**Semester Break**

**28th June to 2nd July – 6 hours 40 minutes**

Spring Tutorial - <https://javabrains.io/topics/spring>

series of 24 videos

approximately 4 hours and 40 minutes of videos

followed by additional 2 hours of reading\practicing\understanding.

**3rd July to 4 July – 6 hours 20 minutes**

Spring AOP **-** From <https://javabrains.io/topics/spring>

170 min = 2hours and 50 minutes of video

Series of 12 videos

Reserved 2 hours for setting libraries and analysing code plus testing.

New section on Hardware specifications for the technical Research.

Along with the research and review of information provided with TA and Hayley.

It accounts for trying new tools such "Jmeter".

Reserved: 1h and 30 min for this task.

**10th July – 1 hour**

Skype call with Hayley

Approx. 1 hour

Machine generated alternative text:
Call to Hayley-Belle Cleverdon 
Call ended, duration 0050 
Call from Hayley-Belle Cleverdon 
Call ended, duration 41.81 
6:10 p.m. 
6:11 p.m. 
6:11 p.m. 
6:52 p.m. 
via Skype 

Summary as posted in Slack:

"Hey everybody. I hope everyone is having a good break. Hayley and I had a quick talk to review where we stand in the project. We agreed that we should meet every Tuesdays physically starting from next week onward.

We believe that we have enough information to put together a draft of the feasibility study, which would be our first version. It should then be updated as we go similarly to what we have done to the project proposal. Together with a prototype (interface only, user interface design) plus a slide presentation we will be organizing a presentation to our client on the 25th.

In order to achieve these goals we must have our parts in the feasibility study ready by the end of this week as well as be ready to present to all members of the group, this will share understanding among ourselves. A meeting on next Tuesday 18th from 12:30 till 3pm will take place to review the feasibility study, to review requirements and produce a user interface design ( Hayley has already started it), prepare slides to present to our client.

By the end of the next week we should have it all prepared, I am hoping we have some time to prepare for implementation phase if not start iteration 0, prepare list of features and etc.

Bear in mind there are plenty to be done so please keep the communication level high. and lets take advantage of the beginning of the semester when we are not super busy with other papers.

My secondary goal for next meeting is to set deadlines for the rest of the year and update all docs.

This is a good time to ask any question you may have, check and research anything that is missing.

Remember that we might have to upskill ourselves with JS (nodeJS), java spring framework, to be discussed.

We will use the repository in github "feasibility study", until advised otherwise.

Please confirm you have read it and let us know of any issue. I will text you for confirmation."

**11th July - 1 hour**

New section on Other Elements of a in-house Implementation

Reserved 1 hour for this task.

**11th to 14th July – approx. 5 hours.**

Briefly reached and compared different programming languages. NodeJS vs J2EE vs PHP. Angular and other CSS Frameworks such as Bootstrap. Further investigated java spring framework.

Acquired resources and understanding on how these language work and can be applied to our project.

These researched was performed to enrich myself with more understanding on how the computer machines support each programming language. This will expand and better explain the technical assessment.

**WEEK 1**

**17th to 19th July - 2 hours**

* worked on System recommendation section. Highlighted benefits and disadvantages of the implementation options. Highlighted concerns for each section.

**18/2017 – Team mearing - 3 hours**

We have discussed:

- We enforced that we should meet every Tuesday. ( Hayley is now available on Tuesdays)

- We agreed to put in the maximum effort to this paper while we are not super busy.

- We are aiming to present our research to our supervisor

- We should be preparing to the implementation phase. We can still get back to our schedule.

- We will keep the communication level high.

- For quality purpose, change records on top of each document should be recorded. Includes date, author, reason, description and version.

