SWE30008 Software Team Project, Semester 1 2015

Internet of Things (ESP8266)

**Project Documentation**

*TEAM 10*

[7242794@student.swin.edu.au](mailto:Names:7242794@student.swin.edu.au) Edward Francis Gilbert 0434 846 690 (Team leader)

[9718168@student.swin.edu.au](mailto:9718168@student.swin.edu.au) Adam De Blasio 0430 737 112

[664306x@student.swin.edu.au](mailto:664306x@student.swin.edu.au) Luke Jackson 0421 464 381

[7440103@student.swin.edu.au](mailto:7440103@student.swin.edu.au) Edwin Wong 0416 160 155

**Table 1. Document Change Control**

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Authors | Summary of Changes |
| 1.0 | 21/05/15 | Edwin | Written up Introduction, Process throughout the project, Key contribution, project reflection, Budget, References |
| 1.1 | 21/05/15 | Edward | Assorted finger flapping |
| 1.2 | 22/05/15 | Luke | My contributions |
| 1.3 | 22/05/15 | Adam | Wrote future work section |
| 1.4 | 22/05/15 | Luke | Fixed future work section |
|  |  |  |  |
|  |  |  |  |

**Table 2. Document Sign Off**

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# Introduction

The goal of the project is to create a definitive guide to start using and programming the ESP8266 module 1 and ESP8266 - 12 Full Evaluation Board. The intended audience is having minimum background of programming experience and enough networking experience. This document provides the methods and processes how the team members coordinate, overcome knowledge gaps in achieving this goal. The document also suggests future works that can be done based on the research and findings throughout the process. Reflection of project and skills gained from it among members are also included. Lastly, it includes the overall key contribution to the project by the team members and time spent on the project that reflect the budget.

# Process throughout the project

In approaching on how to development on the project, the members used the disciplined agile delivery framework.

The team coordination is done by weekly meeting with the supervisor to guide us on the project. Most team meeting is done via Skype to organize tasks, discussion, and report on work progress. Email is used as our point of contact. On the start of the project, team members were new to the ESP8266 and we overcame the knowledge gap by using spike methodology for identifying the gaps (*refer to appendices for the process and work done*).

# Project Reflection team skill development

**Table. Project and Skill Reflection**

|  |  |  |
| --- | --- | --- |
| Name | Improve/gain knowledge from project | Skills Gained |
| Edwin Wong | * Team communication and coordination (teamwork) * Time management * Principles of project development * Research and analytic skills * Documentation and technical writing | * Lua programming * Markdown * GitHub Repository * Usage of ESP8266 models * Electronics wiring (breadboard) |
| Edward Gilbert | Project planning Programming  Using Version Control Systems, especially Git  Technical writing  Guide and tutorial writing | Lua programming  Javascript programming  Embedded programming  Electronic circuits  Soldering  How to wrangle a clowder of angry cats |
| Luke Jackson | * Project Planning * Time Management * Electronics skills * Technical writing * Research skills | * Research skills * Lua language * Electronic wiring * Using ESP8266 chip |
| Adam De Blasio |  |  |

# Future work

Due to the limited amount of time we had on this project there have been many areas of potential work with the ESP8266 Chip that we were unable to explore. These areas were either out of scope or too big to be considered for undertaking within 10 to 12 weeks, and thus been relegated to future project using the ESP8266.

The first and probably the most important is the use of the Arduino code. At some time through out the project timeline a group released a modified version of Arduino IDE that is capable of compiling and flashing Arduino C code onto the ESP8266. Arduino running on the ESP8266 will help grow the community much faster than NodeMCU can or possibly ever will. We believe in the near future it may take over as the de facto standard of the chip.

Secondly the tasks which would have either taken too long to produce or didn’t believe we possessed the prerequisite skill level to cover in a reasonably amount of time.

1. Memory expansion. Early on we learnt that the ESP8266 can use its SPI and I2C interfaces to communicate with SD card modules and we looked into how we might just use such a system. Problems arose when we were using those interfaces because we have never used them before, and there are no guides or example code out there to help us. We abandon this deciding it to be too large of a project for our scope and time. It may become a critical issue however in later projects. Given there are existing Arduino SD card Libraries it may become easier in the future.
2. Next there was a series of complex sensors which as with SD card modules were unable to use the appropriate interfaces, these sensors included Accelerometers and Barometers.
3. There are many advancement within the community creating other native environments for the ESP8266 and should be considered for future work these include: Python, C++, Assembly and Arduino’s C.

Future Work:

 Arduino C

 Python

 C++

 Assembly

 Memory Expansion

 SPI and I2C Sensor and other complex Modules

# Key contribution

|  |  |
| --- | --- |
| Name | Contribution to the project |
| Edwin Wong | * Test plan * Test Report * Documentation * User testing (test cases) * Meeting minutes * Spike Webserver LED * Written up ESP8266 guide for sections: (wiring, flashing, hello world blink LED webserver, RBG LED on ESP-12) * Post-test questionnaire * References for guide * Organized all test documents and questionnaire for user testing * Changes to the guide based on user testing feedback |
| Edward Gilbert | Project planning  User testing documentation and work, including the consent form and substantial work on the pre- and post- test surveys  The introduction, tools, some of the equipment sections of the guide  The third project (cookie hunt game), including all coding  Team organisation  Identification of the toolchain used in the project  Programming for aspects of the project (such as project 1 - LED webserver)  Identification and championing of technologies and processes used to facilitate the project - use of OneDrive, use of Skype for online meetings, use of markdown and the Github wiki, making use of the Github issue tracker. |
| Luke Jackson | * Created spikes plans and encourage use of in the project. * Create user test task for user testing. * Convert word documents to mark down. * Wrote windows environment installer code and readme. * Wrote esp8266 music library code and readme. * Wrote shower project code and readme. * Wrote home security project code and readme. * Modified, corrected Wiring and Flashing sections of guide. * Wrote lua crash course section of guide. * Wrote installer section of the guide. * Collaborated in writing home section of the guide with Edward. * Wrote git repository readme * Collaborated in testing with all members. |
| Adam De Blasio |  |

# Budget

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Rate per Hour | Total Hours Logged | Cost |
| Edwin Wong | $20 | 101 Hours | $2020 |
| Edward Gilbert | $28 |  |  |
| Luke Jackson | $20 | 80 | $1600 |
| Adam De Blasio | $21 |  |  |
|  | **Total** |  |  |

The total cost of the project is estimated at **$3455.68** from the project plan.

# References

None

# Appendices

**GitHub Wiki Guide**  
<https://github.com/664306x/swin.edu.au-esp8266/wiki>

**Summary of the final product description**  
<https://github.com/664306x/swin.edu.au-esp8266>

**Meeting Minutes and Personal Logs**  
<http://1drv.ms/1c6hAw1>

**Final Documentation (Project Plan, Requirement specification, Test Plan and Report)**  
<http://1drv.ms/1c6hHI5>