Problem:

I am creating a new game which will combine concepts from standard platformer with concepts of a multiplayer competitive game. The problem which I am trying to solve is having platformers which require little to no interactivity or competition with friends or opponents. I will do this by creating a multiplayer game with each player having separate, and opposing goals.

* One player will play as a student trying to return to Shirley apartments, who must complete the platforming level.
  + The student will play the game similarly to that of a normal platformer
  + Will have additional mobility options, such as double-jumping or wall-jumping based on whether they get a power up.
  + Will have a deeper physics mechanics than that of past assignments, ie use of friction and jumping motions.
  + Loss upon death, or time expired.
* The other player will play as god, who is trying to prevent the student from completing the level by creating obstacles, enemies, and other unique interactive effects to make the level harder.
  + The largest ability which god will have access to will be the ability to change the weather.
  + The weather will consist of attributes such as wind, precipitation, and temperature which will have various inhibiting effects on the student
  + God will have other abilities such as generating mobs, or creating temporary holes in platforms depending on which level is being played.
* The two players will play three levels and the whoever wins two levels first will win. (possibly BO5 if time permits more level creation).
* Levels will be large and require scrolling
  + Both god and the player will see the same screen, and will be based on where the player is in the level.

Breakdown of tasks:

* Creating physics for the student
  + Jumping mechanics
  + Acceleration and stopping mechanics
* Creating Levels
* Creating special physics, ie double jumping, walljumping
* Creating powerups,
* Creating text instructions for both players
* Be able to send and receive information from the server
* Creating weather effects which affect the physics of the player
  + Ie. Wind changes acceleration, ice makes it more slippery
* Creating obstacles which will have significant interaction between players
  + Generating holes
  + Generating mobs
  + Final boss level between the two players
* Sending information and hints to the player about what obstacles will come
  + Ie for breaking a platform, they will break after a couple seconds of notification, and respawn.
* Balance the game in terms of the ability of God and available powerups.
* Side scrolling! (for both players)
* Start game lobby, can select roles

Most difficult part:

Creating physics engine which will be interactive with control of weather, and feels smooth to play for the student. Furthermore, including the ability to alter the physics based on powerups

Algorithmic plan:

* Creating basic physics engine involving accelerated falling (like gravity), nonlinear run speeds and friction.
* Making platforms and obstacles that can be reached or used based on the physics engine.
* Creating weather class which will be able to alter simple factors like jump height/power
* Ensure that the player playing god can alter the weather in an intuitive manner.
* Code in power-ups and special movements such as doublejumping, or dashing in air.
* Making sure that information about movement is sent to the server properly so that both player’s screens are updated properly.

Module(s): sockets!

Update 1:

Level will be randomly generated recursively

Possibly only one level as they are now randomly generated

Story probably just going to revolve around getting over the morewood chains (jump over them!)

No final boss level (probably)

Update 2:

* Game now has doodle jump mechanics, which can be continued infinitely.
  + Go for high-score in single player
  + Compete with friends in multiplayer
* Multiplayer mode jump against another player
* Smash bros like fighting mechanics
* Attacks deal damage which racks up percentage on a player
* The greater the percentage the greater the knockback an attack does
* The goal is to knock a player down to lower platforms while climbing to the top