**Project overview**

There are many free cloud providers that enable people to develop static websites or even web apps for free. Unfortunately, most of these platforms have very limited data storage capabilities making it difficult to create web applications where users can upload or store their own files. In addition, it would be valuable to have the added privacy that uploaded files were encrypted so it was less significant if the cloud provider was hacked. The goal of this project is to provide a JavaScript based API that enables websites to be created that can load and retrieve files from a cloud storage service. With this service a single html file could be opened on the file system and used to store and retrieve a large quantity of encrypted files stored on a server.

JavaScript code to access encrypted files, decrypt them in the browser and make them available to a web page from GitHub pages.

JavaScript code to process a file upload into the browser, encrypt it and store it in a cloud-based storage.

Rest API backend for existing services e.g. google drive, that enables browser apps to save and read data without needing any backend code.

**Week Beginning 18th January**

**-Tasks-**

- Research how API's work

- Research HTML API's

- Familiarise with JS

- Research Encrypted Storage Backends

* I am glad I got my choice of project as im very interested in developing my knowledge in that area. At the start I was worried about the scale of the project and where to start but as John explained it is more about developing key skills rather than making a perfect market ready product made me feel more comfortable with the project.
* I was advised to first look at the different free cloud storage options that are available at the moment. While researching this I seen mega and believed it could be a good option due to the large amount of free storage but comparing this to google drive it appears to me that google offers API’s which are much more supportive to develop on.

- Today I looked into GUN and how it would be implemented into my project.

* It appears I will have to become familiar with node a JavaScript runtime in order to use it but im not sure.
* At this moment im not exactly sure how GUN will be implemented into the project but I will ask for some clarity with john.

* One of the first hurdles of this project will be becoming familiar with a new language that being JavaScript. I have not used JavaScript before so my first move is going to find a guide for the basics that I should be able to grasp quickly with previous programming knowledge of java and phython.

**-Questions-**

- How GUN will be used

- Will GitHub be the best storage option

**Friday 22nd January**

* I had my first meeting with john today and he gave me some advice for going forward with my project. Firstly he advised it would be better to ensure my diary is written for each day instead of weekly so I will make that adjustment.
* He also commented that I should include the bio of the project at the top so I can have a quick reference to it.
* The main work I was advised to do in a research sense is to investigate both ipfs and gun. His explanation of the direction of the project was very useful for seeing where the direction of the project will go next. The main technical tasks I have this week is to try get a GUN network server up and running and to do that I will need to use node js.
* This meeting made me excited for what is to come, and I am looking forward to setting up a gun server as it is a really interesting piece of technology.

**Monday 25th January**

* Today I made my first attempt at setting up a gun server.
* So I fired up my ide and was ready to create a gun server…
* Until I realised I do not know how to install gun
* Or create a server for that matter
* I first went to the gun website in search of an installation guide
* While on the Gun website looking for information I was presented with a range of options on how I could install gun.
* So as most would I have started by following the instructions given on the page and I swiftly came to a complete block.
* The website gave links for other pieces of software that were required to make it work properly but had no continuity to get set up quickly.
* I first had to get node.js installed once I done that I went to the website to see what my next step is, it involved using NPM a package manager that I have never heard of.
* I opened node and used the command given on the website to install gun from NPM I was optimistic this would work it did not.
* I was directed to run it in my computers shell I done that, and I think it worked it showed a lot of text but I am not familiar with installing packages through the shell.
* My next step tomorrow will be creating the actual server and to see if gun is working on it.
* However I will need to search for a guide on creating a server with JavaScript and learn how and why It is being coded I do not want to just copy a guide blindly as I will learn nothing.

**Tuesday 26th January**

* I started my day today by looking at guides on backend JavaScript code with node.js and quickly I realised this was a bit different from the JavaScript I had already learned it seemed as If the syntax was different
* Sure enough it was node js uses older JavaScript syntax so most new guides for JavaScript done things a bit differently.
* I found a helpful guide on the node js website for setting up a server however it was not exactly user friendly with no comments of descriptions or what exactly each piece of code done.
* Looking for clarification and information I headed to the elitist forum of stack overflow and left soon after and headed straight to YouTube
* There I found a video showing the creation of the server with detailed information about each step.
* I got the server up and functional and added the gun library, success!
* Honestly after setting it up the next step is not clear to me however after a bit of poking around I see that gun has a SEA API which has options for encryption however I am slightly afraid of heading in the wrong direction.

