

## John Romero Programming Proverbs

- 1. “No prototypes. Just make the game. Polish as you go. Don’t depend on polish happening later. Always maintain constantly shippable code. (Large teams require more planning though.)”
- John Romero, “The Early Days of Id Software - John Romero @ WeAreDevelopers Conference 2017”

## Game tools

- second coursework is to produce a level editor for a tablet
  
- we will be exploring many aspects of tools
  - python
  - python pygame
  - touchgui
  - [touchmap](#)
  - debian package management
  - GNU/Linux build tools

# Touchmap

- a tablet tool for creating maps for:
  - penguin tower 2D
  - isometric penguin tower
  - doom3
- you will start with a prototype touchmap
  - and extend it in a variety of methods

# Touchmap

- is written in Python and uses the library `touchgui`
- you can download the `touchmap` and `touchgui` source code
  - you can change the `touchgui` code if you wish

# Touchgui

- a small gui for a tablet written in Python using Pygame
- [touchgui documentation](http://floppsie.comp.glam.ac.uk/touchgui/homepage.html) `<http://floppsie.comp.glam.ac.uk/touchgui/homepage.html>`
- try out the [examples](http://floppsie.comp.glam.ac.uk/touchgui/examples.html) `<http://floppsie.comp.glam.ac.uk/touchgui/examples.html>`

## Obtaining touchmap

- you can obtain the skeleton `touchmap` using the terminal and the command line

- ```
$ cd
$ mkdir -p Sandpit
$ cd Sandpit
$ wget http://floppsie.comp.glam.ac.uk/download/targz/touchmap-0.1.tar.gz
$ tar xzf touchmap-0.1.tar.gz
$ ls touchmap-0.1
```

- some of these commands act silently (as is the UNIX default)
  - write down a summary of each command line (hint use `man`)

## Obtaining touchmap

- in the directory `touchmap-0.1` there are a number of files
  - `touchmap.py` is the main program
  - there are a number of simpler versions of the same program  
`touchmap-1.py`, `touchmap-2.py`, `touchmap-3.py` and  
`touchmap-4.py`
- these simpler versions might be interesting to examine as they show how the main program was developed
  - they also serve to show how the GUI `touchgui` works

## Building touchmap in the University laboratories

- you will need to have downloaded touchmap as above before attempting these command here
- to build touchmap, you should use the command line terminal:

```
$ cd $HOME/Sandpit  
$ rm -rf build-touchmap  
$ mkdir build-touchmap  
$ cd build-touchmap  
$ ../touchmap-0.1/configure  
$ make
```

- again make a summary of these command lines in a notebook (see man)



## Building touchmap in the University laboratories

- these commands build some of the map assets
  - in particular the door, wall png images which are used by touchmap
  
- **note that anything placed inside the directory `build-touchmap` is temporary**
  - examine the contents of `build-touchmap` (we can see the png images for walls and doors)
  - these images are built from `groff` scripts!

## Output from the build



```
$ ../touchmap-0.1/configure
checking for a BSD-compatible install... /usr/bin/install -c
checking whether build environment is sane... yes
checking for a thread-safe mkdir -p... /bin/mkdir -p
checking for gawk... gawk
checking whether make sets $(MAKE)... yes
checking whether make supports nested variables... yes
...
```

## Output from the build

```
$ make
groff -I../touchmap-0.1 < ../touchmap-0.1/doorh.ms > t.ps
echo "" | gs -q -dBATCH -dSAFER -sDEVICE=pnmraw -r100 -sOutputFile=t.pnm t.ps
>>showpage, press <return> to continue<<
pnmcrop t.pnm > doorh.pnm
rm -f t.ps t.pnm
pnmscale -xsize=100 -ysize=100 doorh.pnm > t.pnm
pnmtopng t.pnm > doorh.png
pnmtopng: 1 colors found
rm -f t.pnm
...
```

## Running touchmap

```
$ cd $HOME/Sandpit/build-touchmap  
$ ./localrun.sh touchmap.py
```

- notice the capital S for Sandpit

- notice the ./ before localrun.sh

- this is required as it means use localrun.sh in this directory

## Controlling touchmap

- the quit button at the top right, terminate the program
- the return button at the top left, displays the current map (to stdout)
- the expand and shrink buttons zoom in and out of the map

## Controlling touchmap

- you can create a map by clicking in the middle of the screen
  - a tap will create a wall, a further single tap converts a wall into a door
  - another tap will convert a door into a space
  
- a double tap defines the start of a wall
  - the next wall square created along a straight line will create a long wall (rather than an individual block)

## Tutorial

- download and build `touchmap` using the commands from the lecture
- run `touchmap`
- explore the files in the `touchmap` package directory and make notes on the function of each file

## Bug in touchgui

- you will need to perform this command in the terminal before you run touchgui for the first time
- ```
mkdir -p $HOME/.cache/touchgui
```
- this command creates the directories: `.cache/touchgui` in your `$HOME`
  - this directory is used as an image cache by touchgui



