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Assignment 01 – Part I

1. a) For this problem, the agent is designed to help air traffic controllers direct traffic. The state of this problem should contain everything that relates to air traffic. The state can contain location of aircrafts, velocity of aircrafts, expected/real take-off/landing time for each aircraft. Some information of airport may also be included, such as the capacity of airports.

b) The state is going to be dynamic. Because the environment (anything other than the agent) will be changing constantly whether not the agent changes.

1. I think this agent is a type of model-based reflex agent. This is because the agent (the ghost) used the state information to determine action it should take. It needs to somehow memorize if the Pacman has eaten a power pill in the last 30 seconds. The environment has 2 states – the Pacman ate a power pill in the last 30 seconds, and the Pacman did not eat a power pill in the last 30 seconds. The percept history should be stored up to 30 seconds, where simple reflex agent only uses the current percept. Thus, the ghost is a model-based reflex agent.
2. a) A sensor that detects if there are pedestrians near the cross walk. A timer that counts the clock tick.

b)

Pedestrian sensor: true indicates that there are pedestrians near the cross walk, false otherwise.

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| --- | --- | --- | --- | --- | --- |
| Timer | Pedestrian sensor | Current state | Next timer | Action | Next state |
| 0s - 29s | True/false | Pedestrians only | Timer += 1 | Activate | Pedestrians only |
| 30s – 89s | True | Changeable | Timer += 1 | Activate | Changeable |
| 30s - 89s | False | Changeable | Timer = 0 | Deactivate | Vehicles only |
| 90s | True/false | Changeable | Timer = 0 | Deactivate | Vehicles only |
| 0s – 119s | True/false | Vehicles only | Timer += 1 | Deactivate | Vehicles only |
| 120s – | False | Changeable | Timer += 1 | Deactivate | Changeable |
| 120s – | True | Pedestrians only | Timer = 0 | Activate | Pedestrians only |