What we will be working on:

- User interface design to be completed, missing the judge interface. (to be present to judge and client for feedback). (**Hayley**)

 - Finalize technical study: (**Vini**)

+ implementation recommendation

+ Application solutions

- Operational study to be translated into a presentable section for presentation even though it is not completed. (**Alex**)

- Change management to be review (**Alex**)

- Requirements to be translated into user stories and or formal requirements (Karanjit) \* to be present to judge. Client to check and sign it off

- Quality plan to be review (Karanjit)

- Review project plan (**Vini**)

What we will discuss this week:

- When to contact client and supervisor

- Check what is missing

- Discuss technologies to be learned based on the solutions provided

- When should document be put together and reviewed.

**19th to 20th July – 3 hours**

-Worked on the Application solutions. It points out the Application that can be built to solve the problem. Options available and the advantages and disadvantages of each.

- reviewed project proposal and checked against feedback provided by supervisor.

- version 2.1 of the project proposal should be ready, team members will update stakeholders register and Communication matrix accordingly when necessary

- Updated Tasks on Trello board and inform each team member for last review on the tasks. Finalization of transition from Trello to GitHub.

- removed\ restructured OneNote notebooks, removed extra sections and put information together in the correct sections. Transitioning from OneNote to GitHub.

- Accessed feasibility study and prepared material for new sections which may be important. (resource and Schedule study)

- Reviewed quality plan and change management plan.

**21st July – Meeting with Judge – 3 hours**

The meeting took approx. 2hours and it was also recorded. The extra 1hour is due to commuting to the Auckland university campus in Epsom.

Summary:

Current problems:

Cost: MATHEX doesn’t make any money from the competition, they most likely would not be able to pay for the new system.

Currently the judge has to check if the answers are correct by matching the student’s answers with the answer written on the answer sheet which may cause problems if they were looking at the wrong answer. It may be nice to see questions and answers on the new system.

Things to consider:

We have to take into consideration health and safety, i.e. make sure the hardware is safely installed.

Judges may not be reliable, sometimes they are not even sure who the judges are until a couple days before the competition.

We may want to consider our application recording the times at which each team answered a particular question.

Final score results: See which questions were passed / wrong / correct.

Sort feature? See who’s winning, see the times they completed the questions.

We would have to make the new system simple and be able to work alongside the old paper system to begin. (Introduce the system in steps)

Could start setting up after school time at around 3:15pm, and assembly for the competition begins at around 6:30pm. This would give us roughly 3 hours to set up the hardware.

Notes:

The competition lasts 30 minutes a day over two days.

Two sets of 60 teams – 120 teams total.

One marker marks two teams. The two teams are colour coded for the judge to differentiate them, pink and white.

There will be a couple thousand spectators.

There are 20 questions total. Teams cannot go back on a question if they have decided to pass on it.

The first question MUST be answered correctly.

Teams can attempt questions as many times as they want.

There are markers and scorers (people who put up the score). Gillian is the final judge.

**Week 2**

**23-07 - 2:30 hours**

Revised and updated Sections:

Hardware requirements

System specifications

Application solutions

Created ned appendix B and C.

These changes were made to adapt to new set of instructions and requirements from Stakeholder.

**23th to 24th – 2:30 hours**

Research:

Hardware specifications: processors, memory, SDD features, barebones. Looked for other options at vendor’s websites.

Searched and defined features: such ECC, PLP, RAID.

Other Hardware’s: UPS, cabinets.

Contributed for Appendix B and C as well as "hardware specification" update.

**24th July - 2 hours**

Revised Project proposal and transferred all sections into a file, uploaded to GitHub, v2.1.

Initialized a final report for the feasibility study, all present sections were included plus the appendix A,B,C . Edit the doc.

**25th July – Team meeting – 2 hours**

Walked through what we have done so far and what must be changed after acquiring new information from the judge.

Explained how Mathex competition works in the background as we were instructed to the team member that could not participate.

Highlighted main points that judge emphasised.

The operational study can now be completed.

Some artefacts such as health and safety could be given more attention.

Judge does not think our project will add much value to the Competition itself. New Analyses from Organisers vs Client may enforces the project is not feasible.

