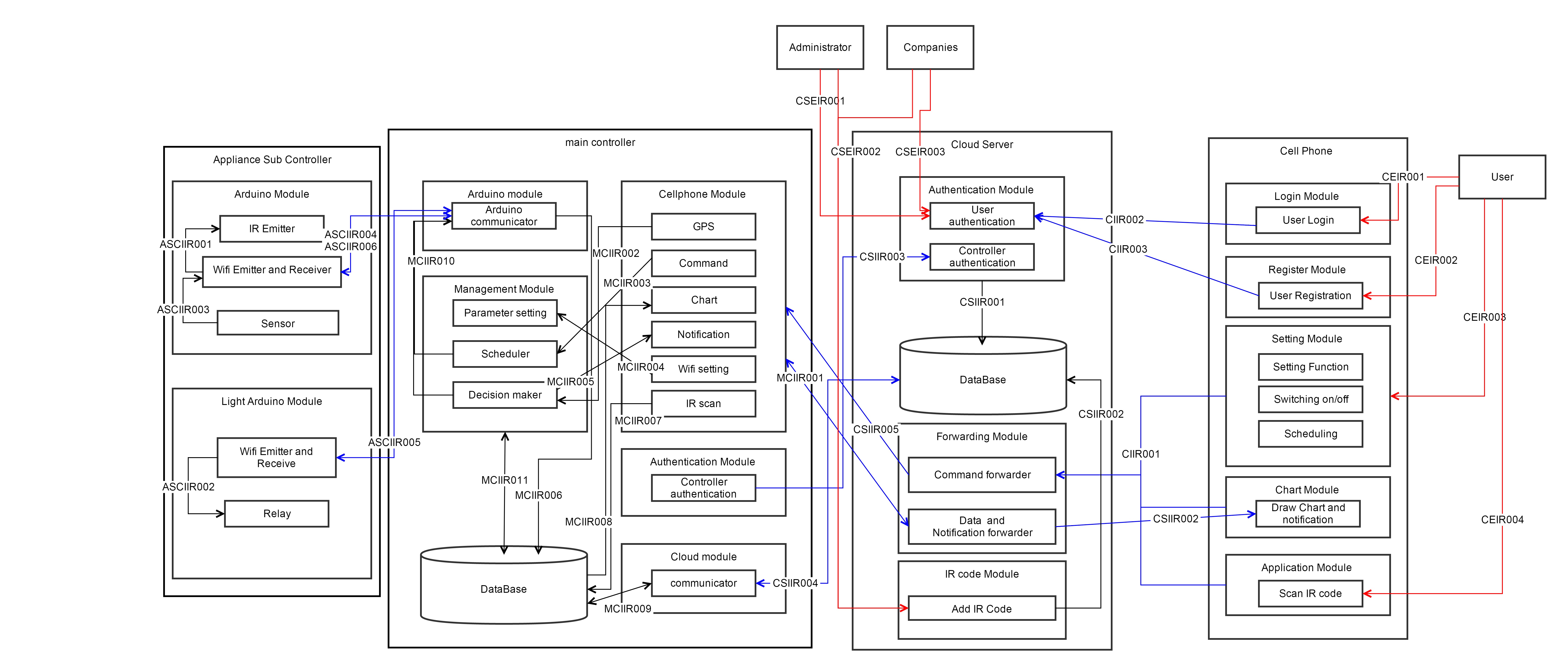
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| <<Simple Life>> 會議記錄 | | | | | | | | | | |
| 會議日期 | | 2015/05/11 | | | | | | | | |
| 時間 | | 12:00~15:00 | | | | | | | | |
| 地點 | | 新數205-3 | | | | | | | | |
| 主持人 | | 楊子權 | | | | | | | | |
| 紀錄者 | | 楊子權 | | | | | | | | |
| 目的 | | Requirement refine | | | | | | | | |
| 參與者 | | | | | | | | | | |
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| 會議議程 | | | | | | | | | | |
| 1. 會議名稱：Feasibility study 2. 會議日期：2015/05/11 3. 會議討論議題：於下個欄位中 4. 問題討論： 5. 臨時動議： 6. 散會 | | | | | | | | | | |
| 會議討論議題 | | | | | | | | | | |
| Action Item後續處理項目 | | | | | | | | | | |
| 編號 | 處理動/ | | | 負責人員 | | | 處理期限 | 狀態 | | 備註 |
|  | 查詢提示燈泡如何供電 | | | 陳俊甫 | | | 0324 | **Closed** | |  |
|  | 查詢價格 | | | 陳聿懷 | | | 0330 | **Closed** | |  |
|  | RPi information | | | 楊子權 | | | 0415 | **Closed** | |  |
|  | Connection btw RPi and Arduino | | | 陳聿懷 | | | 0415 | **Closed** | |  |
|  | Port Forwarding | | | 呂昶毅、陳俊甫 | | | 0511 | **Ongoing** | |  |
|  | ESP8266 programming study | | | 陳聿懷 | | | 0518 | **Open** | |  |
|  | Use WiFi as an AP on setting mode | | | 江建德 | | | 0518 | **Open** | |  |
|  | Main controller as server and database | | | 楊子權、許家維 | | | 0518 | **Open** | |  |
|  | Requirement & Architecture Refined | | | 陳俊甫、許庭柯 | | | 0518 | **Open** | |  |
| 下次會議 | | | | | | | | | | |
| 日期 | | | 時間 | | 地點 | | | | | |
| 5/5 | | | After class | | 德田110 | | | | | |

