

Apocalypse Defense

Requirements & Specifications

Group 9

Members

Blair Gemmer

Nada Alhothli

Pat Kujawa

Introduction

This project will be a tower defense game (http://en.wikipedia.org/wiki/Tower_defense) pitting humans against zombies. It will be an Android app available via the Android Marketplace. The following are functional requirements for the game, in order of priority.

Must-have

1. Game is played in landscape mode with built-in android buttons on right side
2. Game runs on android 2.3 (Gingerbread) on the following devices:
 - a. Viewsonic GTablet (1024x600, Width: 10.5" Height: 6.8" Depth: 0.54")
 - b. Samsung Galaxy player 5.0 (800x480, 3.07" x 5.56" x 0.46")
 - c. Samsung Galaxy Captivate (phone 400x800, 4.78" x 2.5" x 0.39")
 - d. Asus Eee Pad model TF101 (1280x800, 271 x 176.8 x 12.98 mm)
3. User has the ability to start the game and exit the game
 - a. To start, user can press "new game" or "resume game" buttons
 - i. Resume game only available to press if a previous game was saved
4. At any time during gameplay, if the device is interrupted or the user presses the 'home' button, the game is saved
 - a. The locations and health of all towers and zombies on the map are preserved
 - b. The amount of gold and health the user has is preserved
5. New game opens a screen with a map (graphic of a grassland) and controls
 - a. Map is partitioned into a square grid of 15 wide, 10 tall (towers can only be placed on squares)
 - i. Grid should be visible (later, it can be turned on/off via an options menu)
 - b. Controls/labels are along the bottom in an area separated from the map (gutter):
 - i. Tower icons on right side with a finger-width buffer to the right of them
 - ii. Play/pause button (with graphic) on left side
 1. Towers cannot be upgraded or placed while paused (increases game difficulty)
 - iii. Text labels for "Gold: \$xxxx" and "Wave: yyy" in middle
 - c. Begin with \$15 gold
6. Resume game opens the last persisted game (see 4)
7. User can select towers to place on the map
 - a. One tower, represented as a graphical icon in the towers portion of the gutter (see 5.b)
 - i. Tower graphic is of a human with a pistol on a simple watchtower (range of 2 squares, attack of 2, rate of 3 hit/sec, HP of 100)
 1. *Range* is the area within which the weapon does damage to a zombie
 2. *Attack* is the amount of HP the weapon takes away from one zombie for every hit
 3. *Rate* is how fast the weapon produces hits

4. *HP* (hit points) is a measure of the health of a tower.
 - ii. Tower costs \$5 to purchase
- b. Touch and drag from gutter onto map
- c. When dragging, graphical icon and range of tower (green circle) displayed under user's finger
- d. Graphical indicator (red X) if the tower would be placed in a location that entirely blocks the paths of zombies to any towers
- e. When user releases finger, tower is placed on square under finger.
 - i. Gold is updated by subtracting the cost of the dropped tower
8. Zombies populate the screen at an entrance point on the left side of the screen and randomly walk until they "see" a survivor (tower) within their sight range (5 squares), then head toward the survivor (tower)
 - a. Movement is represented by animating a zombie graphic (or just a static image, for starters) and translating on the map at a rate of one square per second (*speed*)
 - b. Zombies start with range 1, HP 10, attack 1, rate of 1 hit/sec
 - c. When receiving damage from towers, a progress-bar like graphic will appear above the inflicted zombie and show the amount of remaining life. The same mechanism will be used for towers
 - d. When zombie killed (HP drops to zero), zombie disappears into the ground in an animation
 - e. When zombie killed, user's gold increases by \$3
9. Towers receive damage from zombies within the zombies' range
10. User has a scoreboard after winning or losing a game
 - a. Zombies killed, survivors that died, and amount of total gold earned
11. When all towers are destroyed, the user loses the game
12. User can win the game by killing 100 waves of zombies without losing
 - a. Each wave, the zombies will get increasingly more difficult
 - i. *HP* will increase by 5 points

Want to have

1. User has the ability to start, exit the game, as well as choose options
2. User can select options within game UI
3. User can mute sound within game options
4. User can select multiple maps to play a game of chosen difficulty
 - a. User can change difficulty before choosing a map
 - b. Create custom map editor to create new maps
5. User can select multiple weapons for the survivor to use to kill zombies
 - a. User must select a survivor to upgrade their weapons
6. Survivor has some sort of reload rate that interrupts gun fire
 - a. no reload on melee weapons
7. Sentry guns that are cheaper, easier to destroy, but faster rate of fire
8. Achievements based on zombie kills, etc
9. Survivors become zombies upon death (hp reaches 0)

10. Fast forward button to increase speed of battle
11. Exit point for zombies that will take away lives from the user when zombies cross the threshold (user starts with 20 lives)
12. User can select weapons for the survivor to use to kill zombies
 - a. Weapon has some rate of fire that is specified within the weapon object
13. End-game scoreboard includes amount of bullets used
14. Upgrade towers
 - a. Touching a tower opens an overlay with upgrade options
 - i. Display benefits of upgrade (range, attack strength/type)
 - ii. Display cost
 - b. Upgrades cost money; can't buy if not enough cash - gray out
15. When the game is paused, hints/documentation show up when user holds on baddies or towers
16. Unlock new towers/upgrades
 - a. By winning
17. Design, save, and play a map
 - a. Choose from a set of starter maps
 - i. Grass, desert, city
 - b. Set entrance(s) and exit(s) for zombies
 - c. Given a set of building blocks, drag them onto the map
 - i. Must not entirely block path of zombies
 - ii. Items like boulders, streams, trees, buildings, sand dunes, cacti, hills

Would be nice to have

1. User can upgrade a survivors weapons as well as stats
 - a. stats: armor, hp, reload speed etc
2. Custom map editor available to the public
3. Share custom maps
 - a. View/download/upload - hosted online
 - b. Maybe buy/sell in app store (built-in rating and comment system)

Usability Requirements

1. Fun
2. Attractive
 - a. Bright color scheme
 - b. Either super-realistic or well-done cartoonish characters
3. Immediate action
 - a. No explanation screens or storyline before playing
 - b. Minimal instruction necessary to understand game
 - c. Power users can disable any instructions
4. Learn as you go
 - a. Interacting somehow with towers/zombies will pause the game and display helpful content regarding the item (e.g. this zombie susceptible to fire, this gun accurate at long range, etc)
5. Re-play appeal
 - a. Earn achievements to unlock maps, towers, upgrades
 - b. Hard and Nightmare modes
6. Familiar to established TD game style
 - a. Follows format of one or more entrances and exits for zombies to proceed through
 - b. Zombies take shortest path available to their exit point
 - c. Towers create obstacles for zombies but cannot entirely block
 - d. Upgradability of towers
 - e. Selling/removing already-placed towers
 - f. Range of tower displayed as user is placing on map
7. Free to try
8. Saves state
 - a. Device battery dying or interruption by phone call should not cause game to lose track of everything going on in the game