Set up deliverables and plan next steps.

What it is expected from us:

Hayley - revise cloud solutions. Analysis of technical research. Update system implementation. Focus on existing technologies. Revise conclusions and recommendations for technical study.

KG – Revise change management plan. Revision of requirements, translate them to user stories. Acquire new requirements from meeting with organizer last week. Please revise technical assessment and comment on the conclusion and recommendations.

Alex – Revise quality plan. Finalize operational study. Provide analysis along with some conclusion to it. Please email judge for instructions about how Mathex works, what they need such as number of markers and people updating scores. That includes background actions such checking the score. Any further detail or requirements.

Jin- please update us with a summary from last week meeting. Finalize legal study. Evaluate issues mentioned as health and safety to the best available, such as concerns for implementing a screen. Assist KG and Alex with gathering requirements and etc.

Vini – Revise technical assessment and inform supervisor about our progress. Updated Activity diagram. Supervise team with their tasks.

Everybody should read the final report and understand it, everyone's input is important to define whether the project is feasible or not.

Get feedback from our supervisor.

Schedule meeting with client

**26th – 1 Hour**

Updated Mathex competition Activity diagram.

**28th – 30min**

Sent draft of the report to Supervisor.

**Week 3**

**1st August – Team Meeting - 3 hours**

All team members attended a team meeting at the R&D lab at 2pm.

We went over the feedback from the mid project review. Everyone is unhappy with the grade received and so might discuss with Akshay in a meeting. We've taken the feedback into account will make changes accordingly.

We discussed the progress made so far since the last meeting. The feasibility study had been sent to Akshay and feedback was received. We will work off that feedback and make the necessary changes.

Other changes to the feasibility study will be made too. We will add a benefits and issues section for each implementation. This is mainly for the client.

We all agree that the project isn't feasible as it costs too much and requires too many resources whilst having limited benefits. This will be discussed with the client next week.

Work was allocated for the following week for each member. All work is to be completed by Friday afternoon so we have time to review and prepare for client meeting.

**03-08-17 – 4 hours**

All Technical sections files in technical Assessment folder has been updated to reflect the final Report alterations accordingly. My new alterations were entered the table version.

Reordered document sections. I swapped operational feasibility study with legal study, because it flows better coming from the Application solution section.

Revision of Report. Removed subsections such as “introduction" where is not necessary, updated subsections names at operational study.

Added conclusion to “Application Solution” section.

Updated Schedule and Resource study’s conclusion.

Added the project description and overview from the status report.

Advised team:

“ There are redundancies, most on the operation study. Correct me if I am wrong, but I believe they are necessary because at Operational study we want to highlight whether the solutions provided will solve the problem or not. Also, it is a whole new section. What I think it is missing? More focus on how the solutions will solve the problem of the users, less focus of the costs. Also, a conclusion.

The legal assessment, perhaps, could have more options about licenses and their “descriptions” attached as appendices. There can’t be a conclusion because there is nothing to be compared.”

**04/08/17 to 06/08 – 3 hours**

Formatted appendices and included into the feasibility study.

Added risks and recommendations to the repost and informed KG of structure changes to the report. Advised KG that the current format of the document is not flowing equally, recommendations provided so he can fix issues.

Resources and Schedule Assessment edited to cover resources needed in depths.

Conclusion of the report written and recommendation provided based on the scope we have agreed for this project. Hayley was advised that we should review it together to make it more concise.

**Extras – 2 hours**

Revision, checks and need to provide feedback to each new change to the project done by any member. Constant communication through slack, text messages etc.

**Week 4**

**07/08/17 – 1 hour**

Final check of the documentation. Printed all documentations accordingly.