**Tasks**

* **Make progress in some way with How to guide**
* **Look into ipfs**

**Wednesday 27th January**

* Today I mostly spent my time researching about ipfs and how it could be implemented into my project.
* I believe ipfs will be used to store picture and video files.
* Another piece of software that appears to be needed for my project is express a node js framework.
* Tomorrow my goal is to get ipfs installed.
* I also today created the html basis for my how to guide which I hope to get started on soon.

**Thursday 28th January**

* Today was bad as my internet was out all day because of maintenance to the mast (I live in the country and we use 4g for Wi-Fi)
* This was disappointing as I really wanted to get express and ipfs installed and start playing around with them to see how I could really take the next step in my project.
* I have my meeting tomorrow and I am hoping to get some clarification as to if I am progressing well.

**Question**

**Will gun and ipfs be used side by side to store different files**

**Friday 29th January**

* I had my second meeting today we discussed that all efforts should go into GUN and we should forget about IPFS in the meantime.
* My main technical work from here on is to attempt to get a GUN server up and running using the various guides to make sure that it is working correctly.
* I’ll need to use express.js another technology I am not familiar with but excited to learn.
* However after having a quick look it seems to be poorly documented for new users.
* Tomorrow I will be deciding on what I am going to base my guide off my first thoughts is an install guide for everything a new user would need due to poor or spread-out guides.

**Saturday 30th January**

* I started my day off today by working to get express installed as that was one of the directions John gave me yesterday.
* I discovered that the documentation was very fiddley and was very confusing to figure out.
* One confusing part was the use of the command line and commands like mkdir and cd which I have no previous experience with, so it took me a moment to figure them out.
* The guide wanted me to create a new directory and project file for installing express since I had already created a project I was not sure how to install it to my pre-existing project.
* After a few tires I discovered that I had to go to the command line and navigate to my project. Json file which was hidden behind many layers of WebStorm folders.
* After spending so much time getting express installed I am frustrated as something so easy was made so difficult by award guides.

**Sunday 31st January**

* Today I made the outline plan for my how to guide it is going to be a QuickStart guide to get GUN up and running and it will include a few things I found either difficult or hard to find and the overall process of creating the necessary development environment
* The main reason is documentation for getting GUN up and running was basically non-existent apart from the main GUN site however this only focused on GUN itself a small portion of the whole process.
* The one I found most challenging was installing express as the documentation led me to do things that were unnecessary and that I did not understand so after going through it I believe I can present a guide and explain to new users exactly what needs to be done and why that is so in more beginner friendly terms.

**Monday 1st February**

* Today I began writing the main content of the user guide.
* The first section is based on Node.js which is a simple install but when getting GUN up and running I didn’t know it was something I needed so having it included in the guide I feel will help new users not waste time by searching for everything they need.
* I also done some basic styling, but it looks plain and im thinking of using a CSS template but im unsure if I am allowed.
* In most successful guides I have noticed in order to draw the user in there is a nice presentable graphic at the top in order to show the user what they are getting in to as a result of this I have decided to create a banner image of all the technologies that are going to be outlined in the guide.
* Also I noticed while researching good examples of how to guides such as PyImageSearch have a short description of the uses of the technology you are creating a guide for, I am going to do this as I believe knowing what you can create with this technology will attract new users.
* In addition to this to make the guide much simpler as seen on the majority of guides is links to any external websites that hold the needed downloads for the guide.
* A small improvement is also the addition of highlighting key words which can help new users identify other areas they can research and pointing them towards what is important a good example of this is here [What is PHP? Write your first PHP Program (guru99.com)](https://www.guru99.com/what-is-php-first-php-program.html)

