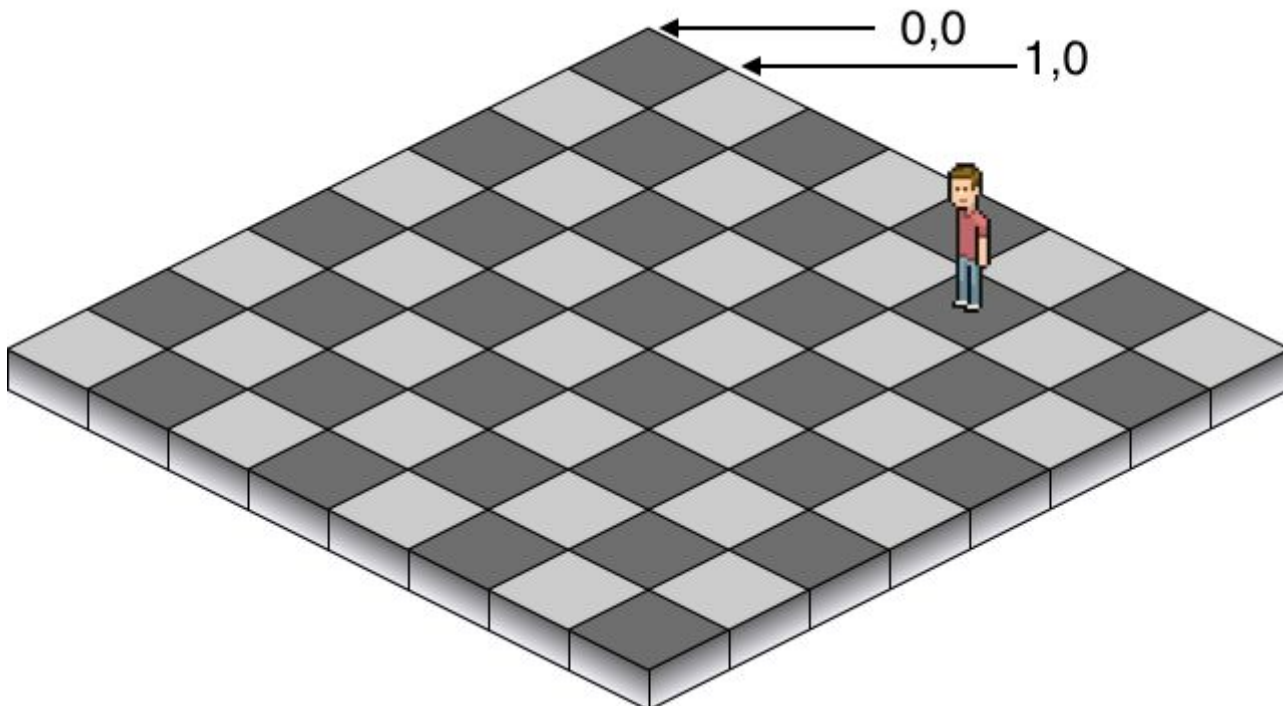


Game Development - Revaluation Examination - February 2nd 2018

YOUR FULL NAME:

- You have 2 hours to complete the assignment.
- Only valid text will be the one inside each box, everything else will be ignored by the teacher

1. **(3 points)** Given an map with isometric view, were the tiles are 128 x 64, write down the formula to find the screen coordinates of the tile the character is in. Also, calculate the tile the character would be in if it were drawn at 200,300. Both screen coordinates and tile coordinates start at 0,0 top vertex and increase to the right-bottom. Hint: world to screen on x coordinate formula $(x-y) * (tile_width / 2)$



