Apocalypse Defense

Project 3
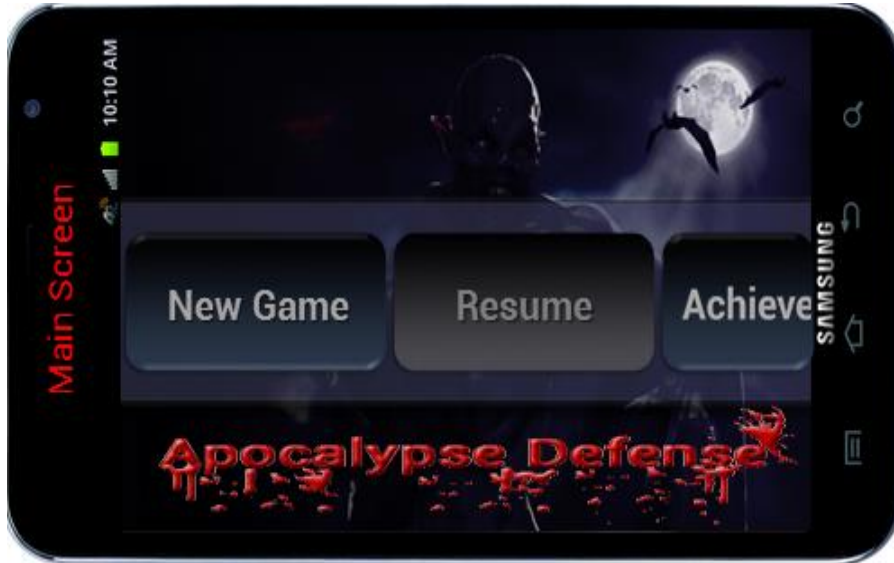
Blair Gemmer

**CSCI 576 – Human-Computer Interaction, Spring 2012**

Iterative Design

Feedback

1. Some devices may not have hardware buttons.
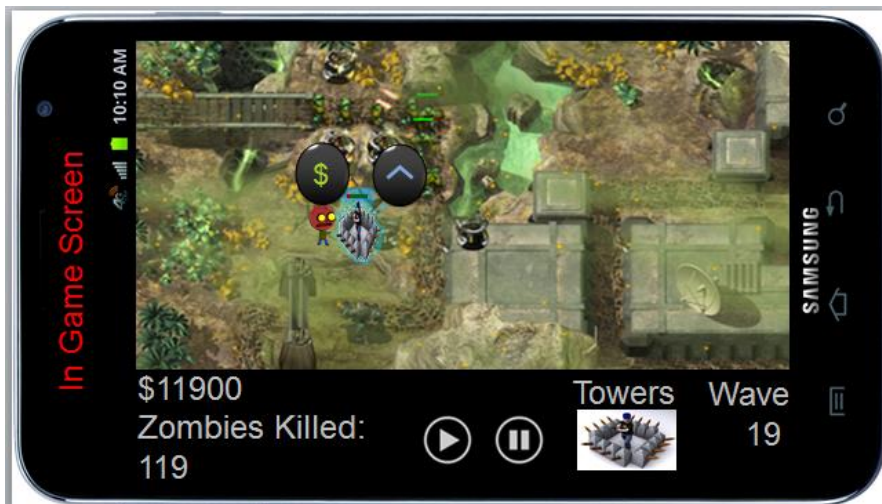2. If there are only three options for main menu, make all buttons available without swiping.

