

# AARS Team Project Written Report (Draft)

## Introduction:

This is going to be our written report of everything we have done for the AARS project. This written report will be contributed by everyone on the team. This is not our final draft and will get more stuff added on in the future; this is just to plan for the final written report and to see what else we would need completed. Any questions can be forwarded to the team leader.

Note: anything labeled with /\*\*/ is a comment and should be followed. Draft is incomplete since we still have incomplete tasks. This draft will be Finalized by Friday April 24, 2020

## Meet the Team:

Surabhi (Researcher): Hello, I am Surabhi, the lead researcher of the group. I focus on collecting data and information on how to do the project and what is needed for it to succeed. The research I gather is anything related to the project and will later be compiled together into a written report and presentation for our project. I make sure to research necessary things that will benefit the project altogether.

Phoenix (Notetaker): Hello, I am Phoenix, I am the note taker of the group. I personally love taking notes and keeping things organized, that is why I was chosen for this role. I record notes, discussions, topics, and important information. The notes I take helps the group remember what we have talked about, will talk about, and things we need to talk about. This role is highly important so we can keep track of our discussions and ideas. I make sure notes are taken each time we have a group discussion.

Kevin (Lead Programmer): Hello, I am just going to steal the same intro as Jimmy and introduce myself. My name is Kevin and I will be the lead programmer if you could not guess by the name of my job. I was picked for this job because mainly I knew a lot python and Java, plus I am good at problem solving. I as the lead programmer I will be building the DB that the project will have to be based on. I hope our team will work well.

Jimmy (Team Manager & Programmer): Hello, I am Jimmy and I am the team leader and programmer. I organize and keep tabs on everyone to make the teamwork the best it can. I am the original proposer of the AARS project, so I help lead the development of the project. I am also the programmer which means that I have worked on building the website and database code. I am only one of two available programmers which is why my focus is on the database code. As the team leader, I am proud of having Surabhi, Phoenix, and Kevin on my team.

## Project Purpose:

This project was created in order to address several issues teachers have complained about. It also addresses I as a student see happening with substitute teachers. I (Jimmy) drew inspiration for the project when about a year ago, I had a discussion with my English teacher about what were some common issues with teaching. He explained to me that he loses a lot of time taking attendance from students, which kind of bothered him. He said he wished that there was a system that could automatically mark attendance without him doing anything. We talked about ideas and one of my proposed idea was something very similar to AARS. He said it was a good idea, but we never really talked about it again nor I thought about making it a reality. When I first had this talk with him, I struggled to understand how attendance could make a big difference on a teacher's life. This question got answered later-on when I had a substitute for my English class (which was on this current academic school year) and she struggled to take attendance. I had to help the teacher identify who was here and who wasn't. This is when I finally realized that an attendance system would be important in fixing this issue. A few months after that, for my NWIT 101 class, I was given the task to come up with an idea that would incorporate hardware, Wi-Fi usage, and that it addressed a problem. This was the right time to make a system to automate attendance possible, and so, AARS was born.

## Product Features & Specifications:

The project was designed with a school setting in mind, but it may also be used on an office setting. We know that our project might have already been widely implemented for security (such as HID systems) but we wanted to make a widescale and cheap alternative; AARS does exactly just that. Each sensor (1 unit) will cost around \$70 USD compared to \$200 usd average of industry grade controllers. The software on most industry grade systems is also paid separately, compared to AARS which uses free and open source software. This project relies more on the software than hardware so you know that you will not lose much if anything happens to any sensor, it can get replaced and set up with our software at no additional charge.

The software... /\*talk about software here later-on when it is already built\*/

## Project Development:

Before you start:

Before you start, it is important that you have enough time to complete the project. A timeline of fulltime dedication of one to two weeks should be enough. This project will require knowledge in both programming and electronics. It is best if you have a team, but you can also do this on your own if you please.

Depending on your skill level, you can build certain parts of the AARS system. Below you will find this list of parts and skill level. Patience will be a very big factor into successfully completing this project. You are bound to have many mistakes and re-dos; this is normal. If you get stuck on something you may view our resources for reference.

#### Skills & Prerequisites:

##### Local Raspberry Pi RFID detector (Beginner):

- Basic familiarity with Python (programming language)
- Basic familiarity with electronics
- 1 or 2 days of full-time dedication

##### Raspberry Pi RFID detector with database dashboard (Intermediate):

- Intermediate familiarity with Python
- Intermediate familiarity with JavaScript
- Basic familiarity with JSON /\*might get deleted\*/
- Basic familiarity with HTML and CSS
- Basic familiarity with electronics
- 5 days to 1 week of full-time dedication

##### The whole project with 3 databases (Advanced):

- Intermediate to advanced familiarity with Python
- Intermediate to advanced familiarity with JavaScript
- Intermediate familiarity with JSON /\*might get deleted\*/
- Intermediate familiarity HTML and CSS
- Basic familiarity with electronics
- 1 to two weeks of full-time dedication

#### Materials:

- 1 computer or Raspberry Pi
- 1 Raspberry Pi
- 1 RFID sensor

5 RFID tags

1 Breadboard

~50 Resistors with varying resistance

~100 Breadboard cables

~10 Led lights (RGB or red and green)

1 or 2 Piezo Buzzers

Peripherals for Raspberry Pi or computer

Note: Original material list is located on team project proposal (final) discussion thread

Building Local Raspberry Pi RFID detector (simulated):

We were unable to do this part due to not having the hardware necessary to complete it. We realized that we could simulate this part by instead setting this on the web. Building a drag and drop for the ID for the RP will be more complex and will take longer so we will simulate this using a text-line approach.

We can get a function to output the date and then make an imaginary ID on a variable. We will write all of this under one function to keep it on the same scope. This is the most basic you can get with it.

/\*More detailed instructions will come out once I get to this part\*/

/\*will update instructions whenever I have more images and more work has been done; also include support resources \*/

Product Demonstration:

/\*will update product demonstration whenever I have more images and more work has been done\*/

(with images and maybe the actual website demo.)

(Specs and features will also go under here)

## Lesson Learned:

/\*please write what you learned from the experience (can be about anything) \*/

Surabhi:

Phoenix:

Kevin:

Jimmy: /\*not yet since we are still working on project\*/

## Future-Plans:

/\*depending on how much we get done I will update future information here\*/

## Concluding Remarks: (please write a personal reflection about the process)

/\*write this whenever we are done with the whole project\*/

Surabhi:

Phoenix:

Kevin:

Jimmy: