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**Term Project Document**

**Final Idea:** pvp game, player vs. boss

**MVP Requirements: (PRELIMINARY)**

**Post-MVP Features:**

* AI for enemy boss to respond to attacks
* win/lose conditions
* enemies with battle mode/difficulty

**Goals for TP**

| **Check-In 1 (8/7):** | Preliminary Ideas **(Include core features and intended sources of complexity for each)**   * I was thinking of making a 2D side scroller type of game where at each level the player has to beat a boss that gets increasingly more difficult to beat. I could try to implement the minimax AI algorithm for these level bosses. Additionally, I was thinking that each level could start off in a maze-like environment where the player has a timed amount to collect healing items and things like that while beating lower bosses before they go on to beat the level boss. I will also try to use OOP to make a character class. |
| --- | --- |
| Notes |
| Accomplishments (N/A if not applicable):   * character + boss classes * HP bars for health * sprites |
| Goals for TP1:   * algorithm research for AI * deciding player mechanics/attacks for both sides * deciding the framework of the game/graphics |
| **TP1 (8/8):** | Accomplishments:   * attack and movement of player mechanics, sprites, attack HP bar |
| Notes   * Get started on the AI/algorithm! |
| Goals for TP2:   * MVP: AI for enemy boss to respond to attacks, win/lose conditions, enemies with battle mode/difficulty |
| **Check-In 2 (8/9):** | Accomplishments:   * Implemented win/lose condition, wrote out AI algorithm; need to debug! * Debugged AI → algorithm currently only takes into account boss hp, prioritizes boss to keep alive * Working on changing levels→ damage of of player attacks decreases each level |
| Notes  Line Counts (includes spaces and comments)   * project file (main)--- 368 * bossAndPlayerClass file— 214 * minimaxAlgorithm file— 122 * heuristicFunction file—- 55 |
| Goals for TP2:   * Animate sprites, debug AI algorithm |
| **TP2 (8/10):** | Accomplishments: Progress since TP1 - List out all features you have implemented, as well as a brief description of how you implemented them.   * Implemented changing levels, did this by creating an app.level variable and increasing it after the player or boss dies. There is a bug, however, with getting to level 3 for some reason so game only has 2 levels currently * Working on increasing difficulty; plan to do this by dividing the player attack value by the current level * Want to add dodge feature for player * Knight can now only attack if it is close enough to the boss |
| Notes   * You completed a somewhat playable game, which was significant progress since last week, but you’ll need to continue to work on the bugs we discussed regarding the lag that occurs when the game is run. This feature makes it somewhat unplayable, which is unfortunate. Something I think you could use to resolve this would be to have the cats move by greater distances each time. I’d also like to see some more functionality with the attack system like we discussed: allowing the cats to move up and down and putting some kind of system on the different attacks (eg. the bigger attacks can only be used every 10 seconds) would help.   Line Counts (includes spaces and comments)   * project file (main)--- 434 * bossAndPlayerClass file— 244 * minimaxAlgorithm file— 93 * heuristicFunction file—- 55 |
| Goals for TP3:   * Fix sprite animation maybe * Fix motion of knight * Maybe add music |
| **Check-In 3 (8/11):** | Accomplishments:   * Fixed bug with changing levels * Added a time limit for the attack with biggest attack * Added help/instructions mode |
| Notes   * Need to make it so that recharge countdown only appears for 10 seconds |
| Goals for TP3:   * Try adding music |
| **TP3 (4/12):** | Final Features:   * Minimax Algorithm + heuristic function for ai to decide move– algorithm tries to preserve the boss’ life * Win/lose feature– player wins is the beat the boss on all three levels * Increased difficulty with level– damage of player attack is cut by factors of 2 according to the level (by level three the attack value is 1/8th of the original value), additionally the largest attack can only be used once every 10 seconds |
| Line Count for each feature:   * Minimax algorithm and heuristic function have their own files * Win/lose feature– project file on lines: 296-304→ how level is changed and games won is updated, 330-331→ checks for final game over, 365-384→ draws end screen * Increased difficulty– bossAndPlayerClass file on lines: 90-110→ for changing attack value, bossAndPlayerClass file on lines: 154-164 and project file on lines: 356-357→ both for time restriction on big attack |