**08/08/17 – 1 hour**

Meeting with client. Summary:

*At the moment, AUT is the only sponsor of the project.*

*Client can see the project system being used for other purposes. Would increase how frequently it is used.*

*Cloud solution isn't desired.*

*Client believes that we may be "over-engineering" by looking into disaster management and health/safety. Wants us to keep it simple.*

*We can consider limiting access to the system (e.g. 1 user id per participating student). Would help lower system requirements.*

*Clients requirements are flexible. Says he is "negotiable".*

*Note: Some spectators may be supporting 2 teams (some schools have A and B teams).*

*Client really likes the paper prototype.*

*AUT branding is very strict. Have to be careful with how we use it. Not the biggest issue at this point though.*

*Suggestion: Cycling leader-board view. Switches automatically every so often.*

*Suggestion: Change the refresh rate on the leader-board. Increase to accommodate for more users. Doesn't necessarily have to update every second. Real-time is a broad term in this context.*

*Visiting the MATHEX event is very important.*

*Client wants to know "What IS feasible" if his original idea isn't feasible.*

**09/08/17 – 1 hour**

Prepared all the information and send to supervisor and client. In addition, explained what we would be working on and what was our future plan.

The following was advised in email;  
“Our current plan is to work in web application as the paper prototype presented to you. It should target the minimum that satisfy the current requirements. Also, we plan to attend the MATHEX competition to better understand the problem in discussion. In addition, we intend to gather more understand of what MATHEX\AMA needs.”

We are waiting for feedback.

**Rest of the Week**

New repository created “logSection” to store all records that relates to the project. That includes emails, feedbacks, audio records, minutes, logbooks and etc.

Updated version of the changes track created to address all inputs to the feasibility study.

**Week 5**

Due to other papers assignment and exams we have put aside R&D for this week. Attending MATHEX could give us better insight of the development of the prototype model.

Client also has not sent any feedback. He expects that we attend MATHEX to understand the project better.

**Week 6**

**Thursday 24th August – 2 hours + 1hour**

Karanjit and I attended the MATHEX event during the evening. We have taken several pictures and videos of the competition. We have also analysed the Wi-Fi networks, signal strengths and channels in use. Screen shots were taken too.

Attending the competition was very important to understanding the problem in hand. We could see how the spectators were affected by the cacophony of noise and the poor visibility of the scores.

Later that evening the team had a skype conference to discuss all the information gathered and how the requirements were or not precise.

Note: This year’s competition had all 4 parts of the stadium opened.

**Friday 25th August – 1 hour**

I met Ramon Lewis to further explain the project in discussion and see what he could recommend for the network domain. The brif meeting extended longer than expected. We agreed to meet again so the whole team would be present. A summary was posted in slack to reflect my meeting with him.:

*“Apparently, Ramon and Kim had some insight if the project already. They also have a solution to the infrastructure problem. I will forward the email to you all when i get home. I am planning to have a meeting with him by next week too. I would like to have you all present. It was a away too much information for me to take in.*

*He has proposed the use of raspberry pies as Hayley mentioned; but for creating a wireless network. The server would not be a enterprise size instead a simple device that should be as big as a laptop. The same should host a dhcp server if needed, web application and database. This approach would be quite cheaper.*

*The concurrency is still an issue, but he said that users can be dropped from the WAN, should happen transparently, and connect again to request new data.*

*There was much more said about how the network should work, also mentioned that hpps should be used for the admin and marker part.*

*Because using PIs and a simpler server, avoid java because overhead. Nodejs sounds good but php can be used too.*

*He got excited and I was not ready to write all down.*

*In addition, those devices will run in linux and may take some time to learn it if that’s the case.”*

**Weekend – 3 hours**

Researched about Mesh network and the points that Ramon has mentioned. Prepared for our meeting on Tuesday.