**Tuesday 2nd February**

* Today I moved on to section 2 of the guide which is based around express.js.
* This is the section I feel will provide the most value for any new users due to the poor documentation on how to get it working, hopefully this will help people get on to the fun stuff which Is playing around with GUN.
* This section took quite a while due to the number of photos I had to gather for it.
* Due to the technical nature of this section I included a lot of picture examples to help users be confident they are on the right path and to also help boost engagement on the guide as images are much more preferable to new users than long lines of text a great example of this can be seen here [How To Use AWS Textract OCR To Pull Text and Data From Documents – CloudSavvy IT](https://www.cloudsavvyit.com/8498/how-to-use-aws-textract-to-pull-text-from-documents/)

**Wednesday 3rd February**

* I decided that since I have worked so much on the How to side of things over the past few days I should dedicate some time in to technical work.
* I started to look through the documentation of using express and different online information on its features. I had already written some node.js code to get the webserver working but express seemed to be much more streamlined and cleaner to use so I spent most of my day re writing the code using express which made the code more compact and overall much easier to understand.
* I messaged John today to clear up if we were in fact allowed to use a template for the styling of the html file and he said yes so my plan for tomorrow is to style and complete the final section of GUN.

**Thursday 4th February**

* Today I started out by doing the GUN section of the user guide which is the las section.
* I also done a lot of styling to make the information much more presentable.
* Overall im very happy with my user guide as I know if I had it myself for when I started out I would have been able to get everything set up much quicker so I feel it has good value.
* A very common part of successful how to guides is the links at the end that direct the reader to where they should go next to develop their interest and further their chances of finding the overall how to experience more useful as they know where to go next, [Setting up Swift and Objective-C Interoperability | by Jen Sipila | iOS App Development | Medium](https://medium.com/ios-os-x-development/swift-and-objective-c-interoperability-2add8e6d6887)
* After a lot of research I noticed that many successful guides such as the official docker documentation [Orientation and setup | Docker Documentation](https://docs.docker.com/get-started/) have easy to understand video guides so I created a video on how to quickly set up a basic express webserver with gun installed to help users who prefer to learn from video format

**Friday 5th February**

* Today I met with john and we discussed how I should improve my diary in relation to the how to guide and also the future of the project
* Firstly he let me know that I needed to explain a much in much greater detail why I made the choices that I did when it came to the how to guide and show the research that I undertook in order to gain a idea on how to create a how to guide that would capture the readers attention
* He also said I should continue working on the Gun server and set up an example to check that works on the server in a browser and on an external device like a phone to ensure that the database is storing the data.
* We spoke about the future of the project and about the directions we could take it to make something useful to other people for example creating a JavaScript library to make firebase user guides compatible with gun and I mentioned the vr application of GUN and he said if I wanted to move in that direction it could also be a possibility.
* For now im going to get the server working and confirm its working and decide on where I take it when I get there.
* After my meeting I refined my user guide and also added key information to the dairy to explain my creation process of the user guide.

**Monday 8th February**

* Today I tried to get the gun server up and running and it really hit hard how steep the learning curve is.
* Even more technologies have been thrown at me the newest being jQuery.
* I feel slightly overwhelmed on how to manage and learn all these technologies while also advancing my project in a good time frame.
* I added to my program and it now accepts an input from the user gun stores it and it is displayed I closed the browser, refreshed the browser and user different browsers all keeping the data that was inputted so It works on a single device.
* However trying to access it from different browsers I am having no luck I cant seem to figure out how to get it working looking online there isn’t much but node.js should allow different devices on the same network to access the webserver, however I cant tell if this is an issue with my home network or if I am missing something in the code.

**Tuesday 9th February**

* Today I took into yesterday’s problem with a fresh mind, I was able to find information that said I needed to change the hostname in my code to 0.0.0.0 and this allowed me to access the application on a different computer. However this still hasn’t allowed me to access it on a mobile device.
* First thing I noticed is the application works correctly per device so I now need to implement some form of syncing across all the devices that are connected to the server so that when a message is sent it shows up straight away to all users
* In order to do this it seems I seem to need a login type system but progress has been slowed as I don’t really understand the examples or what they mean because of the JQuery being used.
* JQuery seems to be very essential in order to work with the guides that are provided unless you have a large amount of web dev experience.
* Going to spend the rest of my time working on the project today by learning JQuery.

