## John Romero Programming Proverbs

- 6. "As soon as you see a bug, you fix it. Do not continue on. If you don't fix your bugs your new code will be built on a buggy codebase and ensure an unstable foundation."
- John Romero, "The Early Days of Id Software John Romero @ WeAreDevelopers Conference 2017"

#### Overview of dhewm3 code

lines of code for the id engines

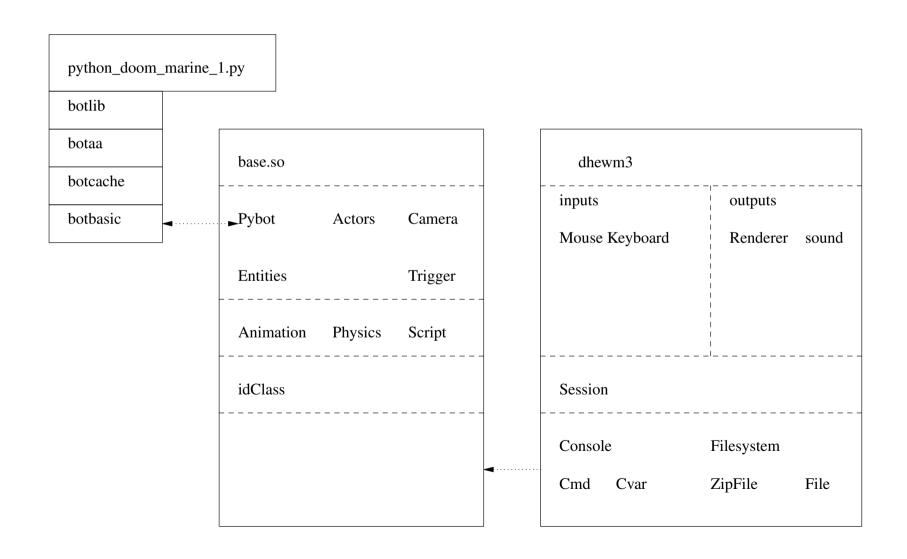
	Doom	idTech1	idTech2	idTech3	idTech4
		(quake1)	(quake2)	(quake3)	(doom3)
Engine	39079	143855	135788	239398	601032
Tools	341	11155	28140	128417	0
Total	39420	155010	163928	367815	601032

- the 0 lines of code for the doom3 is due because doom3 includes them in game
- dhewm3 is about 681075 total lines of code
  - however this includes many tools and libraries

#### Overview of dhewm3 code

- actual engine is closer to 137905 lines of code
- abstraction and polymorphic code employed
- all assets are stored in human readable text form
  - this works well on our fast machines now, this design also guides our python bot library
- templates are used in low level utility classes (mainly idlib) but are never seen in the upper levels
  - no STL used
- well commented code base

# Overview of dhewm3 and Python Bot code



### Python Bot Overview

- note, the bot code is only partially complete
- layered approach
- top layer, botlib will ultimately be the interface to user level bots (python\_doom\_marine\_1.py)
- will contain both access to basic movement and access to navigation mechanisms
- maintains the transform between the doom3 map and penguin tower map

# botaa

- contains area awareness code for the python bot
- parses the equivalent pen map and creates internal simple 2D map of the world in Python
- implements Dijkstra's algorithm for routing to pickups and player/monsters

### botcache

- provides the same interface as
  - botbasic but it caches all results
  - which allows the higher layers (botaa) the ability to query the bot without having to worry about the overhead of the remote procedure call
- it also contains a method
  - reset which deletes the cache, forcing all future requests to be sent over to the dhewm3 engine to retrieve up to date values

## botbasic

- provides socket connection to the dhewm3 engine
- it also implements the underlying remote procedure call mechanism
- generally maps onto basic commands
  - such as: move, fire, reload, turn, aim, etc

#### Homework: read how Remote procedure calls work

- you need to understand the concept of remote procedure call argument marshalling
  - make sure you have read Tanenbaum's description of how RPC's operate
  - and how marshalling is employed and why it is necessary
- Andrew Tanenbaum, Modern Operating Systems, Prentice-Hall International
  - sections 10.3, 10.3.1, 10.3.2