

John Romero Programming Proverbs

- 3. “Keep your code absolutely simple. Keep looking at your functions and figure out how you can simplify further.”
- John Romero, “The Early Days of Id Software - John Romero @ WeAreDevelopers Conference 2017”

Overview of TouchGUI

- [documentation](http://floppsie.comp.glam.ac.uk/touchgui/homepage.html) `<http://floppsie.comp.glam.ac.uk/touchgui/homepage.html>`
- you can obtain a copy of the source code for touchgui by:
- ```
$ cd
$ mkdir -p Sandpit
$ cd Sandpit
$ git clone https://github.com/gaiusm/touchgui
```

# Overview of TouchGUI

- touchgui is a simple tablet based gui for Python/Pygame
  - it allows tiles to be created from images, colours or glyphs
  - each tile has a number of callbacks which are called whenever a tap or double tap occurs

## Overview of TouchGUI

- a tile maybe in one of the following four states: images for the tile when in the frozen, active, activated or pressed state
  - the frozen state is when the tile cannot be pressed
    - (the application might choose to disable the tile)
- the active state is when the tile can be pressed by the user
  - the activated state is when the mouse pointer is hovering over the tile (but not pressed)
  - finally the pressed state is when the button is tapped.

## Touchgui in the labs

- touchgui is installed in the J109 labs
  - you need to explicitly alter the PYTHONPATH
- you can do this on the command line and run your touchmap by:
  - (this assumes you have already downloaded and configured touchmap from previous weeks)

## Touchgui in the labs

```
$ cd
$ cd Sandpit/build-touchmap
$ PYTHONPATH=../touchmap-0.1:../touchgui python ../touchmap-0.1/touchmap.py
```

- the PYTHONPATH environment variable is set to search the current directory (the first .)
  - then search ../touchmap-0.1 and lastly search ../touchgui for any python modules (before searching the system installed libraries)
  - note the path separator :
- after setting the PYTHONPATH the python interpreter is executed which inherits this PYTHONPATH and starts interpreting ../touchmap-0.1/touchmap.py

## Touchgui in the labs

- using a suitable file manager examine the contents of touchgui
- in particular examine the library of creative common images
- maybe make a note of icons you might find useful for your touchmap implementation

## Single glyph button example using touchgui

```
#!/usr/bin/env python

import pygame, touchgui, touchguipalate, touchguiconf, math, os
from pygame.locals import *

display_width, display_height = 1920, 1080
display_width, display_height = 800, 600
display_width, display_height = 1920, 1080
full_screen = False
full_screen = True
toggle_delay = 250
```



# Single glyph button example using touchgui

```
def event_test (event):
 if (event.type == KEYDOWN) and (event.key == K_ESCAPE):
 myquit (None)

def myquit (name = None, tap = 1):
 print "quit called"
 pygame.display.update () # need this to see the button pressed before we quit
 pygame.time.delay (toggle_delay * 2) # delay program so we see the button change
 pygame.quit () # now shutdown pygame
 quit () # and shutdown python

def myreturn (name, tap):
 print "return called"
```

## Single glyph button example using touchgui

- the function `myquit` is a callback which is called when the off button is pressed
  - both parameters are optional
  - a single parameter is allowed and then `tap` will be assigned to 1

## Single glyph button example using touchgui

```
def imagedir (name):
 return os.path.join (touchguiconf.touchguidir, name)

def button_list (name):
 return [touchgui.image_gui (imagedir ("images/PNG/White/2x/%s.png") \
 % (name)).white2grey (.5),
 touchgui.image_gui (imagedir ("images/PNG/White/2x/%s.png") \
 % (name)).white2grey (.1),
 touchgui.image_gui (imagedir ("images/PNG/White/2x/%s.png") \
 % (name)),
 touchgui.image_gui (imagedir ("images/PNG/White/2x/%s.png") \
 % (name)).white2rgb (.1, .2, .4)]
```

note the \ is a line continuation character

## Single glyph button example using touchgui

- `button_list` is a function which returns a list of four images
- the four images in order represent the four states
  - frozen, active, activated or pressed state
- `button_list` takes a single white image and produces four images
  - darkgrey using `white2grey (.5)` representing frozen
  - lightgrey using `white2grey (.1)` representing active
  - brilliant white representing activated
  - dark blue `white2rgb (.1, .2, .4)` representing pressed

## Single glyph button example using touchgui

```
#
buttons - create two buttons and return them as a list.
#

def buttons ():
 return [touchgui.image_tile (button_list ("power"),
 touchgui.posX (0.95), touchgui.posY (1.0),
 100, 100, myquit),
 touchgui.image_tile (button_list ("return"),
 touchgui.posX (0.0), touchgui.posY (1.0),
 100, 100, myreturn)]
```

# Single glyph button example using touchgui

```
def main ():
 pygame.init ()
 if full_screen:
 gameDisplay = pygame.display.set_mode ((display_width, display_height), \
 FULLSCREEN)
 else:
 gameDisplay = pygame.display.set_mode ((display_width, display_height))

 pygame.display.set_caption ("Simple Test")
 touchgui.set_display (gameDisplay, display_width, display_height)

 forms = buttons ()
 gameDisplay.fill (touchguipalate.black)
 touchgui.select (forms, event_test)

main ()
```

## Single glyph button example using touchgui

- `touchgui.select` can take 2 parameters (it can also take more - in future weeks this will be covered)
- the second parameter allows you to test pygame events
- the first parameter is a list of buttons on the touch device
  - only buttons in this list can be activated (mouse over) and/or tapped

## Single glyph button example using touchgui

- `touchgui.image_tile` takes 6 parameters
  - `button_list` is the list of the four state images
  - `touchgui.posX` and `touchgui.posY` converts a floating point value in the range `0.0..1.0` onto the X or Y resolution of the screen (or window)
  - parameters 4 and 5 are the x and y image size
  - parameter 6 is the call back if tapped or double tapped