**Wednesday 10th February**

* Today my main goal was to set up some form of syncing when a user adds both adding data they can access it once again after they log in the gun website shares some information on this so that is where I started.
* After implementing this new piece of code I have encountered a bug, so now when I try to open the webserver on my second machine I see the correct html page for a split second and then receive an error that the local ip address of my host machine has sent an invalid response ERR\_SSL\_PROTOCOL\_ERROR.
* Some sources seem to suggest it’s a windows issue tried it on my Linux VM no luck more say to clear browsers cache also not it im really stuck and not sure what to do next.
* In my attempt to figure out the source of the problem I removed all my new code yet the problem still existed and I’m now beginning to think it is a network issue.

**Thursday 11th February**

* My main goal today was to try resolve the issue with the server not working across multiple devices if I am unable to I will seek johns help in tomorrows session.
* I tried a number of problem solving steps that I found online any nothing was really helping so far I also tried to create a new project which was mostly blank to see if issue was specific to my gun server.
* In trying a new server I was connecting on a different device so it must be a problem with my code.
* However after well over an hour of troubleshooting I still have no clue what would be causing the issue I hope john can shed some light on how this could be resolved tomorrow

**Friday 12th February**

* Today I spoke to John again and he addressed my question about not being able to access my webserver across devices and he was able to guide me to needing to set up a self-signed SSL certificate to proceed.
* He also told me I needed to set up a GitHub repository for my code.
* I was told I need to ask questions quickly so that my progress doesn’t fall behind I agree with this but reaching out and asking questions doesn’t exactly come naturally to me but it is a skill that I need to develop in order to produce high quality work quickly.
* Another area we touched on is to get my server up and running on Heroku which will be one of my key tasks for the next week.

**Saturday 13th February**

* Today I worked on resolving the issue with the SSL error firstly I attempted to follow the guide that john gave to me however it did not give guidance on how to install OpenSSL.
* Going directly to the OpenSSL website did not offer much help either as there seemed to be nowhere to download the OpenSSL installer from.
* I done some searching and found the windows installer is on a different site and the official OpenSSL site only offers Linux based downloads.
* I was able to follow the steps from the guide and created my server key and certificate.
* From there I had to make a few modifications to my code but they were minor in order to implement the new certificate and key.
* This was able to fix my issue and I could now test the server on both my windows laptop and pc and both worked correctly the to-do app functioned properly and values were updated and synced In real time and stored with gun.

**Monday 15th February**

* In line with some advice I was given I started my day with setting up a GitHub repository for my code.
* Next I attempted to start work on getting my server deployed on Heroku I first tried to do it by connecting my GitHub account and doing it through GitHub but I opted to go for the Heroku CLI method instead.
* I decided to make sure everything was working before going any further with Heroku so I tested the app using both windows and Linux pc’s and all functioned correctly, but then I got to testing it on my phone and it didn’t work.
* I spent a few hours trying to troubleshoot the issue and going back and forth with John who was offering advice and potential solutions I tired them all and nothing would work.
* After trying to work through this problem for hours and feeling quite tired John put me in contact with an ex student who may be able to help after feeling quite frustrated this offered me a sense of hope we can resolve this soon.
* 8 hours after beginning my day today I had the idea to move my server over to my pc instead of my laptop and this fixed the issue I could access it from my phone with no problems, I still have no idea why it wouldn’t work my guess is a network problem.

**Tuesday 16th February**

* I am going to be focusing on getting my app up and running on a cloud computer via Heroku. The reason for this is if I get it up and running and I am able to transfer those skills and explain how I done I to a non-technical user the benefits could be great as they could create webapps using gun databases only using static html.
* So to deploy on Heroku there are a few paths I can take I tried to get it working using the GitHub repository option but I couldn’t seem to get it working so I have started to try getting it work using git and Heroku’s CLI.
* After working at it for a while I progressed well all seems to be set up and the directions but just cant seem to figure out the last part, I am going to ask Jamie for some advice on this.
* For now I’m going to leave my work for today as I am going to do revision for my CSC1029 exam tomorrow.

