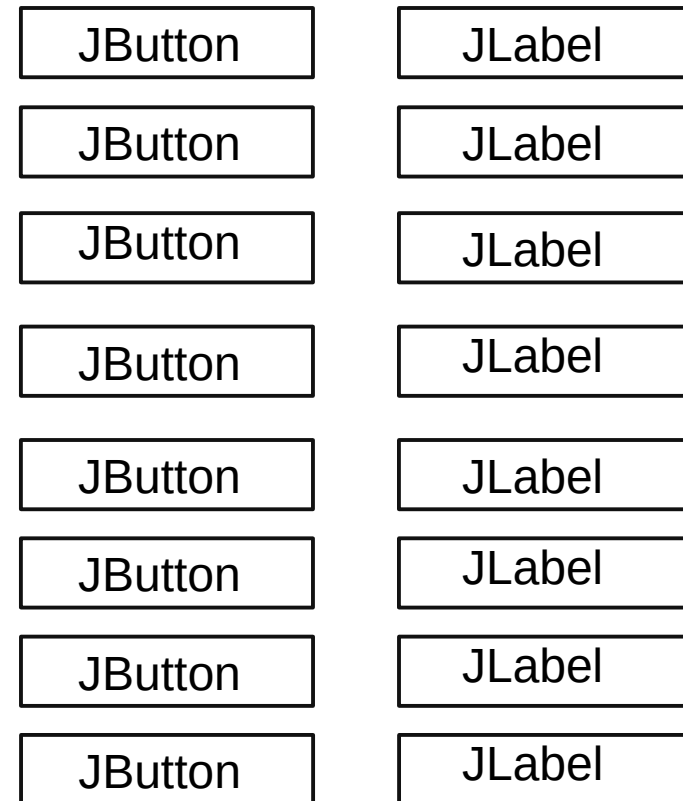
JMenuBar menuBar (north in mainPanel)

JPanel mainButtonPanel (center in mainPanel, BoxLayout)

JPanel leftButtonPanel (GridBagLayout)

JButton	JLabel
JButton	JLabel
JButton	JLabel
JButton	JLabel
JButton	JLabel
JButton	JLabel
JButton	JLabel
JButton	JLabel

JPanel rightButtonPanel (GridBagLayout)

| JButton	JLabel
JButton	JLabel
JButton	JLabel
JButton	JLabel
JButton	JLabel
JButton	JLabel
JButton	JLabel
JButton	JLabel

1

- The majority of the GUI functionality can be found in example2a.java, example4.java, and example4c.java
- Create the JFrame f
- Create the JPanel mainPanel
- Create the JMenuBar
  - Create the JMenu
  - Create the three JMenuItems
  - Add the three JMenuItems to the JMenu
  - Add the JMenu to the JMenuBar
- Create the JPanel mainButtonPanel
- Create the JPanels leftButtonPanel and rightButtonPanel