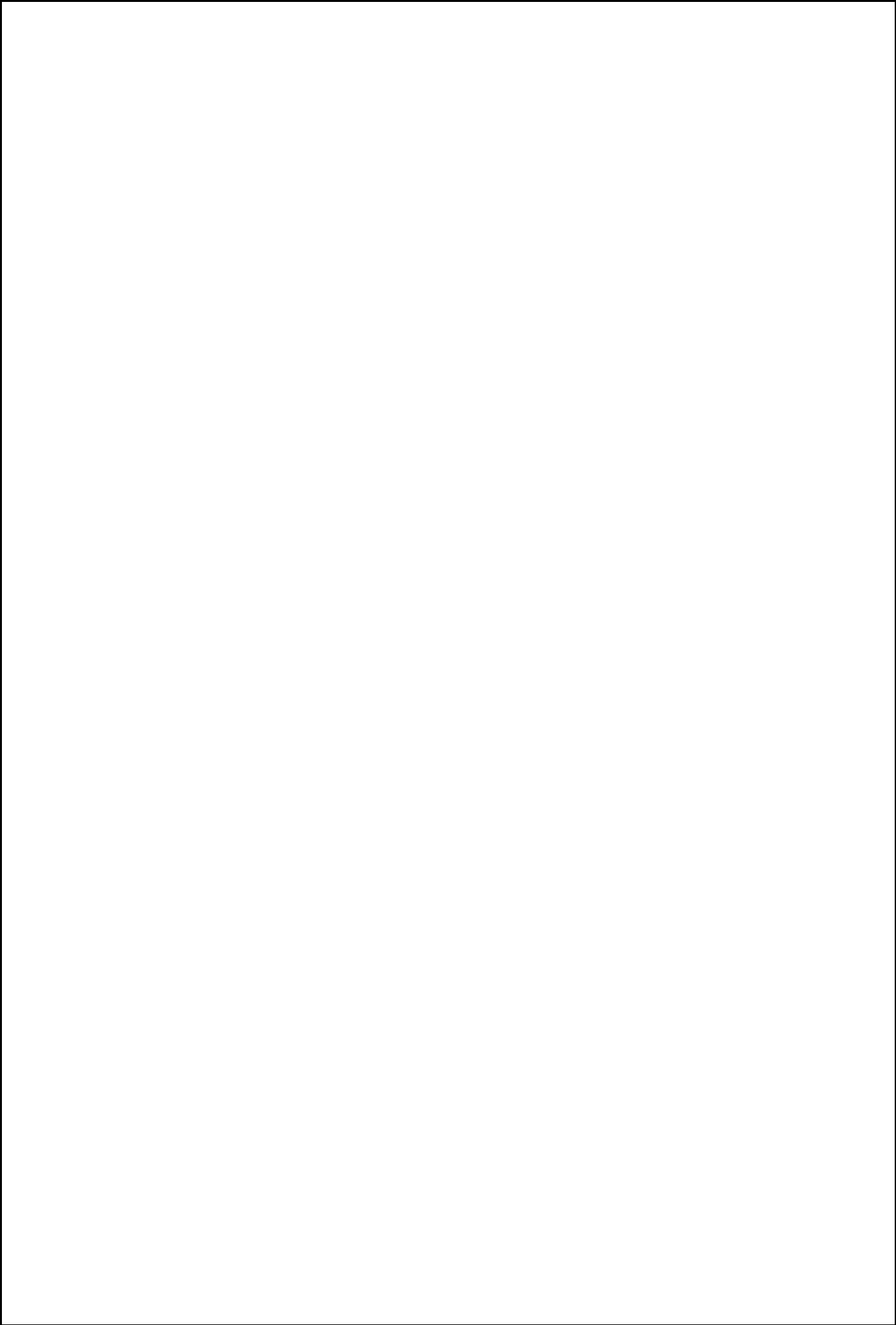
2. **(2 points)** Explain the main differences between the Dijkstra Algorithm and the A* algorithm.

3. **(2 points)** Define and explain the pros and cons of **Fixed Time Step** versus **Variable Time Step**. Why would it be interesting to limit the framerate in a video game ?

4. (3 points) Given can be seen in those two screenshot from *Final Fight*, draw the UML for an entity system that would have all those elements we can see in the picture. Take in account that:

- The three characters are active players (Cody, Guy and Haggar).
- Players and AI can grab and throw knives.
- Trash cans can be grabbed and thrown, as well as broken by attacking them.
- All NPCs have the same behaviour, attacks and animations, only changes the art.
- On the bottom screenshots, the items on the ground regain health.





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