Exercise 1.1

(a) Yes, the elevator control can be regarded as an agent, as it follows the architecture of rational agents.

It has sensors (buttons) to percieve (button status) the environment (elevator + floors) and will operate (move up/down + open/close doors) based on that input, with the goal of transporting people.

The elevator control agent is reflexive with an internal state, as it always remembers the current floor the elevator is in.

Depending on the implementation of ϕ_v^u the agent may be goal-based or utility-based. If ϕ_v^u simply selects a random floor to be served next, it is just goal-based. If ϕ_v^u selects the next floor to be served while minimizing waiting time for example, it is utility-based.

(b)
- Persons transported per hour
- Average waiting time for buttons pressed in the elevator
- Average waiting time for buttons pressed on a floor

(c) The following function ϕ_v^u operates best when M/W are implemented as a stack.

```
next ← f
m ← M[0]
w ← W[0]

if m is null and w is null then
        return f
if m is null and w is not null then
        next ← w
if m is not null and w is null then
        next ← m
if m is not null and w is not null then
        if |m−f|>|w−f| then
                next ← w
        else
                next ← m

for x in M ∪ W
        if |x−f|<|next−f| then
                next ← x

return x
```

Exercise 1.2

(a)
- semi-accessible: Information on number of people waiting on each floor and number of people inside the elevator could optimize the agent
- deterministic:
- episodc: choice of action only depends on current state
- dynamic: new buttons can be pressed while deciding
- discrete:

(b) •

(c) •

Exercise 1.3

(a)

(b)

(c)

Exercise 1.4