

15.1 Traffic light example

Description

Below we show an example of a traffic light that alternates between red and green in direction north and south respectively.

```
trafficSystem: obj
  class TrafficLight(direction: ref String):
    state: ref String
    cycle
      state:= "red"
      this(TrafficLight).suspend
      state:= "green"
      this(TrafficLight).suspend
  north: obj TrafficLight("North:")
  south: obj TrafficLight("South:")
  north.call -- set north to green
  cycle
    north.call
    south.call
    sleep(1000)
```

The object `trafficSystem` has a class `TrafficLight`, which represents the concept of a traffic light.

Two objects `north` and `south` of type `TrafficLight` are declared (and thereby generated). The generation of a `TrafficLight`-object implies that the statements in the class are executed. This means execution of `cycle ...`. This has the effect that the variable `state` is assigned the string `"red"`.

Then the statement `this(TrafficLight).suspend` is executed. This has the effect that execution of the `TrafficLight`-object is temporarily suspended. The effect is that after the declarations of `north` and `south`, they both have `state = "red"`.

Immediately after the generation of `north` and `south` the `trafficSystem` executes `north.call`. This has the effect that execution of `north` is resumed, which implies execution of `state := "green"` followed by a new suspension of the execution of `north`.

The situation is then that `north.state = "green"` and `south.state = "red"`.

The `TrafficSystem` then executes a `cycle` where `north` and `south` both are resumed implying that their `state` variables swithces from `"green"` to `"red"` of `"red"` to `"green"` and so on. The `TrafficSystem` then sleeps for some time before another iteration in the cycle.