**Thursday 18th February**

* Today I continued my work on getting my server deployed on Heroku after my exam yesterday.
* I had a few problems with a few of the final steps before I could deploy the server on Heroku so I decided to contact Jamie to see if he could give me some advice.
* We worked through some of the key things that I needed to do I order to get it working and he agreed that Heroku can be can be very temperamental.
* After working on it for around an hour Jamie said he would review my code to see if any problems lie there and I think that I will have it deployed by tomorrow.

**Friday 19th February**

* Today I met with John and we discussed the next steps that I need to do, First thing is to finalise my deployment of my app on Heroku.
* The next thing is to work towards creating a way for a user to easily deploy GUN on Heroku, this is mainly aimed at non-technical users. To do this I need to use Py Selenium. This would be very useful to work towards as it is something that will have lasting value.
* Lastly we spoke about working towards visualizing .json files and that he would guide me through that part of the work and it would be working with some code that Is incorporated with another students projects.

**Saturday 20th February**

* I continued my attempt to get my app launched on Heroku I had to do some troubleshooting, when I pushed my code to Heroku and the server ran the page wouldn’t load
* Firstly I was missing a piece of code in my package.json file to start the application which was very easily missed if you did not know it had to be there.
* The next issue I ran into was when I checked the logs I received an error code H13, when I checked the Heroku website it was a connection closed error I found a thread of StackOverflow the suggested that the error was often an SSL error, in an attempt to fix it I reverted the self-signed certificate code to the original server code which seemed to clear the error.
* Another was an issue with the port this was an easy fix I just had to assign the port variable to the value that Heroku assigned.
* Lastly I got an error H12 connection timeout I was not able to figure out what the source of this problem was so I contacted Jamie and we are going to work to resolve this issue and hopefully finally get my app deployed as dealing with Heroku is slightly frustrating.

**Monday 22nd February**

* Today I began working on improving my how to guide in accordance with the feedback I was given at the last submission, the first thing I done was to correct all the typos present in the document this is important in a guide for the readability and to keep the reader’s attention, if they believe the guide is poorly made they may not feel compelled to read it.
* Next I wanted to address the issue of having images of command line text, it was noted that the images were compressed, hard to read and it is best practice to have them so they can be directly copied by the user improving functionality. In Order to improve this I have decided to change these images to code boxes to make It directly copyable and more presentable, this is done by well a guide on stripe API which has been recognised for its excellent layout and is highly praised <https://documentor.in/2148/best-examples-product-documentation-guides/>.

**Tuesday 23rd February**

* Today I once again tried to work on getting my app deployed on Heroku, at this point I was getting very frustrated, I was trying to troubleshoot using various methods one of which was changing how I declared my server in my js file, I changed it to a more simple version and it worked I was very happy as I had a lot of problems with deploying on Heroku and some of the error messages are very vague which can make it hard to troubleshoot
* With this up and running I can test its working on multiple devices like my phone and pc
* I can now progress to the next stage of my working where I will use PySelenium to create a way for non-technical users to complete this process in a much easier way.

**Wednesday 24th February**

* Today I began the start of my blog post, the first step im going to take is provide an initial overview to quickly give the reader a quick idea of what the aims of the project are what the guide can provide and ideas for how the direction the user could take when they complete using the blog post.
* From researching other blog post of a similar nature, it would seem to me that including links to where they can gather information on what these later parts of the project would entail seems useful and would help the end user focus their energy on a specific goal.
* Lastly when getting a family member to access my Heroku server to test the application they discovered they could not get it to function how it is supposed to I will investigate this further tomorrow.