1. System architecture



1. Functional requirement
   1. Appliance Sub Controller Functional Requirement

|  |  |
| --- | --- |
| Arduino Module | |
| ASCFR001 | IR Emitter |
|  | Emit IR signal to turn on or off electronic appliances. |
| ASCFR002 | Wifi Emitter and Receiver |
|  | Connect Raspberry pi and Arduino through Wifi. |
| ASCFR003 | Sensor |
|  | Get sensor data from sensors on Arduino. |
|  | |
| Light Arduino Module | |
| ASCFR004 | Relay |
|  | Turn on or off electronic appliances by rely. |
| ASCFR005 | Wifi Emitter and Receiver |
|  | Connect Raspberry pi and Arduino through Wifi. |

* 1. Cellphone Functional Requirement

|  |  |
| --- | --- |
| Login Module | |
| CFR001 | User Login |
|  | User can login the system by email and password.  Send user information to cloud server to authenticate.  Show alarm when information is not correct. |
|  | |
| Register Module | |
| CFR002 | User Registration |
|  | User can register an email and password to the system.  Send user information to cloud server to authenticate.  Show alarm when information is not correct. |
|  | |
| Setting Module | |
| CFR003 | Setting functions |
|  | Set whether the functions on or off.  Functions include **ideal living environment**, automatically maintain the ideal temperature and ideal humidity;  **welcome home**, when distance between cellphone GPS location and home location less than 1km, turn on the electronic appliances;  **safety issue**, if cellphone GPS location is not at home and motion sensor detects someone nearby, send alarm to user;  **save energy**, when the motion sensor detects nothing in a predefined duration (default 2 hours), turn off the light;  All of the above functions can change to send notification to user to decide whether to turn on or not.  Send the settings to connection module. |
| CFR004 | Switching on/off |
|  | Send the switching on/off command to connection module.  Receive appliance condition from connection module. |
| CFR005 | Schedule parameter setting |
|  | Set appliances’ start time and duration.  Set ideal temperature and humidity.  Send scheduling command to connection module. |
|  | |
| Display Module | |
| CFR006 | Display and draw Chart |
|  | Send command to connection module and get data from connection module.  Draw and display user habits or electronic price chart.  User habits include how long and how many times the user turned on this appliance per month. |
| CFR007 | Display notifications |
|  | Get notifications from connection module.  Notifications include ideal living environment, welcome home, safety issue and save energy. |
| CFR008 | Display interfaces |
|  | Display app front page and interfaces.  Change between different interfaces. |
|  | |
| Information Module | |
| CFR009 | Scan IR code |
|  | Show the steps of scanning IR code.  Send scan IR code command to connection module.  Receive controller condition through connection module, when it’s finished tell user. |
| CFR0010 | Add appliance |
|  | Show steps of adding appliance.  Send add appliance command to connection module.  Receive controller condition through connection module, when it’s finished tell user. |
| CFR0011 | How to use app |
|  | Show information about how to use this interfaces. |
|  | |
| Connection Module | |
| CFR0012 | Cloud server Connection |
|  | Receive data from other module.  Send data to cloud server. |
| CFR0013 | Module Connection |
|  | Receive data from cloud server.  Send data to other module. |

