Mealy Machines – starter

# Finite State Machines

## What is the purpose of FSMs?

* Consider this: just like traffic lights control the flow of vehicles at intersections,
* Finite State Machines serve as the controllers of **logic** and **behaviour** in computing systems. Ie. they define the logic that drives the behaviour in the system.

# Mealy Machines

## Scenario

* Imagine you are at a busy intersection. Have you ever been frustrated that the light turned to red, when there were no cars using their priority?
* The traffic lights, like a Finite State Machine, transition between different states—red, green, and yellow—based on specific conditions: the presence of vehicles, pedestrians, or time intervals.
* But what if these traffic lights not only changed colours but also communicated additional information, such as the direction to turn or pedestrian crossing signals, based not just on the current state but also on the input they receive?

This is where Mealy Machines come into play. They add a layer of intelligence to our 'traffic lights,' enabling them to provide more nuanced responses by considering both their current state and the input they receive. Just as a traffic light might signal a turn arrow when sensing a vehicle waiting to make a left, a Mealy Machine can generate outputs based on the combination of its state and input.