

## Z level changes

- altering the floor level between rooms can be visually effective
- we will look at two ways, simple and more advanced method

## Simple: chisel floor level changes

- currently `pen2map` converts a penguin tower file into a doom3 map file
  - however map floor is completely level
  - it would be good aesthetically to introduce minor floor level changes between rooms
- start up `emacs` and press F7 and then press F10
- in `pen2map.py` search forward for `assignFloorLevel`
- notice how it is called from `generateMap`

## Simple: chisel floor level changes

- modify assignFloorLevel so that it is 0 for an even room number and -0.25 for an odd room number
  
- test these changes on a two room map
  - test these changes on a three room map
  - test these changes on a four room map
  
- a unit of 1 in a penguin tower map represents 48 inches in the doom3 world
  
- can you think of a better algorithm in which to change floor levels?

## Breadth first search algorithm for greatest height difference between rooms

- ideally we would like to have a large  $z$  differential between rooms
  - however we have a constraint of, say a single step between adjacent rooms
  - of course rooms might have multiple doors, connecting to different rooms (or the same room)

## Breadth first search algorithm to adjust floors

- using a breadth first search algorithm we can satisfy the constraints of having a difference of a single step between neighbouring rooms
- this is left as future work and as an exercise for the reader