3. Should game auto save or can there be a confirmation screen if you are overwriting a saved game?
4. Make "continue to play game" button the same size as others in exit confirmation screen.
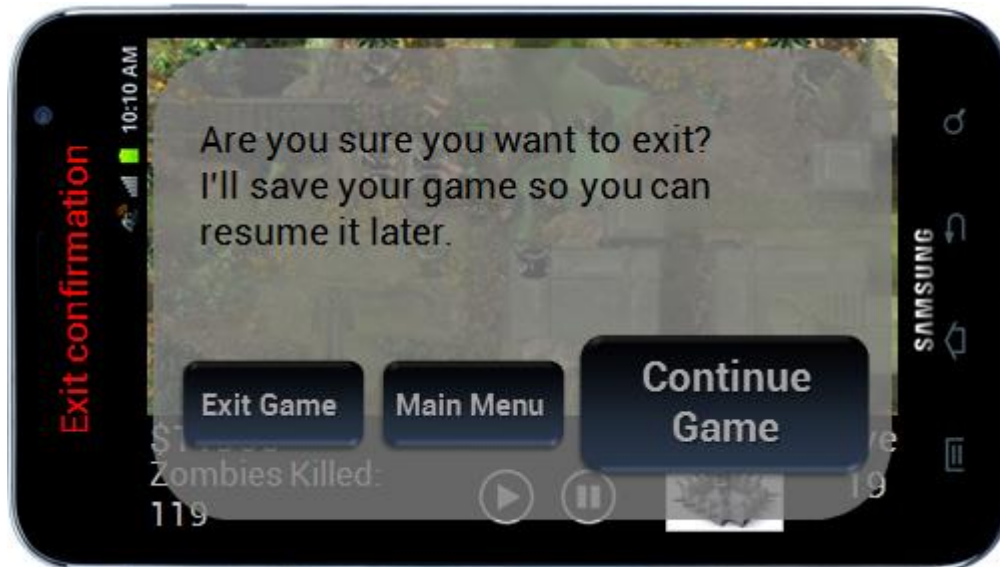
5. Add the cost to the tower in the gutter in gameplay.
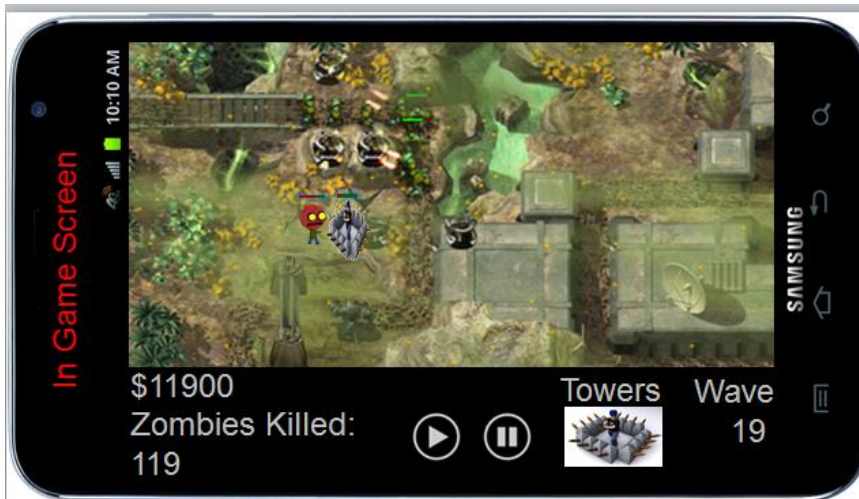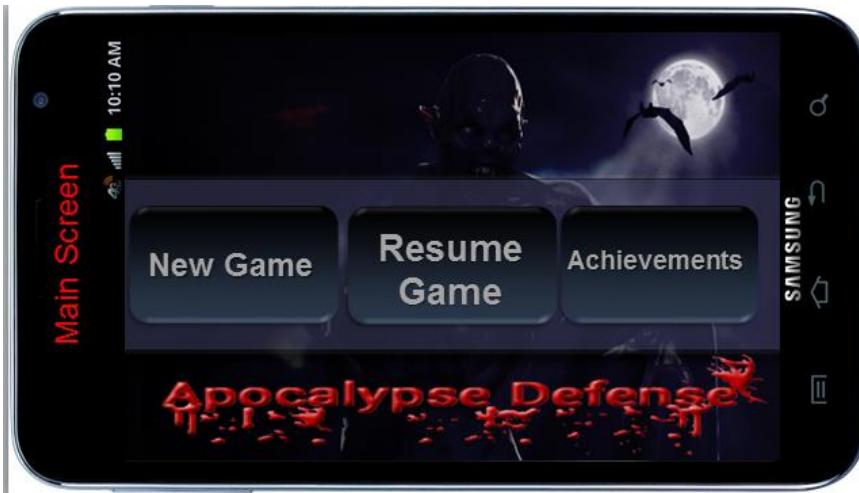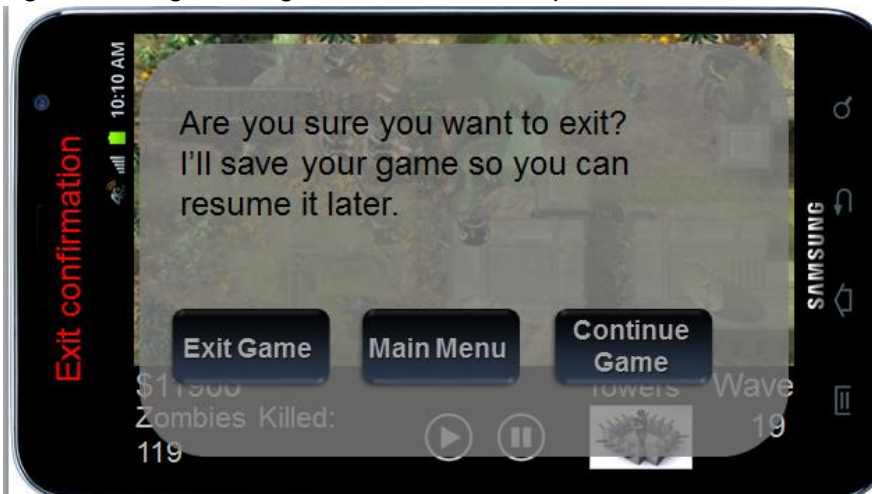
6. Make "sell tower" button red.

7. Make the gutter area in the bottom of the screen as small as possible.
8. Think about how to make upgrade menu.

Responses in Design

1. All the current devices have hardware buttons or a software solution that has the same functionality.
2. Agree. Changed design to include all three menu options available on the same screen without swiping.

3. Agree. Before starting a new game, if there is an old game saved, you will get a confirmation screen that asks if you are sure you want to start a new game.

4. Agree. Changed design to have all three options uniform in size.

5. Agree. Changed design to add cost of the tower to the gutter icon.
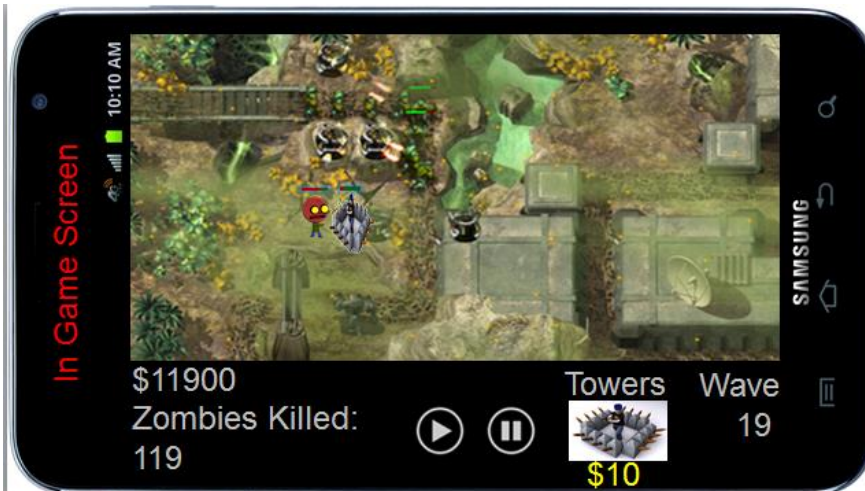
6. Agree. Sell tower button is now red.

