Lab1 Traffic light

Output:

```
./lights.x 60

        SystemC 2.3.1-Accellera --- May  9 2018 16:18:07
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set sim time... done
create channels... Done
create lights...1...2...3...4... Done
create controller...0...1...2...3... Done
create sensors...
1...2...3...4... Done
connect lights...1...2...3...4... Done
connect sensors...1...2...3...4... Done
connect controller... Done
##############[start simulation]###############
Added car, direction: South
====================================
Cars waiting:
0 Cars waiting at: North
0 Cars waiting at: West
1 Cars waiting at: South
0 Cars waiting at: East
====================================
Green on: South
Added car, direction: West
Car drives past from: South (Max direction)
Added car, direction: North
Added car, direction: East
Green on: North
Car drives past from: North (Opposite)
Added car, direction: South
Car drives past from: South (Max direction)
Red on: North
Red on: South
Added car, direction: South
Added car, direction: West
Added car, direction: East
====================================
Cars waiting:
0 Cars waiting at: North
2 Cars waiting at: West
1 Cars waiting at: South
2 Cars waiting at: East
====================================
```

Explanation of output:

After creating the controller unit, the four lights and the four sensors we simulate traffic by setting the arrived variable for a random light to true every 3-6 seconds. This is done by a thread that is started in the sensor file. This will ensure that traffic is randomly simulated every time the simulation is run. The controller class determines what direction in the intersection that has the most cars waiting and sets that direction’s light to green. If the opposite light has cars waiting or if cars arrive before the light’s five second period is over it will turn green as well.