

# CSI 31 LECTURE NOTES (Ojakian)

## Topic 14: TKinter Fundamentals

---

### OUTLINE

(References: See Webpage)

1. Event-based programming
  2. Events and Binding
  3. Widgets
- 

#### 1. Event-based programming in general

- (a) Non-linear
- (b) Create event-loop:
  - i. Wait for user actions
  - ii. Respond depending on user action: Bind “events” to “callbacks”

#### 2. Event loop in Tkinter

- (a) import tkinter
- (b) Open window and loop with Tk(). Close with mainloop().
- (c) To create a basic button:
  - i. Button([...])
  - ii. `configure`
  - iii. `pack`
- (d) Pack: Each widget in “next” spot with modifiers:  
side = LEFT, RIGHT, TOP, BOTTOM  
Later: Other geometry managers ...

**PROBLEM 1.** Write a program that simply displays 3 buttons (that do nothing). Have it print before and after entering the event loop.

- (e) Binding: `bind(event, callback)`
  - i. “< Button - 1 >” is the left click event.
  - ii. “< Return >” is the return button event
  - iii. And there are many more! ...

**PROBLEM 2.** Write a program that displays 1 button which responds to two events: If the button is left-clicked on, then it prints *CLICK*. If the return key is hit, then it prints *RETURN*.

- (f) Other events:
  - i. '`< Key >`'
  - ii. '`< Enter >`'
  - iii. '`< Leave >`'
  - iv. etc...

### 3. Widgets

(a) Another widget: **Canvas**

**PROBLEM 3.** *Write a program that displays 2 circles, one red, and one green. Clicking on a circle will have it print the corresponding color to the screen.*

(b) Some widgets:

- i. Button
- ii. Canvas
- iii. Label
- iv. Checkbutton
- v. etc ...

(c) “width = ” and “height = ” to (most) widgets

### 4. Frame Widget

(a) Put widgets in it using any geometry manager.

(b) Then place the entire Frame using any geometry manager