**AI Assignment Report**

**Overview**

I believe my AI simulation successfully achieves my intended goals. There is a moveable player character that can interact with an AI controlled Agent. The agent implements the planned decision tree, deciding whether to Wander or Seek the hero dependent upon a number of decision checks, such as distance from the player and energy levels.

I am satisfied with most of the project and programming, but there are a perhaps a few area’s that could have been improved. There is some inflexibility in the way I designed some of the classes, and the Pathfinding could have been improved. I will go into those in detail.

**Inflexibilities**

I can see there were area’s that were a bit inflexible. For example, for a larger project, it probably would have been better to have a separate enum for energyState that could be either ‘normal’ or ‘tired’. That would then affect the other behaviours, rather than having a normal and tired version of each behaviour. However, I think having the one behaviour class Wander, then separate actions in the tree that affected how the behaviour class behaved, did make it more flexible than if I had put the wandering code directly within the behaviour tree.

I can’t help feeling there was a more flexible way to carry out the actions in the tree, however, but the solution eludes me at this time. For example, I have a WanderQuicklyAction and WanderSlowlyAction. I feel it would have been better if I could have used a single WanderAction class that had checks inside it to make it behave differently under different circumstances for the agent being tired and not tired, but I did not do this. I did manage to do that with the EnergyCheckDecision class though.

**Poor AI Pathfinding**

The pathfinding is somewhat inefficient in a few minor but significant ways. The first problem is that the startNode of the AStar path is a node that is close to the enemy, but it’s not always on the side of the enemy that is closest to the hero. So to follow the path, the enemy sometimes turns away from the hero to go to the start of the path. This is not good AI. An improvement would be to make sure the startNode is always on the side closest to the hero.

The way the enemy turns around makes them quite slow and cumbersome as well. Perhaps that could be improved.

**Summary**

While I can see a few area’s that could be improved, I am happy with the final result and believe it satisfies the plan I proposed. The AI successfully uses a decision tree and employs pathfinding behaviours.