# Intro:

The feature that I will be working on for the project is the enemies. I will be the one who makes it possible for enemies (or bugs) to be generated in waves, and insures that the enemies try to get to the area that the player is trying to protect. The bugs will also need to be able to handle going around/over obstacles, as well as dealing damage to the player and or the CPU (or whatever the player is trying to protect). The bugs will also handle when they have been harmed/destroyed.

# Use case diagram
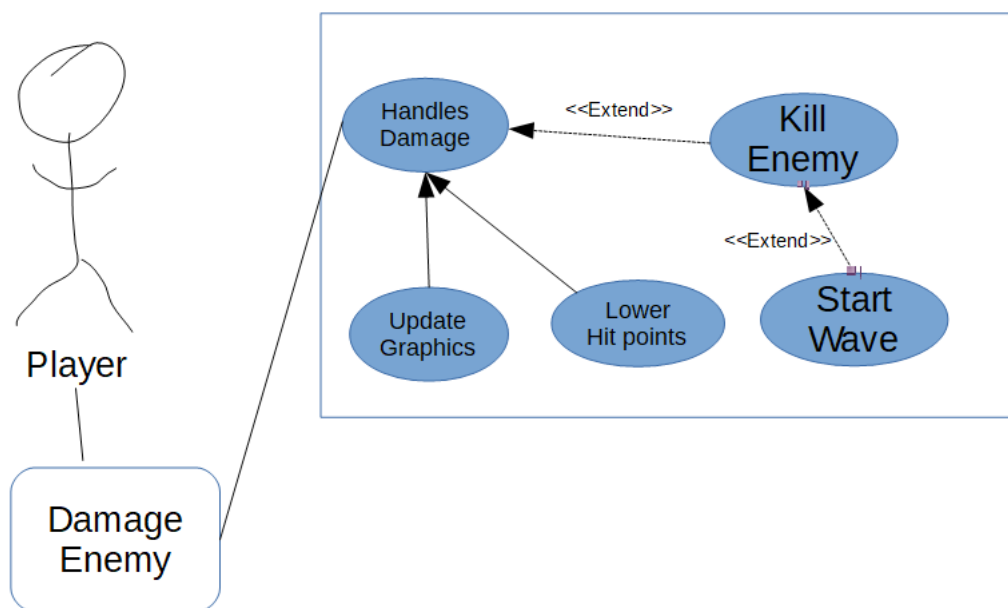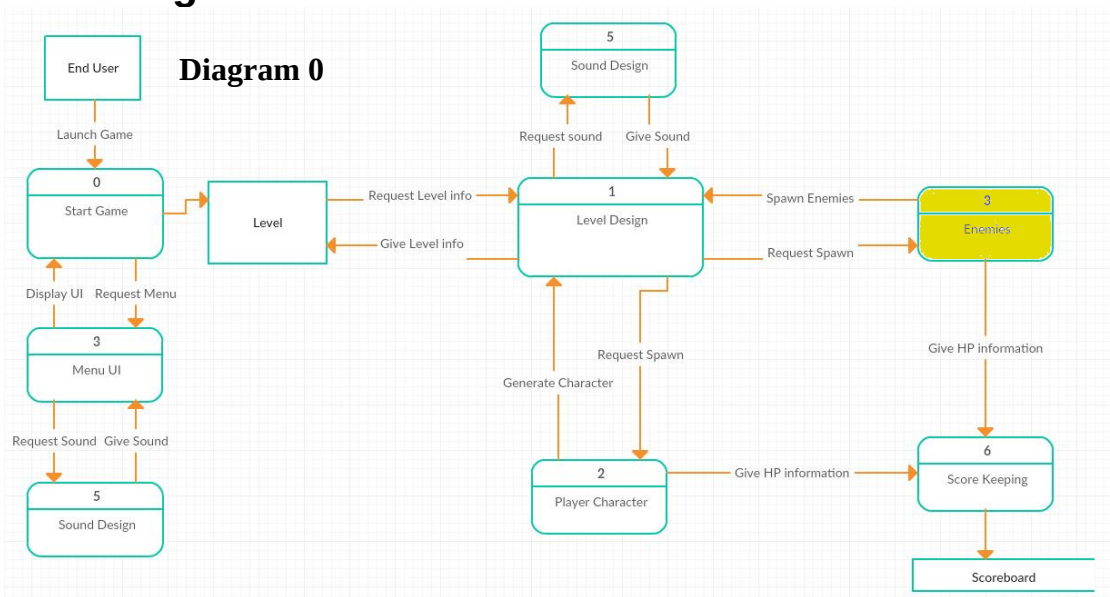


# Scenarios:

Name: Handles Damage
Summary:
Handles what needs to be done when there is damage dealt to a bug.
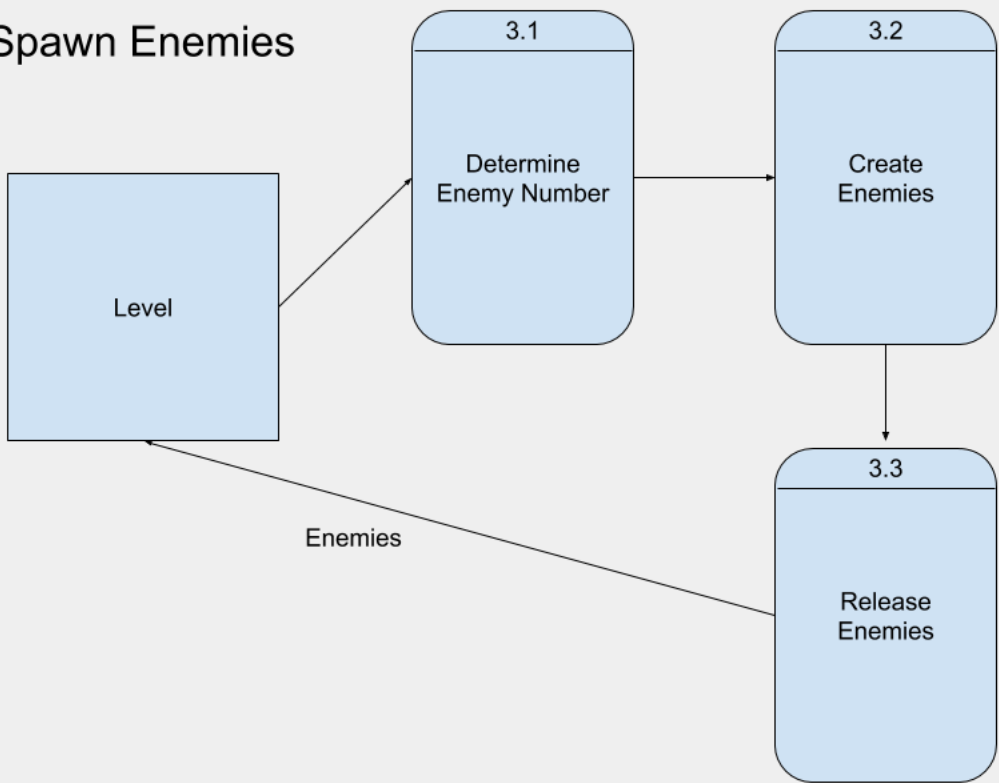
- Actors: Player Character
- Preconditions: Player character strikes or shoots the enemy
- Basic sequence:
    - Step 1: Lower the hit points of the enemy
    - Step 2: From the hit point value of the enemy, determine if it should still be "alive"
    - Step 3:Update the graphics of the enemy to reflect its state
- Exceptions:
    - If the hit point value of the enemy is 0, kill the bug (or, remove it from the scene)
    - If the bug is killed and it's the last enemy in the scene, start a new wave

Priority: 2

ID: BMB01

# Data Flow Diagram



**Diagram 0**

End User

Launch Game

0 Start Game

Level

Display UI   Request Menu

3 Menu UI

Request Sound   Give Sound

5 Sound Design

5 Sound Design

Request sound   Give Sound

Request Level info

Give Level info

1 Level Design

Spawn Enemies

Request Spawn

3 Enemies

Request Spawn

Generate Character

Give HP information

2 Player Character

Give HP information

6 Score Keeping

Scoreboard



Spawn Enemies

Level

3.1 Determine Enemy Number

3.2 Create Enemies

3.3 Release Enemies

Enemies

**Process Descriptions:**

Determine Enemy Number:
      IF number given by Level is 0, return.
      ELSE IF number given by Level is greater then the maximum number of enemies that
            can be created, return.
      ELSE Create Enemies

