SYSC 3010 Systems Development Lab

Trial Project

Summary

The trial project runs for the month of September. The objective is small, but contains all hardware elements that will be used in the final project. Groups will run through all project deliverables, including version control and project planning, so that expectations will be clear when doing the final project.

Objectives

- Develop a simple system as a team, proceeding through all development steps (design, implement, test, document and present) in order to:
    - Learn all basic aspects of the RPi system – internet connection, RPi-RPi connection, PiFace digital I/O (switches and LEDs) and Gertboard digital I/O.
    - Experience team interactions, team coding, documentation, and software management issues
- Implement a simple system that connects one or more Raspberry Pis with a host station.
    - Host station will support a Java program (in the final project, the Java program must have a GUI)
    - The RPi may use the Python installed by default, or may use Java after installing the Java SDK.
    - At least one RPi must make use of digital I/O. Ideally, two will use digital I/O, one with the PiFace and one with the Gertboard.

Expectations

The system will provide an interface that will enable the user to remotely turn on specific LEDs and to be notified of any pushes of the buttons, the LEDs and buttons being distributed over a minimum of two RPi.

Such a system could serve different motivations:

- The central control system for a smart house, where the LEDs represent lights or appliances to turn on or off, and the switches representing sensors on the doors and windows.
- A distributed gaming server allows two (or more) remote players to play a game together. Depending on the game being implemented, the switches could allow the players to move in certain directions, or answer one of several options in a trivia question. The lights provide feedback on the movement or the corrections of the answers.

The Server must be written in Java. By default, it will be deployed on a lab machine (or your laptop). If you have Java installed on your RPi, it can be deployed on a RPi.

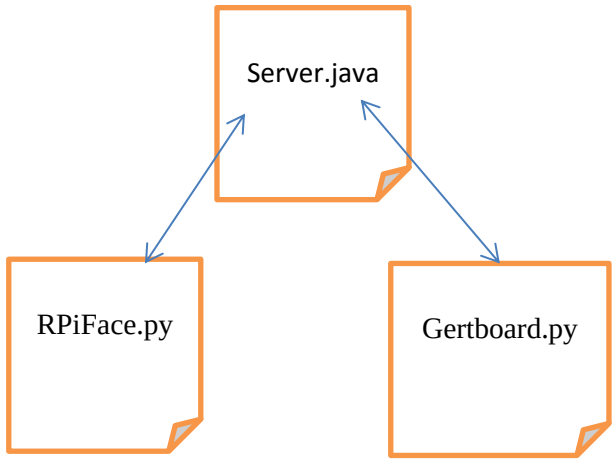

Figure 1 Minimal Component Diagram for Trial Project

Submission

All documentation and source code will be electronically submitted. The documentation must include instructions for running the system. The system will be demonstrated to other teams during class. Documentation must allow other teams to evaluate the design, implementation and testing of the system. Documentation must also provide the motivation for the system.