Team Project Proposal

Project AARS – Automatic Attendance Recording System

Team Members

Surabhi – Researcher

-research about the project

-complete proposal

-manage the weekly planner

Kevin – Lead Programmer

-program the database

-program the project

Phoenix – Notetaker

-take the notes

-complete weekly journal

-update Kanban

Jimmy – Team manager, Programmer

-manage the team

-program the project

-make plans for project

Group Requirements/Regulations – Everyone is equal, at least ¾ of an agreement to follow through with something (if 2/4 occurs, we call for an outside mediator), no phones allowed unless it is for an emergency or work-related reason… (to be continued once the whole team is present)

Project Description:

What is our project about (a brief)?

Our project is going to be called "AARS". AARS stands for Automatic Attendance Recording System.

This project tries to address the time lost from teachers (specially substitutes) trying to mark attendance. The project will try to make it as efficient and accurate as possible.

Internet will be used by connecting the hardware (in this case, a raspberry pi) with another machine (such as a computer) that will act as the cloud to store the data collect it and sort it for easy analysis and exportation. A new database might be created just to fit this project.

The physical object that will be used is a raspberry pi. These will be accompanied by an RFID sensor that can detect RFID cards or RFID tags. This will act as the authentication medium and collection of data.

How is this project going to work?

This project will consist of using an RFID sensor to read RFID tags. The RFID tags will work as input medium. We will have methods of letting the end user whether their request has been validated or not. After we have that input, we will utilize the raspberry pi by connecting to the internet and sharing data to a local database. There will be two global and one local database.

Local database number one is to include information about a certain user's activity. The RFID tags have an ID on them which it will collect, it will then take the timestamp, and then the location on which that RFID tag was scanned through. The true input here is the ID from the tag.

The local database will be connected directly to global database number 1. Global database number one will include information associated with a certain ID. This information includes name, grade, status (e.g. student, teacher, admin), as well as what time they should be in at a specific time. Local database number one is used to overcome the problem of having read only RFID tags.

Global database number two will be connected with database number 1. Database number two will include all finalized information (it will concatenate local database one and global database one) and will be used in order to create a GUI that teachers can read. This GUI will be based on an HTML website. It will most likely be in the project website as a trial. As a quick note, all databases will have a simplistic GUI but not as extensive as the final GUI that teachers will be able to see.

How is this going to keep us busy?

The real challenge with this project is making the databases. Setting up the hardware will be a slight challenge as probably none of us have done something like this so that's not the majority that this project deals with. We need to create the database from scratch or use one (such as Pickle DB) if we find a preset one easier for our purposes. It will take us time as well to learn how to get the input from the RFID reader/tags. The part that might consume the most time is converting the data for easier HTML/JS processing for our GUI. Another part that might become a bit harder is on how to concatenate and make the databases "talk" to each other. Another part that could also go in this is making another raspberry pi work as a server for these databases. Another part that will also keep us busy is to find out how we can update the database and GUI at the same time (say when there is new input coming in). We will also need to address security issues with our system which can then get us busy if we do run out of things to do for the project (which is unlikely). Another part that we can also implement if that doesn't keep us busy enough is to do a program that can sift through and analyze data, maybe even create predictions on certain data on when or where a student might be. At this point, I think we would then be ready to implement it into an actual product if we get to do everything described above. So, based on this, the project should keep the four of us busy.

References

Possible database that we might use: https://pythonhosted.org/pickleDB/

Video on how to set up RFID reader: https://www.youtube.com/watch?time_continue=1&v=evRuZRxvPFI&feature=emb_logo

Transferring files through network: https://vuyisile.com/how-to-transfer-files-over-a-network-using-python/

Way to update GitHub repo via python: https://gitpython.readthedocs.io/en/stable/tutorial.html#

Service most likely going to use to host GUI webpage: https://pages.github.com/

Little Stack Overflow post to help with Git push: https://stackoverflow.com/questions/41947096/git-push-using-python

Little guide on using resistors: https://www.dummies.com/programming/electronics/components/electronics-components-resistors/

Purchase Order Request:

	A	B	C	D
1	Items Requested	Estimated cost	Reference (link)	Remark (justification)
2	Raspberry Pi	$41.99	https://amzn.to/2Q1lGwD	Used to collect information from RFID reader and to transmit it to a remote database
3	RFID Tags (5)	$5.89	https://amzn.to/38Hve6r	Used as a form authentication that is unique to every person using AARS. This works as our input
4	RFID Card Reader	$6.99	https://amzn.to/2TF3VFv	This is what gets the input from the RFID tags. This collects information that will be sent to Raspberry Pi (RP) and the database

/*Device request is attached in another email, can also be accessed via team discussions > team project proposal thread*/

Task/Timeline/Responsible Member

/*will be updated by time, possibly new timeline will be created for easier use and management*/

After some time, we might use the Agile methodology of Kanban. Kanban is explained here https://www.youtube.com/watch?v=jf0tlbt9lx0

Date	Task	Group Member
3/11/20	Draft proposal	Surabhi
3/11/20	Draft device request	Surabhi
By 3/15/20	Submit final proposal + device request	Jimmy

By 3/15/20	Check email for proposal questions	Jimmy
By 3/15/20	Get team to discuss more project details	Jimmy
3/11/20	Research database	Kevin
3/11/20	Keep notes and weekly update	Phoenix