Grim Towers general ideas

Originated 11/20/2018

**General Ideas**

* Users build archer towers, ballistae, skull launchers, lava pourers etc. to stop oncoming waves of different types of enemies from making it to the end of the path
* Tower ideas: archer tower, crossbowmen tower, ballista, fire shooters, skull launcher/catapult, trebuchet, lava pourer, fire-breathing dragon (maybe also swipes its tail?), spike shooter?, knights or pikemen to guard exit until they die
* Enemy type ideas: cavalry, knight, peasant, goblin, water spirit type creature (immune to fire), King, archer, horse archer (won’t actually fire at user’s towers?), pikeman, viking?,
* Players have ability to create their own maps for up to 8? players.
* Multiplayer capability with a main server client that has a database storing:
  + Online players (name, IP, game status)
  + Created games/sessions (server name, # players, player capacity, level name, level status (waiting to start, round #), binary has password (y/n))
* Free-to-play capability, allowing all but multiplayer gameplay. Full version available as some small one-time payment.
* So **3 different applications**:
  + 1. End-user game, Unity 3D w/ C#
  + 2. Level builder (used by devs and users alike), Unity 3D w/ C#
  + 3. Main server, console application in C#?
    - See possibility of Unity handling the server for us, eliminating the need to host on a dedicated machine or third party and hopefully saving on development time as well.
* Tools:
  + Unity 3D, editor 2018.2.7f1
    - Used to make end-user game and level builder
  + Monodevelop
  + MySQL server?
    - Used in main server, possibly end-user game (see below)
    - Wonder if there’s a way to transfer a database directly from server to a user, so that way every user will have a copy of the database from main server valid from the last point of refresh.
* Game Mechanics
  + Mob mechanics (refer to enemies as ‘mobs’)
    - Navigate on their path on the road by setting a waypoint as their target they will walk in a straight line towards, then go to the next waypoint. For smooth-appearing transitions may need to do some (linear interpolation?) when very close to a waypoint
    - The game is over if any mob reaches the final waypoint, the end of their path.
    - Each wave in a level spawns some total HP as some factor it should for that wave (depending on difficulty or map-set param.), but the types of units spawned will be random within certain parameters (e.g. tougher mobs have a greater chance of spawning in later rounds)
  + Tower mechanics
    - Some towers have a radius of damage (e.g. archers) while others will only act in a box or cone directly in front of them (e.g. lava pourers) and are essentially ‘attached’ to a road segment.
    - Each type of tower is bought with a fixed amount of gold that does not change depending on difficulty.
    - Towers have varying accuracies and aim randomly within a distribution favoring the first enemy in the radius (closest to the end). Once target is picked,
      * Alternative physics way: use colliders and accuracy is determined via many tests on a sample. Would require fine-tuning of projectile accuracies.
  + User actions
    - All players start with some amount of gold,