- Define the LayoutManagers for the four JPanels
- Add the JMenuBar and mainButtonPanel to the mainPanel at NORTH and CENTER
  - Or add the JMenuBar as the menu bar component of the frame (f)
- Add the leftButtonPanel and rightButtonPanel to the mainButtonPanel
- Add the mainPanel to f
- Validate f
- Set f visible
- Ideally you will see something similar to what I have
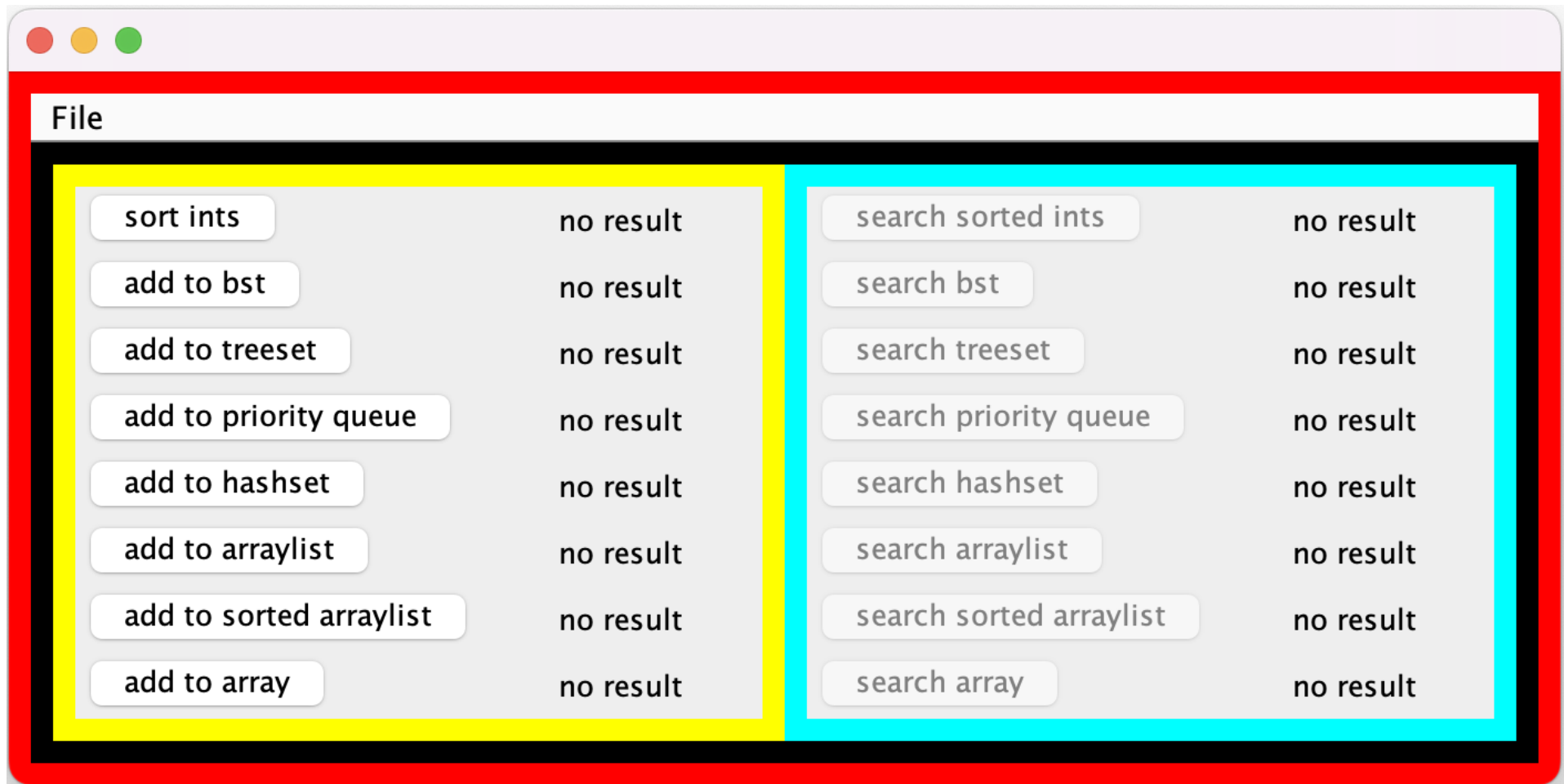
- Here's what mine looks like
  - The red border is the border for mainPanel
    - This won't contain the JMenuBar if you add it to the frame as the menu bar component
  - The black border is the border for mainButtonPanel
  - The yellow and turquoise borders are the borders for leftButtonPanel and rightButtonPanel respectively
