### 49er Sense Android App v1.0 : Readme

**1.Product Description**

Through 49er Sense, users are given the ability to keep their home secure. Through the 49er android app, users can monitor and control various smart devices in their home.

**2.Android App Design and working**

Once the app launches, a login screen is displayed. The user is prompted to enter login credentials and click on Login. On doing so, the user’s home screen is displayed.

The home screen displays the following features which are available to the user through this app. Clicking on those features shows the user their current settings and also lets them navigate to the different features screen to let them choose their settings. Section 3 describes the various features and how the user can use them.

**3. Features and how to work them**

**3.1 Security System**

The user can secure their home by selecting different options for their security system through the app. The different settings available to the user are DISARMED, ARMED(STAY), ARMED(AWAY)

**3.2 Locks**

The user can lock or unlock various doors in their house through the app.

**3.3 Garage Doors**

The users can open their garage through this app.

**3.4 Lights**

In this the user is given the chance to turn on or turn off the lights in different rooms. Also vary the brightness of the lights by varying the dimmer scroll.

**3.5 Motion Detectors**

The user can turn on the motion sensors on different floors of the house through the app to detect movement in the house.

**3.6 Door Sensors**

The user can turn on the door sensors on different doors of the house through the app to detect the opening and closing of the doors.

**3.7 Thermostat**

The user can set the temperature on the thermostat through this screen for various floors of the house. They can also control the ac mode and the fan of the AC unit.

**3.8 Energy Consumption**

The user can check the energy consumed in the last 24hrs, week, month or year by the lights and thermostat in their house.

**3.9 Video:**

The user can view live video stream in app of the webcam installed in the house. The user can also record any part of the live stream and the video file is stored in the server.

**3.10 Weather Forecast**

The weather tab shows the weather forecast in the user’s area for the next 7 days.

**4. The backend Apache server and the sensors simulated on the Raspberry pi**

The system needs a backend web server for the app to function correctly. The web server that comes with the xampp installation is Apache. The android app interacts with the webserver using various PHP files. The data is stored using a MySQL database. PHP files interact with the app and the database. PHP files read from the database and relay the data back to the android app and vice versa.

The home appliances and the sensors are simulated using a Raspberry pi. Each device a separate java thread running independently. A copy of database is also maintained on Raspberry pi to record changes made by the home users. Both databases are synced whenever any change is made on either of them. The communication with the apache server and the raspberry pi happens over sockets.

The video is streamed over the 8080 port using an UDP stream. The app listens on the 8080 port for any new packets. If the user wants to record, the 8080 output is also directed to port 21 on the server which is the ftp port.