In Game Screen

$11900
Zombies Killed: 119

Towers

Wave 19
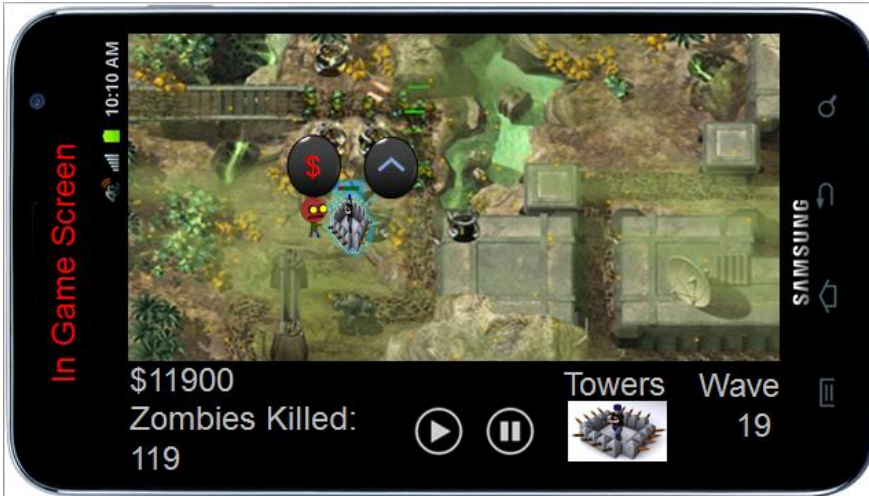
7. Agree. Will implement this based on how testing on each device goes.
8. Agree. Even though it is a medium priority, we will begin thinking of how our upgrade menu will look.

Cognitive Walkthrough

Tasks

1. Start a new game
2. Resume an interrupted (or exited) game
3. Adjust the volume
4. Play the game
5. Exit the game
6. Return to main menu from within gameplay

Start a new game

1. **User clicks "start new game" button after entering application.**

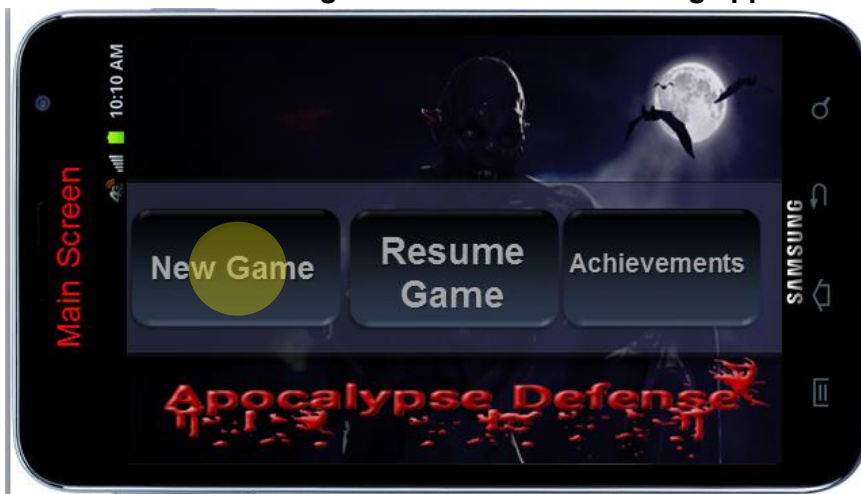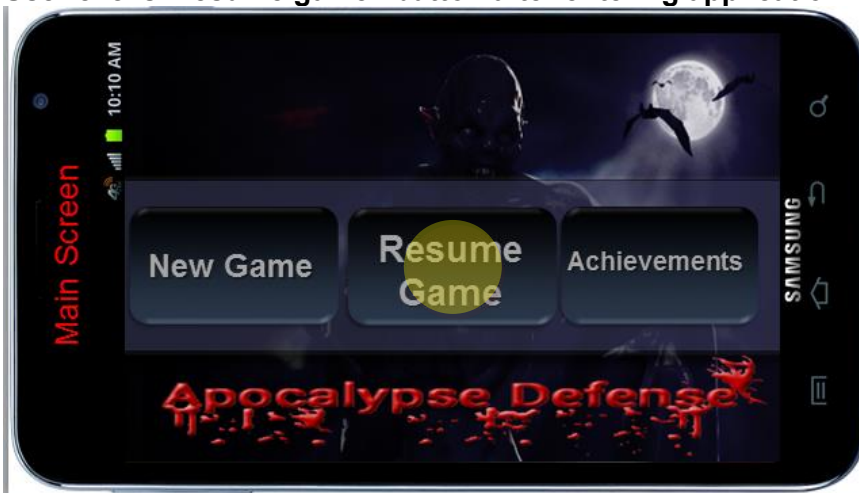a. *Will users be trying to produce whatever effect the action has?* **Yes, if they have started the application, they are ready to start a new game.**
b. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes, it is the first button in the list and clearly labeled "start new game".**
c. *Once users find the control, will they recognize that it produces the effect they want?* **Assuming they know what "start new game" means, they should know the effect clicking the button will have.**
d. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **If the user clicks on the button, it will depress and go to the next screen. This should allow the user the ability to choose the next action with confidence.**