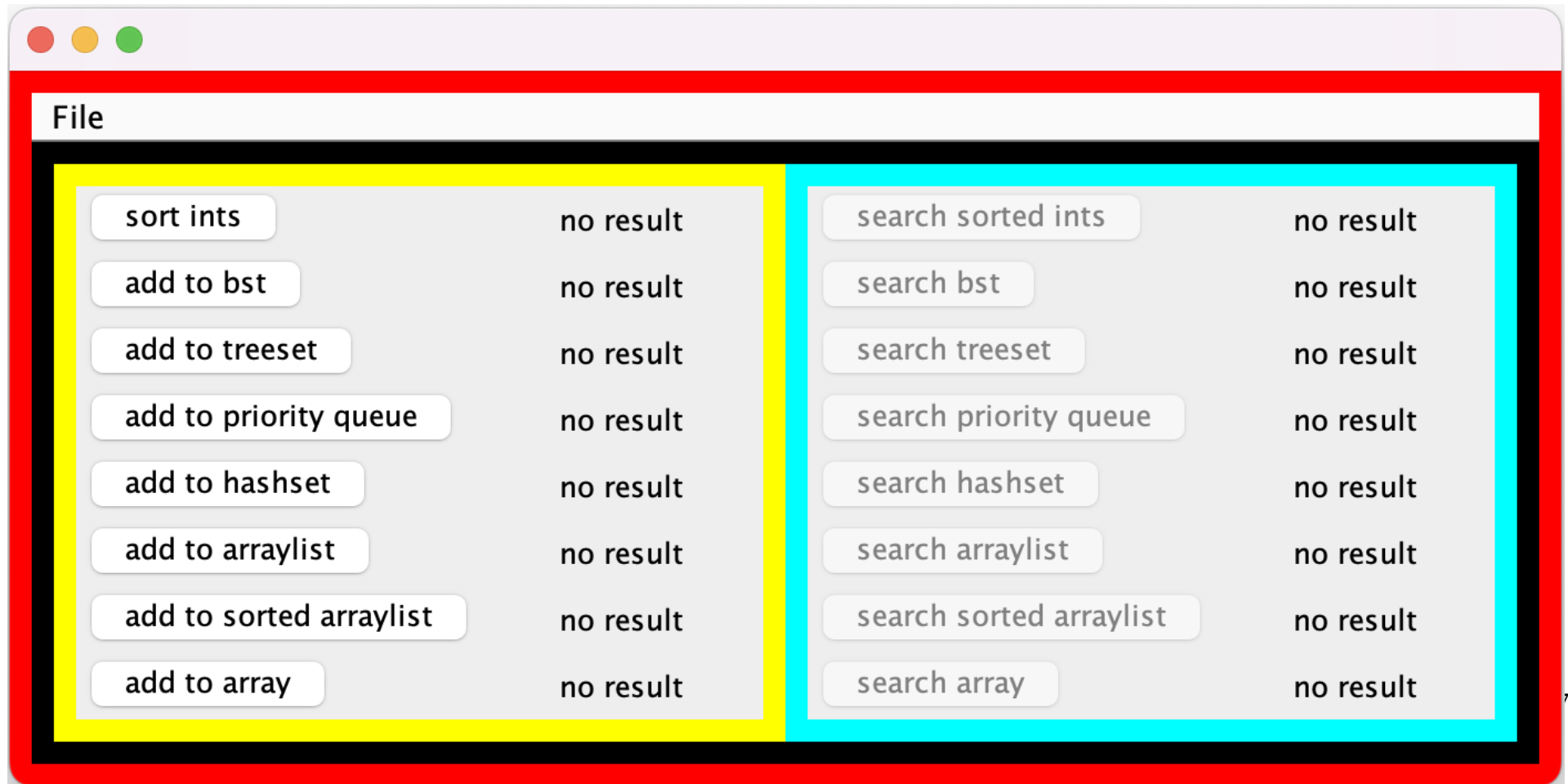 - The borders are there to show the four panels
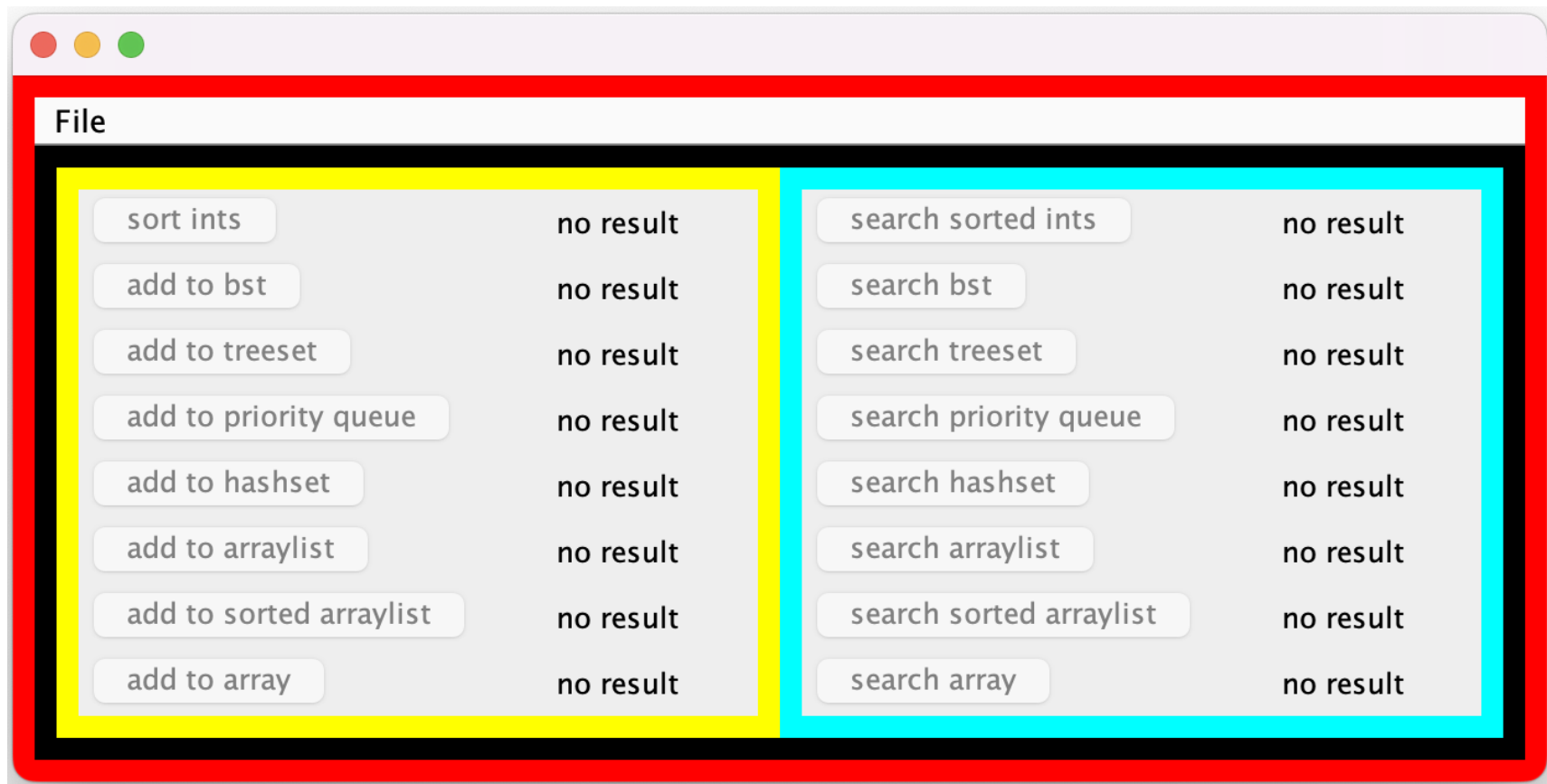
- Here's what mine looks like when the File menu is selected
  - Each of the three JMenuItems will need to have an ActionListener (see example2a.java)
  - The JButtons are not enabled until after the applicable file is read