**Study Break**

**Tuesday 29th August – 1:30 hour + 1 hour**

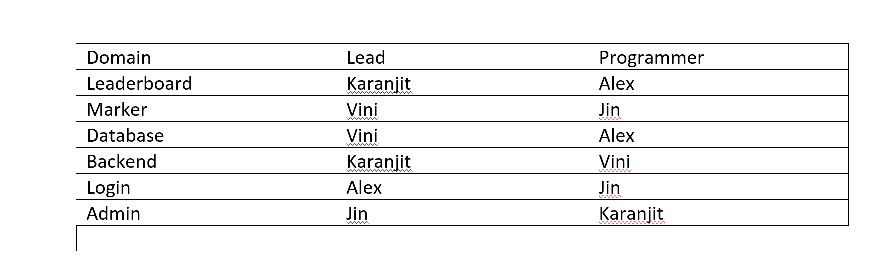
The group have meet with Ramon Lewis, technician Engineering at AUT. He has introduced his own network solution using Raspberry PIs to implement a cheap network in the venue. This meeting was audio recorded. This solution will be further investigated.

At the same day, group discussed the network issues and possible solutions. We agreed to further investigate the network concerns once we have a solid application to test it. Our supervisor has disagreed that the Raspberry PIs could host that many concurrent connections. Ramon himself said, that these is not for commercial use and it has not been used previously to host project of this magnitude.

**Wednesday 30th August – 2:30 hours**

We have had a group meeting through Skype to clarify the process for FDD. Hayley as the Chief architect created a brief program that guide us through each process. This is to clarify, delegate tasks, address the stage one of the project plan or the iteration 0 as it was described.

In this meeting, all domains were defined and each of us were assigned for a domain. Please see below:



Due to technical issues, the meeting took longer than expected. Jin was having problems listening to us and speaking.

**Friday 1st and Saturday 2nd September - 5:30hrs**

Worked on the development of the domains: markers, scorers, database and backend.

Each model has been defined and all requirements available put in the correct domain to be addressed. To further expand or understanding of each domain diagrams have been created. There are: activity diagrams; sequence diagrams; state diagrams. To where it is appropriate a simple desing has been provided, it is derived from the paper prototype diagram used in the meeting with the client.

**Sunday 3rd of September – 2:30 hour**

Create a relational database design and its description that satisfy requirements. The database will contain 8 tables to store all data we are aware of and should be expecting. The design is scalable, and should be further analysed when the overall model is presented to client.

Created a sequence diagram for the login domain. The current domain does not include features such as “forgot password” or “register new user”.

Hayley checked and has given feedback to the current proposed models.

**Monday 04th September – 30 min + 1 hours + 45 min**

Addressed feedback provided by Chief Architect (Hayley).

Create a class diagram for the models Marker, Scorer, backend and database (include classes that should manage data: retrieve, update, select). A brief class diagram illustrates the main idea of the classes present on the application server. These classes also represent the interaction with the database. Discussed what type of servers will be used for hosting the application and which database system (PostgreeSQL).

Further discussed with the team in slack about the Scorer domain, this domain is beyond the scope of the project. But it is a proposed solution to the problem as mentioned in the feasibility study.

Hayley came up with other design solutions which may be useful. A fusion of the current model to her ideas may be a good idea.

**Wed 06th September – 30 min**

Revised diagrams and preserved a unique naming convention.

Thursday 07th September – 2hours

Update LogSection. Minutes and logbook.

Upload all pictures and videos from Mathex competition to google drive.

**Week 7**

**Wednesday 13th September –** 3 hours

In order to expand me understand I set up postgreeSQL database and played around with it. Followed parts of the tutorial to get a grasp for it.

Researched about dropping connections to the Database; Handling the number of database connections; Connection Pooling; Persistent connection;

**Thursday 14th September – 3:30 hours**

Continued with research, further explored the following points:

* External Pooling
* Connection pooling and PHP
* Drop connections with database after time out
* Drop idle connection in the Application server

Also, explored a connection pooling software called PbBouncer. Extended by watching a video in youtube. All this information can be found the file currently named “learn about PostgreeSQL”.