**Thursday 25th February**

* In an attempt to see why my program wasn’t working I went to an old version of my app where it was definitely working as I thought that some of the messing around I done trying to deploy on Heroku may have caused it to stop working however it didn’t work on this version either.
* My next idea was to go to the GUN documentation where a tutorial that my app was based off was and it was a live code tutorial when trying to use it there it also did not work, this really confused me and I really was not sure what was going on.
* In search for answers I looked in the community section of the GUN website and found a small discord channel of around 150 people, I joined and asked if anyone else was experiencing this issue, to my surprise, Mark, the creator of GUN replied to my question with the following “@eunanmorris17 hey that's really cool to hear ,tho sorry its not working the current peers it connect to are running different versions which usually is not a problem (for the last 6 years), but 2020 I messed things up and I'm working on a new version to fix that + a bunch of things. can I use (my mistake) as an opportunity to teach you about installing NodeJS to run GUN locally if you don't already know how?”.
* As it turns out it was a fault with GUN itself so I will have to completely re-evaluate the application that I have.

**Friday 26th February**

* Had another meeting today, the main topic of discussion was how my application no longer functions correctly the main piece of advice I got was that I shouldn’t directly source the Gun code from the internet as it may break my code.
* My main technical task now is to try to fix the Gun server which is annoying as it was something external that broke it and I imagine its something far beyond my technical ability to resolve so I feel very unmotivated and defeated at the thought I may have a re do the entire thing.
* I feel so stressed at the fact it is broken as so much of my work was based around the working example of Gun, it showed off its functionality so well and this has caused many problems for my hand in next week.
* However I need to keep going so I worked on my blog post on the section outlining what I have achieved so far which goes into detail into my thoughts and the changes in direction in which the project has taken, I feel like including the different avenues that are possible to take with this project will allow anyone reading it to expand their knowledge and open them up to new ideas and the idea of taking things to the next level.
* I also decided im going to create a planned outline of all the areas I will cover within the Blog post to ensure it covers all the areas I feel will be beneficial to the end user.
* One last thing is im going to index all the sections in the sidebar so that the user can access what they need and when they need it to make it user friendly, the reason I want to do this is to allow the user to get set up and excited about the project as quickly and effortlessly as possible as getting them into the fun and exiting aspects of the project will both make the user more motivated about the project as well as increase their output in the time span that they have instead of wasting time with boring and awkward configuration a prime example of this is going to be my section on Heroku as it will contain all the knowledge I have gained to deploy quickly and effectively.

**Saturday 27th February**

* I went to make progress on the functionality of my app today and was able to get it running properly so I went to my code and made sure that the files for gun I am using in my code are not going to be referenced from the internet and are going to be downloaded so that updates cannot break my app.
* Today I wanted to add more to my how to guide I know I won’t be able to completely overhaul the guide as the blog post in my main priority but I want to add more value to the guide and to make it more exciting for the reader, therefore I am going to add a section about deployment on Heroku which adds depth to the how to guide and I feel I can provide value as I spent a lot of time working to deploy on Heroku. Along with this most successful how to guides so the reader how to make something exciting and actually being able to get an app up on the internet for free is very exciting for many people and I believe will attract users as it is much more unique than any other guides.
* In addition I asked my brother who is fairly untechnical and I fell very representative of the kind of user who would use my guide, to work his way through the guide. He was able to complete it in just under 30 minutes. He gave feedback about wording that could be improved and where more detailed information could be given. In reflection of this I changed the title to make it more appealing to a user how was looking for a fun project. “Deploy A Gun Server On Heroku In 30 Minutes”.

**Monday 1st March**

* Today I worked on adding a where to start section which is going to give information to the reader on where they should start making the start of the project seem less daunting and give clear technical work for them to follow in order to get up to speed with the project.
* I then am going to create an explicit guide on the backend server code just to get the user of the ground and get code running as have running code will allow the reader to feel more comfortable with the technologies.
* Another reason I am doing this section is to get the user on to the more important aspects of the project as fast as possible.
* As I learned from making the how to guide it would be much better to have the code I include in code boxes instead of in images as it often can be hard to read, the reader can also directly copy the code in this case making for a more convenient user experience and helping the reader get up to the point I am faster.
* I have also went and included images of what my application functioning for them to have an idea of what it would look like and to get a visual idea of Gun in action.
* When doing research I noticed that many successful blogs that have the same aim as me to provide information to a new user and to get them up to speed , one such example is <https://hackr.io/blog/java-projects> here they show simple projects for people learning java. I noticed a very consistent theme within the projects that they all have downloadable source code for the user to look through to help if they are stuck or if they are interested how the project is coded. As a result I will include a download link for the source code of my project.