    - For the search buttons, the search file must be read and the corresponding add/sort button must have already been selected
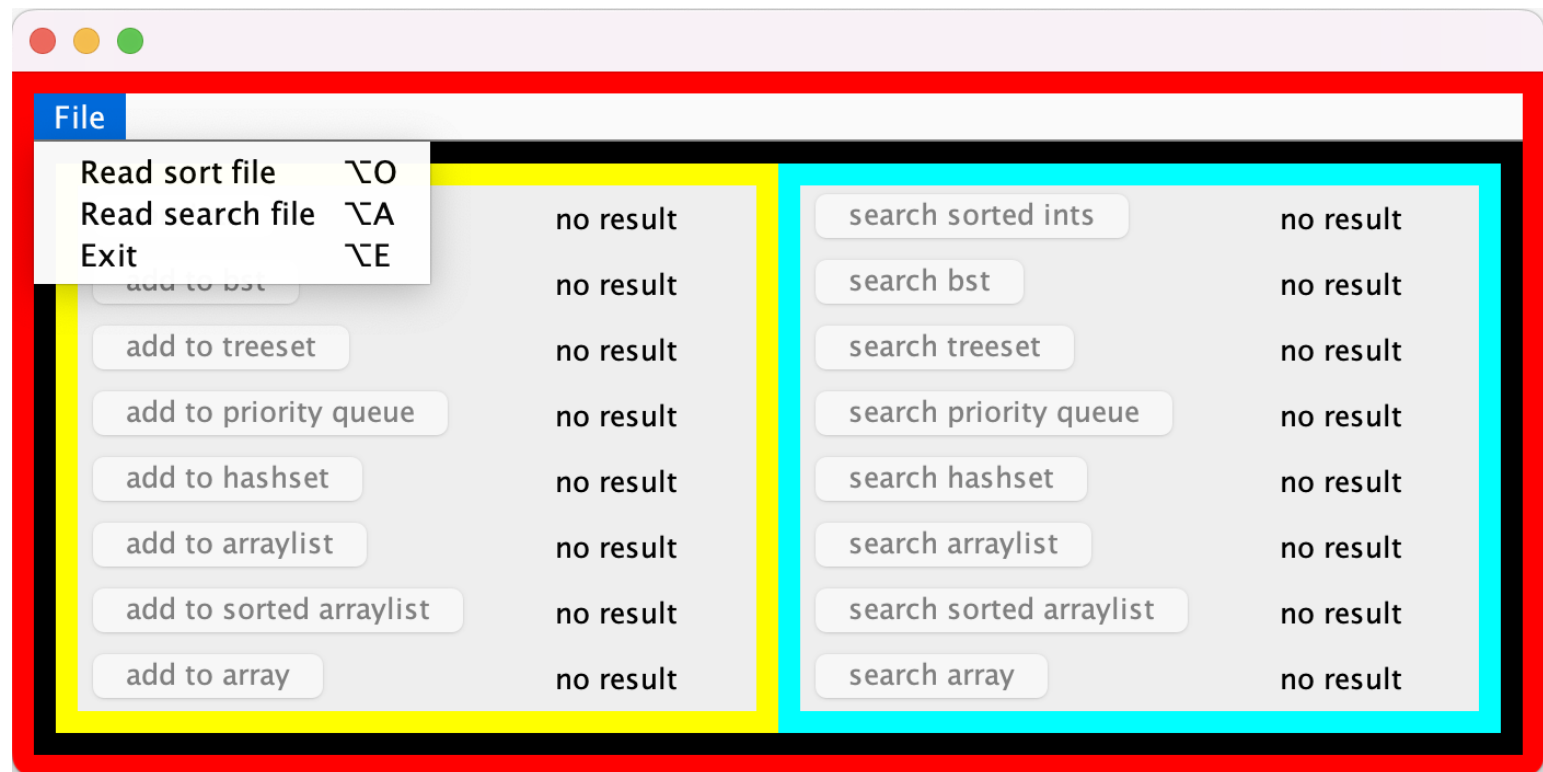
- Here's what mine looks like after the "read sort file" has been selected
  – The "sort"/"add" buttons are now enabled, while the "search" buttons are still not enabled

