

**Core Lab** (these are the items I really want you to complete – they’re worth more points [and should be more straightforward])

1. **(10 points)** Download one of reiner’s tilesets for your main character (I used “vlad”). Keep the walk images in separate files (unlike our example from section 5). Load these into a dictionary
  - a. where the key is a tuple (dx, dy) where dx and dy both are either 0, -1, or +1 to indicate direction of movement
  - b. ...and the value is a *list* of images

Play these back in response to character movement and time. Don’t animate the frame when the player isn’t moving. You can either use mouse or keyboard controls (your choice)

2. **(8 points)** When the user pressed the space-bar, fire a lance (draw it as a line), which should travel until it goes off-screen (and then is removed)
3. **(6 points)** Spawn chests (or other collectibles) at the top of the screen that slowly move to the left and wrap around.
4. **(10 points)** Detect hits between lance-tips and chests. Remove the chest and lance that collide.
5. **(4 points)** Show on-screen the number of chests hit and the total time taken.
6. **(4 points)** Have a debug mode which can be toggled by pressing the “D” key. When active, draw bounding circles around all hit-able objects and display the fps we’re getting.
7. **(4 points)** Keep the player from moving (even partially) off-screen or from going past a “wall” in front of the chests.
8. **(2 points)** Play a sound when a lance is shot and when a chest is hit.

**Bonus Features** (these are extra items that will take some effort on your part and aren’t worth quite the points as the core features)

1. **(3 points)** Instead of removing the chests, play through an opening animation (and keep the open chest on-screen)
2. **(12 points)** Create bowling balls (or similar obstacles) that slowly move to the right and spawn at regular intervals. If a lance hits a ball, remove it. If a ball hits the player, freeze them (no movement or firing allowed) for a few seconds – display a freeze-bar to indicate how much freeze time is left.
3. **(8 points)** Have a win-screen with some kind of “par” rating (1, 2, or 3 stars maybe?). Allow the user to start another game if they wish.
4. **(? points)** Other bonus features are allowed, up to 70 points total. Ask if you’d like an idea of how much it’d be worth.

Here’s a video of my completed lab (with most of the bonus features): <https://youtu.be/V1tNg1HDRt0>

*Ignore the email sound about 35 seconds into the video (I’m too lazy to re-record it ☺)*