**Tuesday 2nd March**

* My progress today on the how to guide was good I started working on a section I want to call the Technologies section which is basically going to be a quick reference section where I outline the technologies used in the project and I give links to useful guides or learning resources. This section will also contain advice for the new user if they run into any difficulties as I will share any problems that I have encountered so that they may be able to quickly troubleshoot a problem or avoid having it In the first place. I got the idea of this from <https://www.w3schools.com/> as in their guides they have short sections on each aspect of the topic they are covering. I believe taking this approach and adapting it will benefit the user greatly for quick information and help on the exact thing they may be having difficulty with.
* In this section for some technologies I have reference and a link to my how to guide as I feel it provides some very helpful information on some of the technologies that I have come across within the project and that for someone starting the project it would be a good place to start.
* Today I also started working on creating an index for the side bar of the page for quick navigation of the page and can be helpful for a reader returning to the page to be able to look as see roughly were they left off, however I am not completely familiar how to do this within html so I will have to do some research upon that.

**Wednesday 3rd March**

* I added GUN to the technologies section today and included a range of helpful advice as well as a set of steps to structure the learning of GUN. In order to make this guide as effective as possible I outlined all the steps and sent it to my cousin who is a final year computer science student and someone who potentially could take on the project so I thought it would be a fairly realistic test of the effectiveness of the guide. After some feedback I narrowed the guide to 3 steps which we both felt most effectively guided a reader to get familiar with GUN. The first thing was to familiarise them with JQuery so the reader could actually read the GUN documentation at a level they could work through it and learn at the same time instead of stopping to figure out what every line meant. Step 2 was to work through the guides to get hands on and practicing the format the code takes as-well as learning some of the key functionality of the code. Then for them to have a look through projects on the GUN GitHub page for more in depth knowledge. Lastly was to join the GUN discord server if they had questions or were stuck with anything GUN related during the project.
* In addition today I completed the index that I spoke about in yesterday’s entry so all sections present in the blog post can now be easily accessed from the side bar.
* In addition to this I worked yesterday to ensure that all my code was commented correctly are ready to be submitted as-well as this I made sure that all of this code was uploaded to a GitHub repository.

**Thursday 4th March**

* Today the majority of my work was centred around adding even more information and value for a potential student taking on this project, I added a section about Heroku where I share some of the problems that I have had with it and solutions to these problems as I overcame this. Practical advice like this would have been very welcomed if I had of received this blog as it would of saved me from days of frustration so I believe it greatly adds to the value of this blog.
* Additionally to this I created a short guide on how to create a self-signed SSL certificate, the reason I done this was to make it easy for the reader to set this up for local development and testing purposes, I also included how having this incorporated can cause problems when trying to deploy the application on Heroku.

**Friday 5th March**

* Today I met with John and we spoke about needing to get the code up on google cloud then doing thorough testing of Gun to see where its breaking point is and if we can be confident in the technology overall.
* A key part that im keen to test is what happens when something is edited offline and synced when internet is re connected as it would be very interesting to see how Gun handles this scenario, it claims to do this with no problems but I will try test to see if this is really the case.
* I spent around an hour today just tidying up my work and looking over everything to make sure that it is correct and up to date and ready for submission.

**Monday 8th March**

* Today my main work was looking at how to deploy my application onto google cloud, the reason I want to do this as according to mark nadal there is a problem with the Heroku peers. Deployment on google cloud should fix this.
* After a while trying to get it working and being a bit confused I decided that I needed to get some help to deploy on google cloud so I sent Jamie a message asking if he had any advice on how to do this.
* I also had a look at if there was any information on testing done on a webapp that uses GUN database but I could not find any.