2. **User selects the default map and default difficulty level for that map and clicks the map to enter gameplay.**

a. *Will users be trying to produce whatever effect the action has?* **The map and difficulty level will be clearly labeled to alert the user to its function.**
b. *Will users see the control (button, menu, switch, etc.) for the action?* **The map is the largest button on the list and the difficulty radio buttons are clearly labeled.**
c. *Once users find the control, will they recognize that it produces the effect they want?* **As long as the user has any experience with starting a feature in an Android application, they should catch on to its functionality quickly. A less experienced user will be restricted by the constraints of the system to clicking the only control available.**
d. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **If the user has correctly clicked the map button, the game will begin. This will alert the user that they have clicked correctly.**

3. **Complete**: User has started a new game.

**Resume an interrupted (or exited) game**

1. **User clicks "resume game" button after entering application.**

   a. *Will users be trying to produce whatever effect the action has?* **If a game was previously played, this button will no longer be greyed out, which will alert the user to its ability to be clicked. If they have recently played a game, they will be anxious to resume it so this will seem like a viable option.**
   b. *Will users see the control (button, menu, switch, etc.) for the action?* **It is clearly labeled and will be greyed out when not functional, but will be clickable when it is functional.**
   c. *Once users find the control, will they recognize that it produces the effect they want?* **As long as they understand what functionality "resume game" tends to mean, which is likely.**
   d. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **If the button is correctly hit, it will depress and gameplay will resume.**
2. **Complete:** User has resumed a game.

Adjust the volume

1. **User clicks Android hardware "menu" button.**
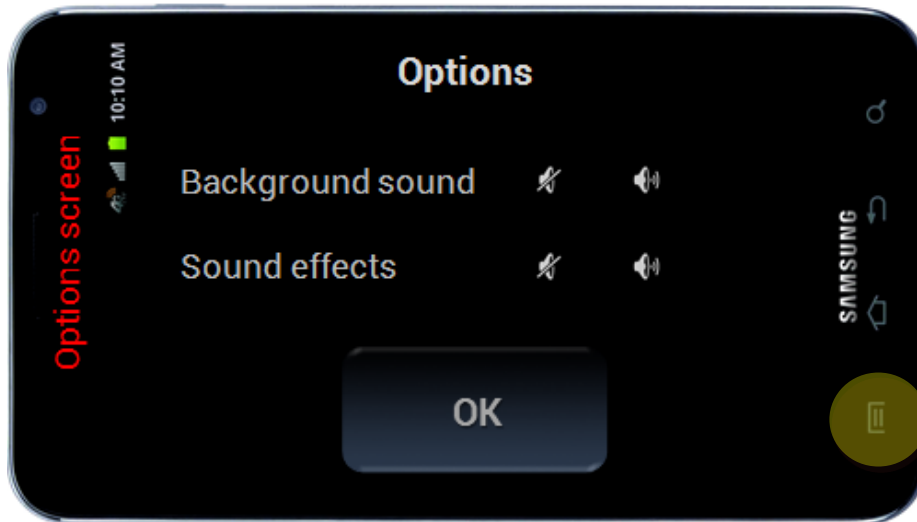
   a. *Will users be trying to produce whatever effect the action has?* **Yes. If the user is searching for a way to mute the sound, typically the Android menu button is one of the first to be chosen (among current Android users who have any experience at all with Android apps).**

   b. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. It is a highly visible and normally used function of any Android application.**

   c. *Once users find the control, will they recognize that it produces the effect they want?* **Yes. If the user clicks the control, it will bring up a popup which will instruct them to mute the background sound or sound effects.**

   d. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes, the popup will indicate this.**

2. **User selects mute sound button.**
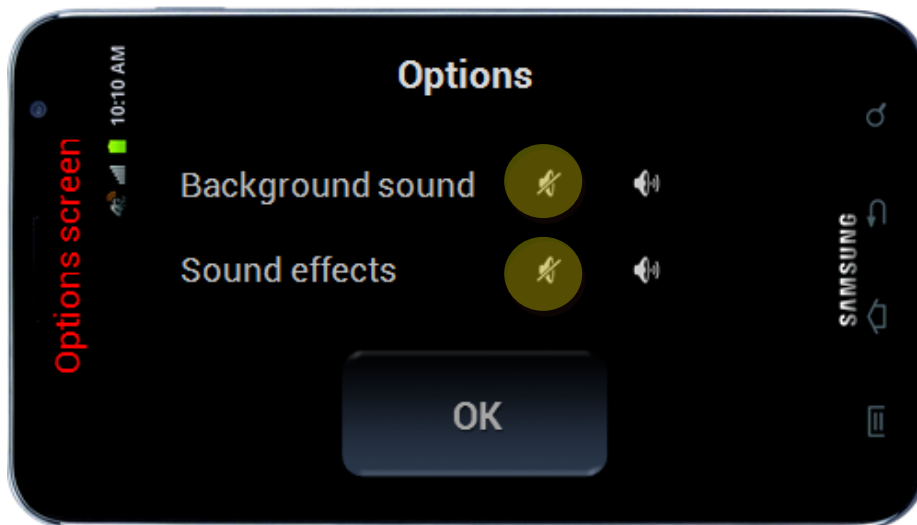
a. *Will users be trying to produce whatever effect the action has?* **Yes. If they desire to mute the background sound or sound effects, they will be trying to produce this effect.**
b. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. The control will be clearly labeled to indicate its function.**
c. *Once users find the control, will they recognize that it produces the effect they want?* **Yes. It will be standardized to function like other Android applications, so it shouldn't be confusing to the user.**
d. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes. The user will no longer be able to hear sound if the sound is muted.**

