Design Document – Prac Week 6

This documents all the intended mechanics for the game tested in the week 6 prac.

1. Terrain

1.1 The level terrain is depicted by a grid of square tiles, 16 tiles high, and as long as needed to depict the entire level.

1.2 There are three types of terrain tile: water, ground, and buildings.

2. Camera

2.1 The game is intended to be played in a web browser, both in a 1280x720 window and in full- screen mode on a typical PC monitor. The game scene and UI should adapt to fit both scenarios.

2.2 The camera is 2D orthographic, and shows the full height of the level. The width of the camera should be determined by the screen width.

2.3 During play, the camera should move to the right at a constant speed.

3. Player Ship

3.1 Movement

3.1.1 The ship moves relative to the camera. When the player releases the controls, the ship moves forward with the camera, so that its position on the screen does not change.

3.1.2 The ship moves at a fixed speed (in screen space), with a tunable amount of momentum for fluid movement when the control input changes.

3.1.3 Movement beyond the camera view is impossible.

3.2 Collisions

3.2.1 The ship is destroyed when it collides with the terrain or any enemy units.

3.2.2 When the ship is destroyed, an explosion plays at its last location.

3.3 Bullets

3.3.1 When the player presses the Fire key (‘x’) a bullet is fired from a position in front of the player’s ship.

3.3.2 Bullets move to the right in world coordinates at a constant speed.

3.3.3 A bullet is destroyed when it collides with the terrain or an enemy unit.

3.3.4 A bullet is also destroyed when it leaves the screen (so it is impossible to shoot offscreen enemies).

3.4 Bombs

3.4.1 When the player presses the Bomb key (‘z’) a bomb is dropped from a position below the player’s ship.

3.4.2 A bomb moves downwards in world coordinates, accelerating with gravity.

3.4.3 A bomb is destroyed when it collides with the terrain or an enemy unit.

4. Enemy Units

4.1 Missiles

4.1.1 Each missile launches when the camera reaches a certain position in the scene (a tunable parameter).

4.1.2 Once launched, a missile will fly directly upwards in world coordinates at a fixed speed.

4.1.3 A missile will be destroyed when it collides with the player's ship, a bullet, a bomb or the terrain.

4.1.4 When a missile is destroyed, an explosion plays at its last location.

4.2 Radars

4.2.1 Radars are stationary and play a rotating animation.

4.2.2 A radar will be destroyed when it collides with the player's ship, a bullet or a bomb.

4.2.3 When a radar is destroyed, an explosion plays at its last location.

4.3 Fusion Cores

4.3.1 There is one fusion core per level.

4.3.2 The fusion core is stationary and plays a pulsation animation.

4.3.3 The fusion core will be destroyed when it collides with a bomb.

4.3.4 When the fusion core is destroyed, a large explosion plays at its last location.

4.3.5 When the fusion core is destroyed, the level is successfully completed.

5. Scoring

5.1 The UI will show the player’s score in the top left corner of the screen.

5.2 If a missile is destroyed by bomb or bullet, 10 points are added to the core.

5.3 If a missile is destroyed by colliding with the terrain or the player, no points are added to the score.

5.4 If a radar is destroyed, 50 points are added to the score.

5.5 If the fusion core is destroyed, 500 points are added to the score.

6. Lives

6.1 The player starts with three lives. When the player's ship is destroyed, one life is lost.

6.2 The game is over when the player has zero lives.

6.3 The player's current number of lives is displayed in the top-right corner of the UI.

7. Checkpoints

7.1 Checkpoints occur at certain points in the level.

7.2 A checkpoint is activated when the player passes its position.

7.3 When the player's ship is destroyed, if the player still has lives, it is respawned at the location of the last checkpoint to be activated, or at the start of the level if no checkpoint has seen activated.

7.4 When the player is respawned, the camera will move to centre the player at the spawn location.