File

sort ints	no result	search sorted ints	no result
add to bst	no result	search bst	no result
add to treeset	no result	search treeset	no result
add to priority queue	no result	search priority queue	no result
add to hashset	no result	search hashset	no result
add to arraylist	no result	search arraylist	no result
add to sorted arraylist	no result	search sorted arraylist	no result
add to array	no result	search array	no result

- Here's what mine looks like after the "read sort file" has been selected and the "read search file" has been selected
  - The "search" buttons are not enabled yet, since the corresponding "sort"/"add" buttons have not been selected

File			
sort ints	no result	search sorted ints	no result
add to bst	no result	search bst	no result
add to treeset	no result	search treeset	no result
add to priority queue	no result	search priority queue	no result
add to hashset	no result	search hashset	no result
add to arraylist	no result	search arraylist	no result
add to sorted arraylist	no result	search sorted arraylist	no result
add to array	no result	search array	no result

- Here's what mine looks like after the two "read ..." menu items have been selected and the first two "sort"/"add" buttons have been selected
  - Note that the first two corresponding "search" buttons are now enabled

File			
sort ints	3520ms	search sorted ints	no result
add to bst	47ms	search bst	no result
add to treeset	no result	search treeset	no result
add to priority queue	no result	search priority queue	no result
add to hashset	no result	search hashset	no result
add to arraylist	no result	search arraylist	no result
add to sorted arraylist	no result	search sorted arraylist	no result
add to array	no result	search array	no result
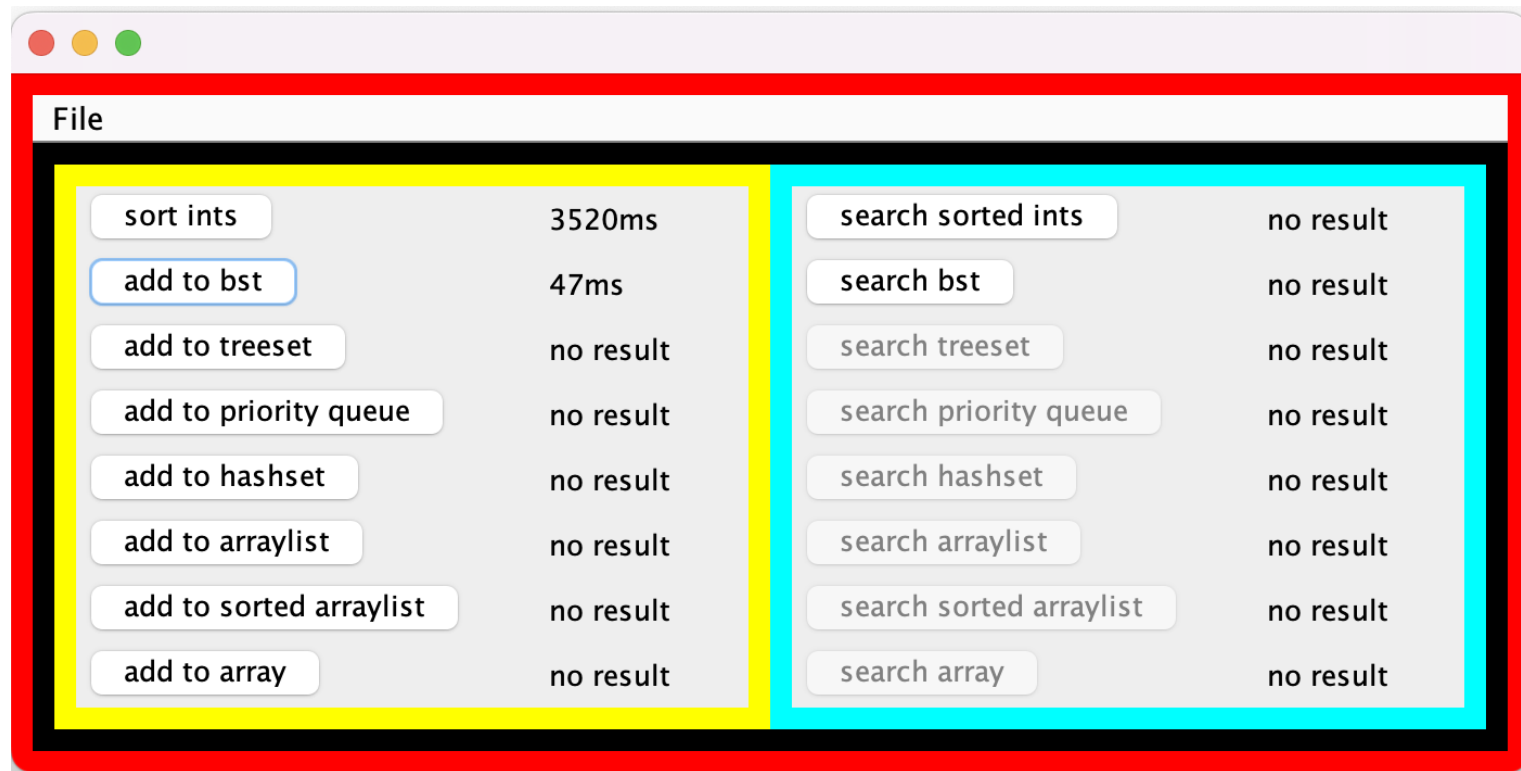
- Here's what mine looks like after the two "read ..." menu items have been selected and the left and right buttons have each been selected

File

sort ints	3520ms		search sorted ints	33281 / 22ms
add to bst	47ms		search bst	33281 / 27ms
add to treeset	53ms		search treeset	33281 / 30ms
add to priority queue	10ms		search priority queue	33281 / 6050ms
add to hashset	21ms		search hashset	33281 / 9ms
add to arraylist	21ms		search arraylist	33281 / 19309ms
add to sorted arraylist	47ms		search sorted arraylist	33281 / 32ms
add to array	3ms		search array	33281 / 1451ms