3. **User selects same button to unmute sound.**
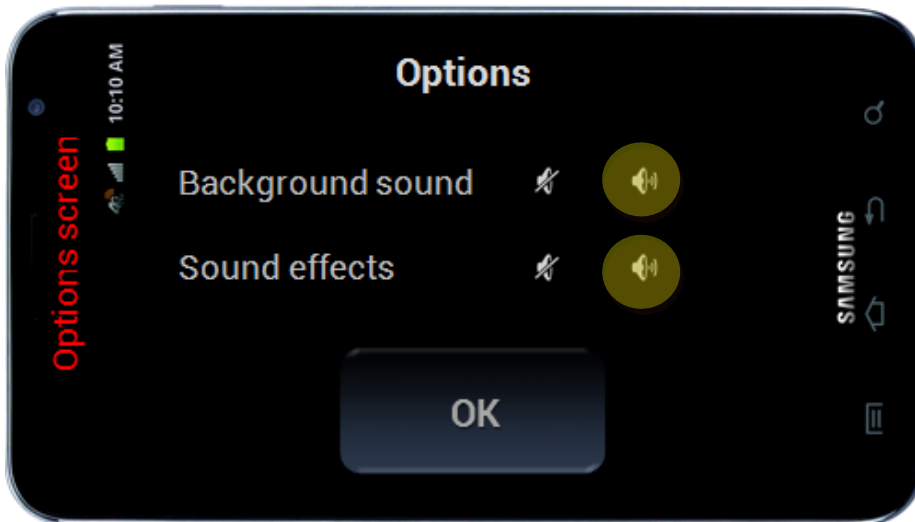
a. *Will users be trying to produce whatever effect the action has?* **Yes, if the user wants to unmute the sound they will be trying to accomplish that task.**
b. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. If the user has muted, it will be clear that they can click the button again to unmute.**
c. *Once users find the control, will they recognize that it produces the effect they want?* **There will be a label that crosses out the speaker symbol so it will be apparent when the sound is muted or unmuted.**
d. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **The cross out symbol should provide enough feedback, as well as the sound turning on or off.**

4. **Complete:** User has adjusted the volume.
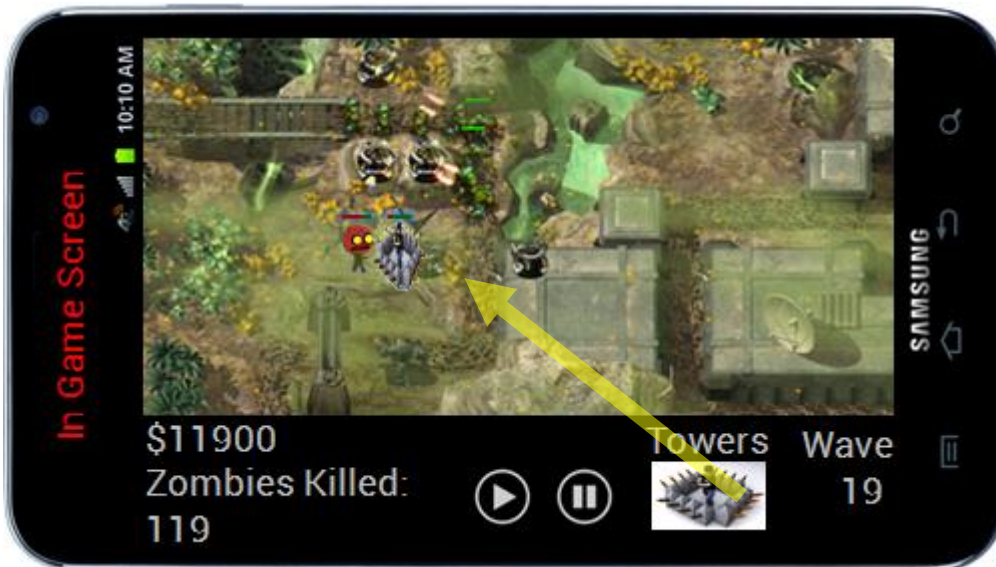
Play the game
1. User has started a new game (see "**start a new game**").
2. **User selects a new tower by placing his/her finger on the tower icon in the gutter and dragging the tower to any location on the map, except on top of zombies.**

In Game Screen

Prevent zombies from killing all towers!

Survive 100 waves to win.

Drag a tower to the map. Release it to begin.

$11900
Zombies Killed: 119

Towers

Wave 19

a. *Will users be trying to produce whatever effect the action has?* **Yes. The intro tutorial will show the user how to utilize this functionality. Also, the user is constrained in that this is one of the only actions that can be produced from the gameplay UI.**

b. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. The tower icon will be clearly labeled to indicate that it is indeed a tower to be dragged. Once the icon is depressed, it will show up under the user's fingertips which will indicate that the user can drag the tower.**

c. *Once users find the control, will they recognize that it produces the effect they want?* **Yes. After the initial drag to the screen from the new game tutorial, the user will have an understanding of how to drag the towers.**

d. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes. Once a tower is dragged, they will show up in the location they are dragged to on the map. Hopefully, the user understands that they need more than one tower to complete the mission.**