* 1. Cloud server Functional Requirement

|  |  |
| --- | --- |
| Authentication Module | |
| CSFR001 | User authentication |
|  | Manage user and the administrator’s account and the company’s account for uploading new IR code. When a user login, this module find the controller that he has authority. |
| CSFR002 | Controller authentication |
|  |  |
| DataBase | |
| CSFR003 | DataBase |
|  | Store all data that need to communicate between different class |

* 1. Main Controller Functional Requirement

|  |  |
| --- | --- |
| Cellphone Module | |
| MCFR00 | Wifi setting |
|  | Get wifi name and password from cellphone and deliver them to Parameter setting. |
| MCFR00 | Command |
|  | Get command from assignment module.  Store command information as attribute and deliver to scheduler, decision maker and commander.  Simple on/off command will pass to commander.  When to turn on/off the appliance or duration will pass to scheduler.  User set temperature, humidity, safety issue, welcome home, save energy, and functionalities setting will pass to decision maker.  Send back appliance condition to assignment module. |
| MCFR00 | Chart |
|  | Receive draw chart command from assignment module.  Get chart information from database.  Store chart information as attribute.  Deliver chart information to assignment module. |
| MCFR00 | GPS |
|  | Get GPS information from assignment module.  Store GPS information as attribute and send to decision maker. |
| MCFR00 | IR scan |
|  | Receive scan IR code command from assignment module.  Scan IR code, when it’s done send message to assignment module.  Send IR code to database. |
| MCFR00 | Notification |
|  | Get notifications from decision maker and scheduler.  Deliver notifications to assignment module. |
|  | |
| Assignment Module | |
| MCFR00 | Receive |
|  | Receive all commands and GPS from cloud server.  Assign the command to class where handle it.  E.g. On/off command to command; draw chart command to chart; scan IR code command to IR scan; GPS location to GPS. |
| MCFR00 | Send |
|  | Send appliance conditions, IR scan condition, chart information and notifications to cloud server. |
|  | |
| Authentication Module | |
| MCFR00 | Controller Authentication |
|  | Send the controller ID to the cloud server and make could server know the controller itself. |
|  | |
| Cloud IR Module | |
| MCFR0 | IR code receiver |
|  | When cloud server database has new IR code, the receiver will receive the new IR code and deliver it to main controller database. |
|  | |
| Database | |
| MCFR0 | database |
|  | Store IR code, a table of user account, appliances and id numbers, chart information, wifi username and password. |
|  | |
| Management Module | |
| MCFR0 | Parameter setting |
|  | Receive wifi username and password from cellphone module.  Use username and password to connect to wifi.  Build tunnel from assignment module to cloud server.  Send wifi username and password to database. |
| MCFR0 | Scheduler |
|  | Receive appliance id, start time, and duration command from cellphone module.  Schedule all the appliances.  Send on/off command to commander. |
| MCFR0 | Decision maker |
|  | Receive command and GPS from cellphone module.  Make decision for all appliance.  Send on/off command to commander. |
| MCFR0 | Commander |
|  | Receive on/off command from cellphone module, scheduler, and decision maker.  Get IR code from database.  Send on/off command to Arduino module.  When automatically control, send appliance condition to cellphone module. |
|  | |
| Arduino Module | |
| MCFR0 | Arduino Communicator |
|  | Receive on/off command and appliance id from management module.  Send on/off command to the corresponding appliance. |

1. External Interface Requirement

3.1 Cellphone External Interface Requirement

|  |  |
| --- | --- |
| CEIR001 | User Login |
|  | User type email address and passwords.  Email address must correspond to the email address format.  Password must shorter than 15 characters and longer than 8 chars. |
| CEIR002 | User registration |
|  | User may register an account by their email address  Email address must correspond to the email address format.  Password must shorter than 15 characters and longer than 8 chars.  Password must contain at least one number and one char.  Password must displayed by \*.  User need to type password twice, and the passwords are totally the same. |
| CEIR003 | User set functionalities |
|  | User set whether the function on or off, set ideal temperature and humidity, and control appliances on or off through cellphone interface. |
| CEIR004 | User scan IR code |
|  | User follow the steps to scan IR code. |

