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CSS 450 Computer Graphics

Final Project Proposal

Overall

We plan to create a 2D side-scrolling game where the Hero must dig through the world to reach a goal. The world will be created out of blocks/squares placed on a grid randomly to create the level. The hero can break/destroy these blocks to dig through the level. Enemies will chase the hero through the world and the hero must reach the goal before the enemies reach him.

Functional Specifications/Technical Constraints

- **Hierarchy and Transformation:** Both the hero and the enemies will have hierarchy and transformation with the hero being more complex than the enemies.
- **Primitive Attributes:** Blocks, enemies and the hero will be texture mapped. Particles (when a block is destroyed) will use alpha blended primitives.
- **Complexity/ Number of transforms:**
- **Pre-defined Animation:** Both the hero and enemies will have animations for moving around the world.
- **World Coordinate Window (WC) or Camera Control:** The game will center the large view on the hero and move with him.
- **Multiple Views:** The game will have two views. The large view will center on the hero and the smaller view will show the entire world so the hero knows where the goal is and can dig in that direction. The smaller view will act like a mini-map and allow the user to pan/zoom.
- **Semantic of application**: The player is trying to get the hero to the goal. The goal will be represented by a star. Difficulty level will be increased by increasing the speed of the enemies.
- **Audio support:** An audio effect will happen when the hero destroys a block and when the enemy collides with the hero.
- **Suspend/Resume/Reset or Load/Save:** A pause button will be included that stops all movement by enemies and the hero. The reset button will reset the hero and enemies and regenerate the random world's blocks.
- **User friendliness:** Keyboard will handle the move left right and jump. Mouse left click will destroy blocks.
- **Other Notes:**
  - While the hero can destroy blocks to move around the world the enemy cannot. Instead the enemies tunnel through the blocks.
  - The hero cannot fight the enemy he can only avoid them. If an enemy reaches the hero the enemy explodes with some particles and the hero dies.

Layout

Image of sample UI contains sample blocks and sample enemies. No sample hero included.
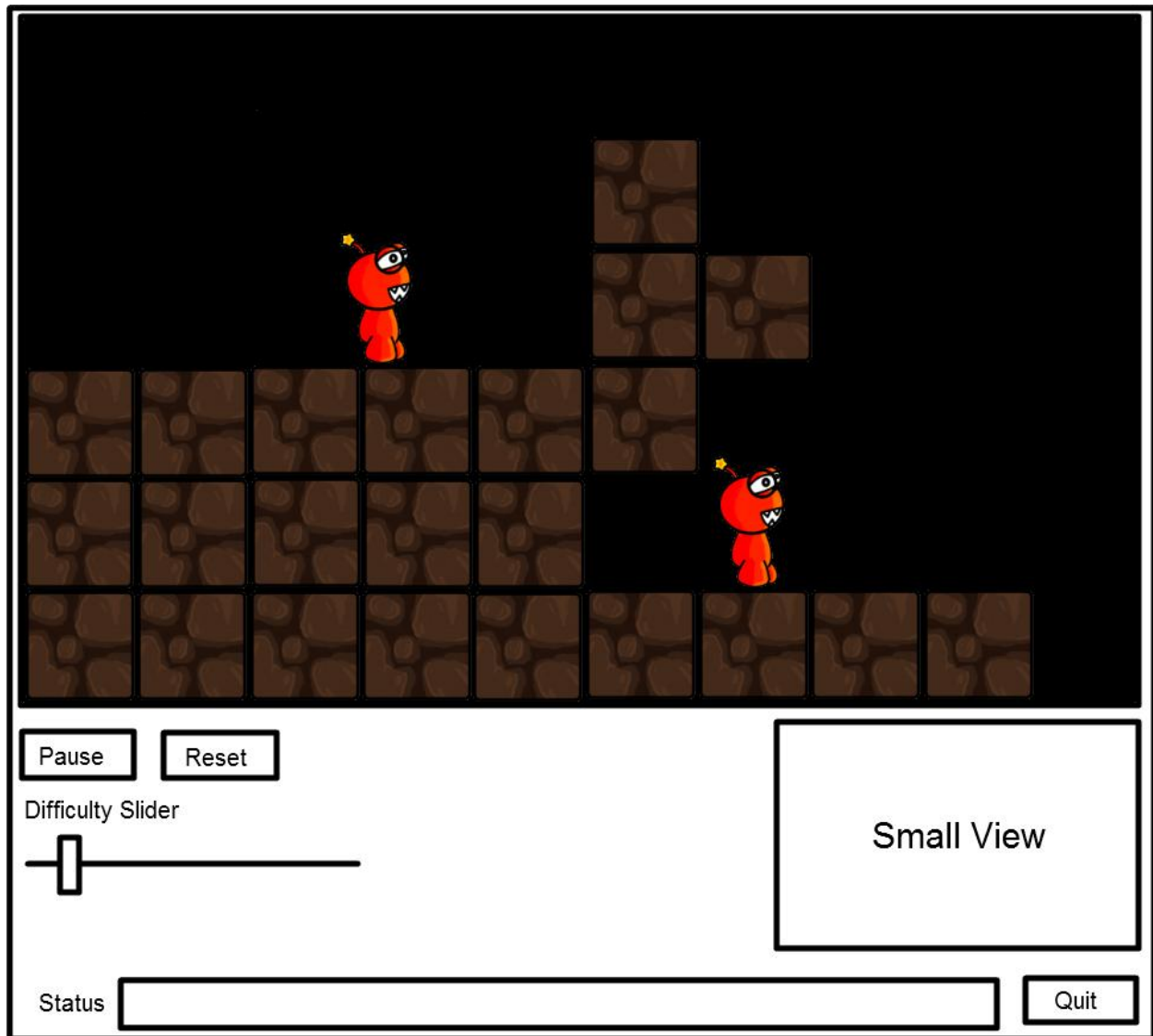
Object Interactions

- The hero collides with the enemies and the blocks.
- Blocks do not move and can be broken by only the hero via LMB click and hold.
- The hero walks on the blocks and not through them.
- Enemies move through blocks and collide with the hero.

View/ Controller Pair Support

Large View

- Centered on the hero.
- Follows hero.

- Zoomed in so the player can easily select which block to destroy.

Small View

- Shows the entire world so the user can see the goal.
- Can zoom and pan to specific areas.