3. **User continues to select towers until they run out of money or all the zombies are dead.**

   a. *Will users be trying to produce whatever effect the action has?* **Yes. The game continues to play until the towers all die or the zombie waves have all been eliminated.**
   b. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. Scoreboard will indicate a win or loss.**
   c. *Once users find the control, will they recognize that it produces the effect they want?* **Yes, the scoreboard will be plainly labeled.**
   d. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes. A list of buttons will show up that indicate to go back to the main menu or exit the game.**
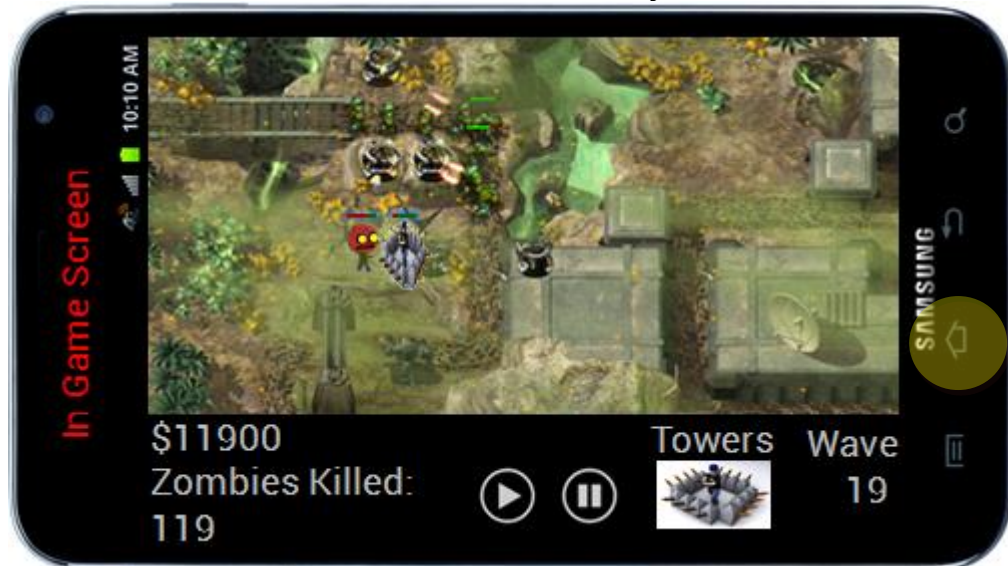4. **User wins the game by killing all the zombies in 100 waves.**
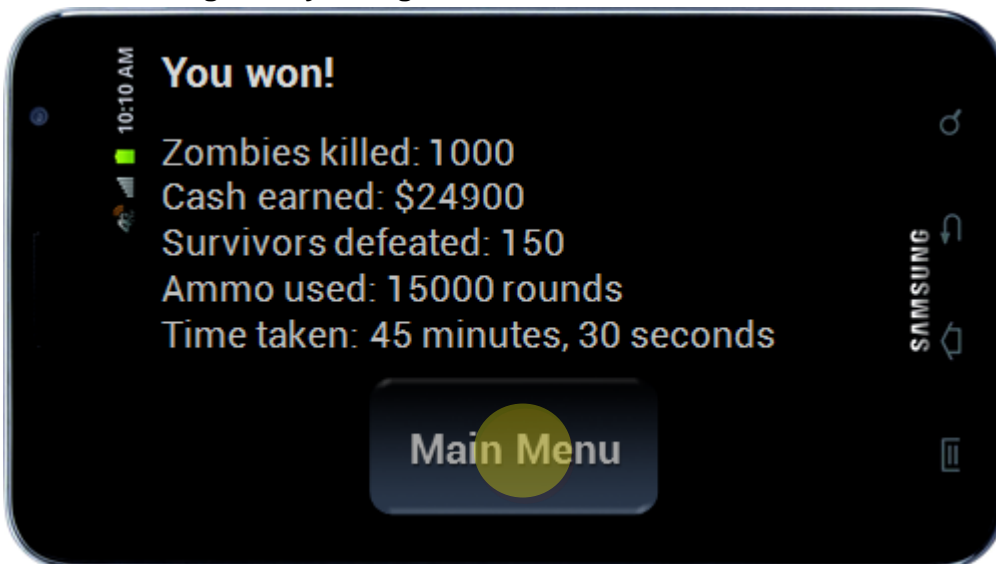
   a. *Will users be trying to produce whatever effect the action has?* **Yes. If the user plays the game well enough, they will win the game.**

b. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. If they win the game, the scoreboard will indicate that they won the game.**
c. *Once users find the control, will they recognize that it produces the effect they want?* **Yes. The scoreboard will indicate this.**
d. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes, after the scoreboard, a list of buttons will indicate to go back to the main menu or exit the game.**

5. **User loses the game by losing all their towers before being able to replenish them.**
   a. *Will users be trying to produce whatever effect the action has?* **Yes. A scoreboard will indicate that the user lost.**
   b. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. The scoreboard will be clearly labeled.**
   c. *Once users find the control, will they recognize that it produces the effect they want?* **Yes, the scoreboard will indicate this.**
   d. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes, a list of buttons will allow the user to return to the main menu or exit the game.**

6. User exits the game (see "**exit the game**")
7. User returns to main menu (see **"return to main menu from game"**)
8. **Complete:** User has played the game and utilized all the features of game play.