3.2 Cloud Server External Interface Requirement

|  |  |
| --- | --- |
| CSEIR001 | Administrator Login/register |
|  | Administrator can login/register to cloud server. |
| CSEIR002 | Update IR code |
|  | Administrator and companies may update IR code to cloud server. |
| CSEIR003 | Companies login |
|  | Companies login/register to cloud sever. |

1. Internal Interface Requirements

4.1 Appliance Sub Controller Internal Interface Requirements

|  |  |
| --- | --- |
| Internal Interface Requirements | |
| ASCIIR001 | Turn on/off command by IR signal |
|  | Wifi Emitter and Receiver send command from main controller to IR Emitter. |
| ASCIIR002 | Turn on/off command by relay |
|  | Wifi Emitter and Receiver send command from main controller to Relay. |
| ASCIIR003 | Sensory data transmit |
|  | Sensor transmit sensory data to Wifi Emitter and Receiver . |
| ASCIIR004 | Main Controller command to Arduino |
|  | Main Controller send turn on/off command to Arduino by Wifi.  Main Controller send appliance ID and IR pattern to tell the subcontroller which appliances to command.   * Appliance ID is type of int which save defined appliances information. * IR pattern may have five formats follows with hex number (e.g. SONY 68B92) , or Raw format follows with raw code   + NEC   + Sony   + RC5   + RC6   + Raw   Main Controller and Sub Controller connect each other by TCP/IP protocol. |
| ASCIIR005 | Main Controller command to Light Arduino |
|  | Main Controller send turn on/off command to Light Arduino by Wifi. |
| ASCIIR006 | Transmit sensory data to Main Controller |
|  | Arduino transmit sensory data to Main Controller by Wifi connection. |
| 4.2 Cellphone Internal Interface Requirement | |

|  |  |
| --- | --- |
| CIIR001 | Connection between cloud sever and cellphone |
|  | Send all commands to cloud server to forward. |
| CIIR002 | User login data |
|  | User can login to cloud server |
| CIIR003 | User registration |
|  | User must registries an account when first use. |

4.3 Cloud Server Internal Interface Requirement

|  |  |
| --- | --- |
| CSIIR001 | User and controller authentication |
|  | Database hold a table which maps user and controller.  Database save administrator and companies’ login information. |
| CSIIR002 | Data forward |
|  | Cloud server will forward data to user cellphone when chart need to be displayed. |
| CSIIR003 | Controller Authentication |
|  | Controller will get authentication by cloud server when it connects to Wifi. |
| CSIIR004 | IR code and user information update |
|  | Controller will update its IR code by connecting to cloud server.  Controller will update user information by connecting to cloud server. |
| CSIIR005 | Command forwarding |
|  | Cloud server forward user’s command to controller. |

4.4 Main Controller Internal Interface Requirement

|  |  |
| --- | --- |
| MCIIR001 | Data transform |
|  | Cellphone Module will send chart data and GPS location or notification to cloud server while needed. |
| MCIIR002 | User location |
|  | GPS send user location to decision maker. |
| MCIIR003 | Command and Scheduler |
|  | Command send Commands to set Scheduler. |
| MCIIR004 | Wifi setting |
|  | Wifi setting sets wifi information includes account and password to Parameter Setting. |
| MCIIR005 | Decision maker notification |
|  | Decision maker will send message to notification when needed.  Notify when   1. Temperature out of range 2. Humidity out of range 3. Schedule mission executed   User nearby home |
| MCIIR006 | Appliance Sub Controller data received |
|  | Database will save sensor data through Arduino communicator.  Sensor Data will be saved in txt file format.  Main Controller will sampling sensor data in every 30 minutes and save a year data in txt file which file size may not bigger than 52KB.  Sensor data includes temperature, humidity. |
| MCIIR007 | IR code saving |
|  | Database save IR codes after encoding. |
| MCIIR008 | Chart data |
|  | Database will send chart data to Chart when needed. |
| MCIIR009 | IR code and user information saving |
|  | Database will update its IR code and user information through communicator. |
| MCIIR010 | Send command |
|  | Decision maker and scheduler will send command to sub controller through Arduino communicator when condition satisfied. |
| MCIIR011 | Sava user habits and get IR code |
|  | Management module will send information to database to save user habits.  User Habits include:   1. User ID in int value 2. User define schedule ( class schedule)   Database will send IR code to management module when commands needed. |