Create Enemies:
      WHILE number of created enemies in this wave is less than the number of enemies
            indicated by "Determine Enemy Number"
            Spawn a new enemy
            Release the enemy into the scene
      END WHILE

Release Enemies:
      FOR each enemy to release
            IF there is room in the entry way for another enemy
                  Put the enemy in the entry way
                  Activate the enemy so it starts attacking

# Acceptance Tests

Tests of the wave machine (and bugs):

I will test to make sure that the wave machine can handle being required to produce waves of at least 30 bugs with the following results:
- The bugs must all automatically move towards the location they are supposed to
- The bugs must come out gradually enough to not clog the entry ways
- The bugs must be able to handle their own hits, and die/disappear when they need to
- The bugs must be able to interact with the level, and any obstacles they may encounter
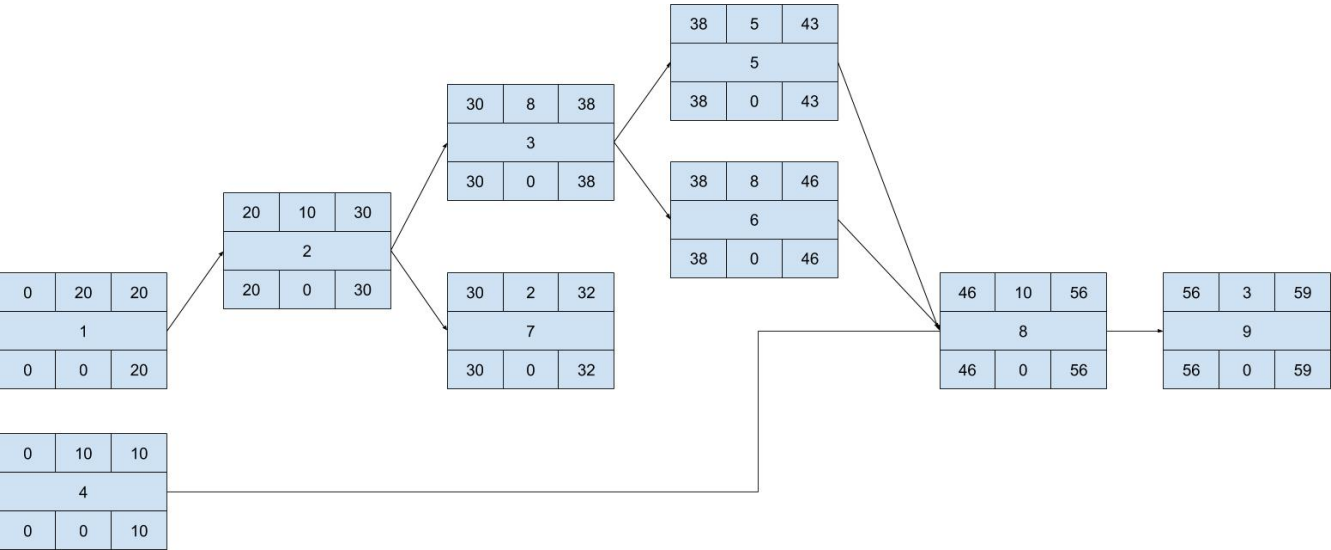
The wave machine will also be tested with an input of 0, to make sure it doesn't malfunction.

# Timeline

| Task | Duration (hrs) | Predecessor Task(s) |
|------|---------------|---------------------|
| 1. Bug Object | 20 | - |
| 2. Wave machine | 10 | 1 |
| 3. Automated movement | 8 | 2 |
| 4. Graphics | 10 | - |

| 5. Dealing damage | 5 | 3 |
|---|---|---|
| 6. Taking damage | 8 | 3 |
| 7. Documentation | 2 | 2 |
| 8. Testing | 10 | 2,4,5,6 |
| 9. Integration | 3 | 8 |

## Pert diagram



## Gantt timeline