Summary:

“Fixed primary Key on the database Design. Altered and added more info in the DomainModel description file. Create a new file that address the issues we have discussed for the back-end such as dropping idle connections and handling concurrency. Create a back-end design including a PgBouncer to manage connections. - Everybody's”

**Saturday 16th September – 2hours**

I wrote an individual status report and sent it to the supervisor as requested.   
I was planning t use this time to play with PgBouncer and set it up. To be done next week.

**Week 8**

19th September – 2 hours

We had a team group or those who were able to attend – Refer to minutes for this date for summary.

Later, 1 hours

Overall domain description file was broken down into smaller files that correspond the appropriate domain. Uploading minutes from our today's meeting together

20th September -2 hours

I have created a new database design that only covers the minimal features needed for the application. Also, I have changed the name of =some variable as required in our last meeting (e.g. userId => username, username=> name). In addition, reduced the composite keys to a minimum and used composite key instead of creating unique ids. Created a variable “assigned’ for each team record, also a time stamp variable for each competition. New file is called “Minimum database design”.

I went through the backend, database domain model and created user’s stories when I found necessary. Some user stories are very high-level so I classified those into classes non-functional requirements, Network infrastructure, application requirements. Some user stories already exist from the usability study. Find new file “user stories and requirements”.

21st – skype meeting – 2 hours

**23rd September – 3 hours**

Updated the minimum database design with variables type. Created a test database that contains all the tables from the minimum database design. Created and saved main queries for creating tables; inserting data; updating data; and selecting data. Also, found online a list of all NZ schools from the ministry of education. Leaned all to import that data into the database. All files and queries were uploaded to the development domain.

**Later, 6hours**

Spent an awful amount of time attempting to install PgBouncer in Windows but I was not successful. By looking on several tutorials it might be easier to install in linux.

Then, I moved on to find a way to get Apache, PHP and portgresSQL working together. I came across a WAPP provided by Bitnami which worked but it was very slow to load PHP files. I learned that Bitnami has caching and some “pagespeeding” feature active by default, which I attempted to disable but I failed.

Thus, I tried to install apache from the source, bad idea. I managed to get it working but could not load the PHP module.

**Week 9**

**24th September, 5 hours**

I tried to figure out why PHP was not working in my apache webserver. I followed several instructions I found online but could not get it to work.

Then, by what I had learn from my unsuccessful attempts was that I could add postgreeSQL to XAMPP. After some research, I found a tutorial and it is now working okay.

Perhaps, I should have used Linux from the start. Lesson learnt.

Updated backend domain to reflect my new findings. Created a setting up file to advise the rest of the team in case they need.

Set up back-end on linux OS using Bitnami LAPP, disabled caching where was necessary conf files. This stack postgreeSQL is not the latest version.

**Throughout the Week, - 5 hours**

I have created guidelines to set up the backend on Linux and OS. All information necessary to getting work. Uploaded all queries to the backend and informed team.

For the database interaction with the app server, I have created PHP files to manipulate data from\to the db and tested all methods accordingly. It was necessary to go through some documentation which advises how to keep communication with the database safe and avoid “hacking”.

Started learning bootstrap and how to create responsive webpages

**Week 10**

**Over 10 hours**

This week I focused on developing a responsive webpage for the marker’s domain. I manage to create a simple template that reflects the functionalities proposed on the initial prototype design and includes interaction with the application server and database. This page is using bootstrap library to scale its size appropriately on different size devices. Jquery has also been used to facilitated implantation.

Functionalities such as:

loading pages within another page division has be demonstrated.

Using jQuery and normal JS to request data from database has been demonstrated.

Basic use of boostrasp classes to create page demonstrated. Page has been tested in mobile phones, tablets and desktops.

**Includes researching and leaning time**

**3rd October, 2hours**

Team meeting:

Worked on the Webpages which we want to demonstrate to the client.

Discussed design approaches for the pages.

Prepared meeting agenda for client meeting.

**06th October -2 hours**

Meeting with client

**More info can be found on the Individual report**