# CESC 327
# Assignment 2: Leader Election

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Due date Mar 1

## 1 Task

This program is in c and will be executed in the Kilobots. For the development, install the simulator Kilombo (https://jic-csb.github.io/kilombo) A nice tutorial is at
https://github.com/acornejo/kilobot-labs.

In this assignment you have to implement a leader election protocol on a ring. In the leader election protocol, there is at least one initiator that starts the protocol. The problem is solved when every node chooses the node with the minimum id as the leader.

When a robot becomes the leader, it sets the color of the led to white (red=1, green = 1, blue=1), otherwise it sets the color to (red=1, green = 0, blue=0). The protocol is executed every time that a new node joins. In other words, the node that is joining becomes the initiator.

## 2 Clockwise Leader Election

## 3 Grading

| Criteria | Weight |
|---|---|
| Documentation of your program | 20% |
| Execution output | 80% |

Each node v executes the following code:

1. $v$ sends a $ELECTING(v)$ to its successor.
2. $v$ sets $m := v$ the smallest identifier seen so far
3. **if** $v$ receives a message $ELECTING(w)$
4. **if** $v$ with $w < m$ **then**
5. $v$ forwards $ELECTING(w)$ to its clockwise neighbor and sets $m := w$
6. $v$ decides not to be the leader, if it has not done so already.
7. **else if** $w > m$ and $v$ has not been participating **then**
8. $v$ sends message $ELECTING(m)$ to its successor
9. **else if** $v = w$ **then**
10. $v$ sends message $ELECTED(v)$ to its clockwise neighbor
11. **end if**
12. **if** $v$ receives a message $ELECTED(w)$ with $w \neq v$ then
13. $v$ forwards $ELECTED(w)$ to its clockwise neighbor and sets $leader = w$
14. **end if**