Exit the game

1. User is in the middle of gameplay (see **"play the game"**)
   a. **User selects the Android hardware "home" key.**

      i. *Will users be trying to produce whatever effect the action has?* **Yes. If the user wants to quit a game or application, generally the home key is a normal function of that app.**
      ii. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. The home key is clearly labeled and always available on the Android device.**
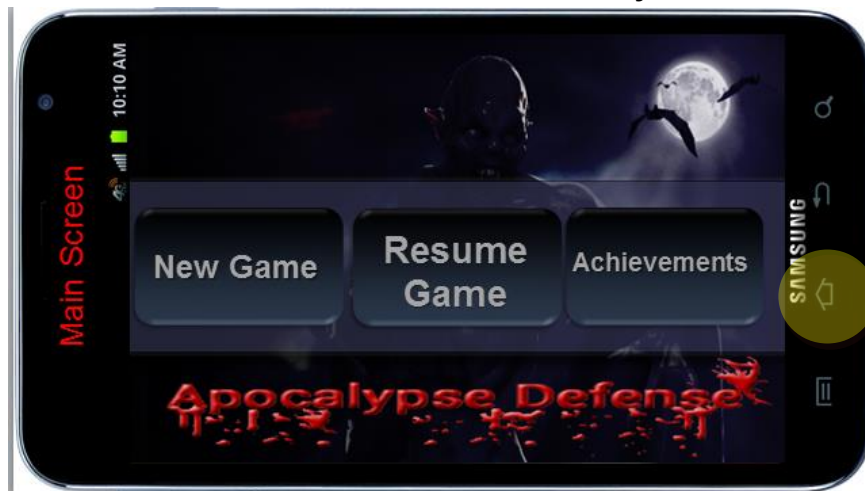
iii. *Once users find the control, will they recognize that it produces the effect they want?* **Yes. If the user clicks the control, it will bring them to the desktop of their Android device.**

iv. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes. They will be presented at the desktop.**

v. **User is at the Android desktop.**

b. **User selects the Android hardware "back" key.**

i. *Will users be trying to produce whatever effect the action has?* **Yes. This is a common way to exit an application in Android apps.**

ii. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. It is clearly labeled and always available on the Android device.**

iii. *Once users find the control, will they recognize that it produces the effect they want?* **Yes. If the user clicks this button, a confirmation screen will popup which will indicate to the user that they have wanted to exit the game.**

iv. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes, the popup will show them their options to return to the main menu or exit the game or continue play.**

v. **User selects the "exit game" button from the confirmation popup**
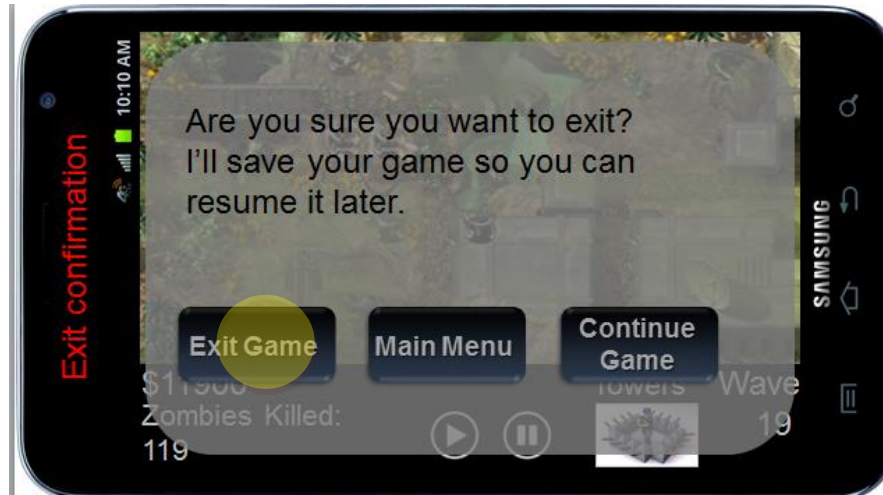
1. *Will users be trying to produce whatever effect the action has?* **Yes, if the user wants to leave the game they will choose this action.**
2. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes, it is clearly labeled on the confirmation menu.**
3. *Once users find the control, will they recognize that it produces the effect they want?* **Yes. If they click this button, the game will exit.**
4. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes, the user will be at the desktop.**
5. **User is at the Android desktop.**

2. **User is in the pre-game main menu area of the program and has not started gameplay.**
   b. **User selects the Android hardware "home key"**

   i. *Will users be trying to produce whatever effect the action has?* **Yes. If the user wants to quit a game or application, generally the home key is a normal function of that app.**
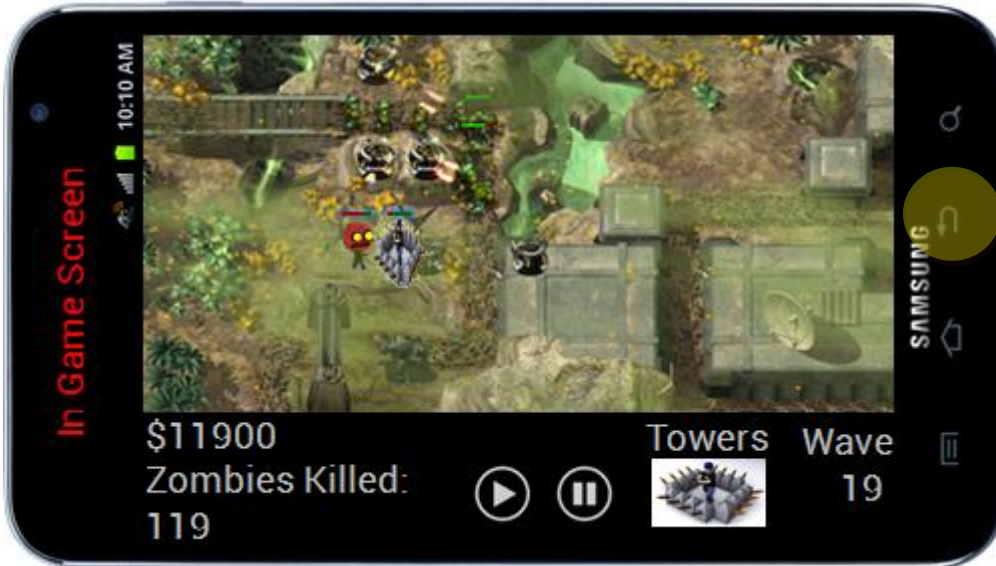
ii. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. The home key is clearly labeled and always available on the Android device.**

iii. *Once users find the control, will they recognize that it produces the effect they want?* **Yes. If the user clicks the control, it will bring them to the desktop of their Android device.**

iv. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes. They will be presented at the desktop.**

v. **User is at the Android desktop.**

a. **User selects the Android hardware "back" key.**
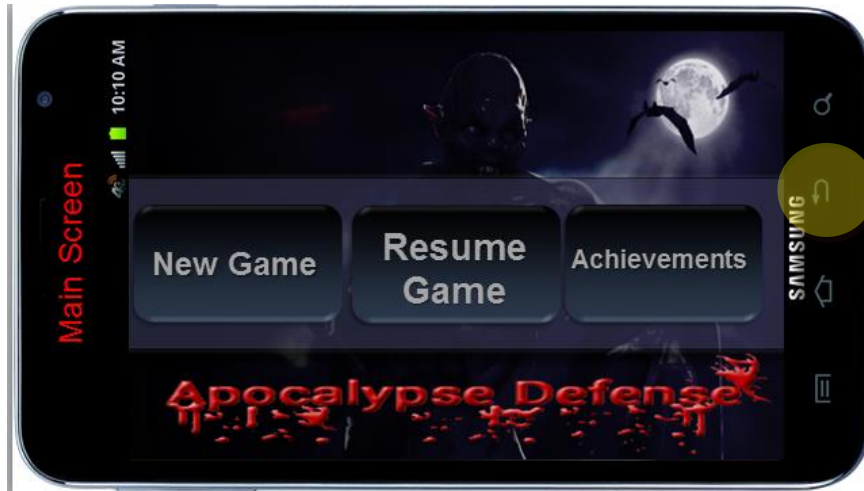
i. *Will users be trying to produce whatever effect the action has?* **Yes. This is a common way to exit an application in Android apps.**

ii. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. It is clearly labeled and always available on the Android device.**

iii. *Once users find the control, will they recognize that it produces the effect they want?* **Yes. If the user clicks this button, they will exit the game.**

iv. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes, the user will be at the desktop.**

v. **User is at the Android desktop.**

3. **Complete:** User has successfully exited the game from within gameplay

Return to main menu from within gameplay

1. User is in the middle of gameplay (see **"play the game"**).
2. **User selects the Android hardware "back" key.**

a. *Will users be trying to produce whatever effect the action has?* **Yes. This is a common way to exit an application in Android apps.**

b. *Will users see the control (button, menu, switch, etc.) for the action?* **Yes. It is clearly labeled and always available on the Android device.**

c. *Once users find the control, will they recognize that it produces the effect they want?* **Yes. If the user clicks this button, a confirmation screen will popup which will indicate to the user that they have wanted to exit the game.**

d. *After the action is taken, will users understand the feedback they get, so they can go onto the next action with confidence?* **Yes, the popup will show them their options to return to the main menu or exit the game or continue play.**

e. **User selects the "main menu" button.**

3. **Complete:** User has returned to the main menu from within gameplay.

Users

- People who have experience playing tower defense games, zombie killing games, or strategy games.
- People who do not have experience playing any games.
- People who use an Android device.
- People who are familiar with how Android default buttons work.
- Those who want to play games casually (no time commitment).
- All ages.
- All genders.

Example Users (Personas)

- Jane Doe: Computer programmer and avid video game player.
- Jon Doe: Blue-collar worker who spends his breaks playing tower defense games on his Android phone.
- Joe Blow: A zombie survivalist who enjoys anything related to zombies or zombie killing and uses an Android phone or tablet.
- Max Min: Five year old boy who is getting into video games and has an irresponsible parent who lets him play with their Android phone or tablet.
- Min Max: 85 year old owner of an Android phone who managed to figure out how to download the application from the Google Play market.

How often users will use system

- Daily, or pick up and put away for months, easy to come back to.

Results of Cognitive Walkthrough

Based on the simplicity of the design and the changes made due to the feedback we received during critique presentation, there are no changes I feel need to be implemented based on the cognitive walkthrough.

Heuristic Evaluation

Simple and natural dialog: The program design uses simple English words that are not technically difficult or require any training to understand.

Speak the user's language: The design revolves around using the Android standard icons and limits its usage of new language to confuse the user. Standardization is key here.

Minimize user memory load: Every aspect of the game is displayed to the user through the UI or saved in the game state when the user resumes the game.

Be consistent: All buttons are consistent within the UI as well as within the Android app community to maintain consistency across the board.

Provide feedback: Every path has a clear change in state that is noticeable to the user.

Provide clearly marked exits: All exits are standardized for the Android app community standards.

Provide shortcuts: Resume game is a shortcut to the last game played that was interrupted or exited in some way. The hardware Android buttons provide shortcuts for exiting the game quickly and smoothly.

Good error messages: There is a confirmation screen in case user doesn't want to start new game (if resume is available) and if user accidently hits back and doesn't want to exit.

Prevent errors: User is fairly constrained to the system so it is difficult for user to make any mistakes.

Results of Heuristic Evaluation

Based on the simplicity of the design and the straight forward paths through the program, I do not see any immediate changes that are necessary to the design at this stage.