**Tuesday 9th March**

* I was not able to get a hold of Jamie for the start of today so I began working on creating a table of possible test cases and making some predicated outcomes.
* In order to learn the best way to create test cases and do testing I used a few guides to help me structure the testing and also how I should lay it out in order for it to be as useful to others as possible.
* The key things I’m looking to test is both the offline to online syncing capabilities as well as the extreme end up data input to where if or when it starts to break.

**Wednesday 10th March**

* Starting to feel slightly stressed this week as all 3 of my modules are now project/coursework based and it is starting to feel quite heavy
* I have not been in this situation before and I am finding it quite hard to manage my time between all 3 effectively
* I really dedicated all my time last week to the hand in on Friday and neglected my other projects so today and Thursday I will be focusing on bringing the other two up to speed in order to have a more balanced approach to all my modules.

**Thursday 11th March**

* Today most of my day was taken up by other modules projects.
* However I did spend some time on trying to get the server deployed on google cloud and with Jamie I hope to have it deployed by the weekend
* I feel happy in the fact im now more balanced across all my modules and that I have not lost all momentum and can carry on with purpose with my project here.

**Friday 12th March**

* In our meeting today we spoke about the key points from the hand in and the main areas that my project lacked.
* One of the primary points is that a snapshot of GUN needed to be added to the code so that it cant be broken due to GUN being updated and it breaking my application as a knock on effect.
* Another point was the lack of next steps in the code of how future parts of the project have been planned and how they could be achieved in order to give the user an idea of what is to come next.

**Saturday 13th March**

* Today I really put some time into getting my deployment on google cloud successful, first thing I done was create a brand new gcloud repository on my machine to negate any problems my previous attempts had created.
* Next I figured out that I needed to create a .yaml file as it is used to configure any deployments onto google cloud via app engine, once I created this and done research into what configuration code needed to be added I was able to successfully deploy the app from the gcloud sdk.
* However when navigating to the site I was getting an error 500 which is a very general error code.
* I went to my package.json file and realised my start script was not setup properly so I corrected this and updated my app and it worked.
* I can now begin implementing and finishing my test plan.

**Monday 15th March**

* The first few test cases that I created were to do with the logging in of the system and ensuring the user was able log in correctly and to find any possible bugs that came along with this.
* I created a excel document with each test having a testID, Objective of the test, preconditions of the test, the test data that will be used, the expected result of the test and the status of the test weather that would be failed of passed.
* These tests covered testing login capabilities with correct credentials, incorrect credentials and logging in across different platforms i.e. multiple computers and mobile devices.

**Tuesday 16th March**

* Today I worked on the next section of test cases that surrounded the area of adding data to the database and how it deals with data when offline.
* The one of most important tests that I carried out was when the browsers history and cache is cleared that the data is maintained to know gun is working properly, another was very interesting was unplugging the internet and adding data then reconnecting to see how it syncs and surprisingly is works almost instantly however when viewing this using a second device It isn’t added as the most recent entry it was entered as the second of 10 entries which was interesting.
* In addition to these I want to test how it works with large amounts of data but im not sure yet how I will implement this im thinking some sort of automated way of entering values that increment by 1 each time so if it does break or stop syncing I will know where that point is.

**Thursday 18th March**

* Today I completed my testing except for the test for the max amount of data the system can hold as I have not decided the best way of doing this.
* I don’t think m original idea will work as the data size probably wont be great enough to effect GUN but I will still search for a solution to this.
* I wanted to revisit the idea of automating the deployment of a webserver that uses GUN for non-technical users but this doesn’t seem possible with gcloud as card information has to be entered as verification you aren’t a robot.

**Friday 19th March**

* Today at my meeting we spoke about a few different things one of which is testing the max capacity of gun in terms of data one way that was suggested was using the function *getimagedata ()* on an image in order to floor the database with a lot of values.
* Another was a idea at how we could make GUN function like a normal database when downloading data.
* Lastly to improve my testing and furthering the benefit to people who use GUN, I want to find questions that people have posted about GUN and test them using my webapp to create useful testcases that people who were to view them would appreciate and like.

**Saturday 20th March**

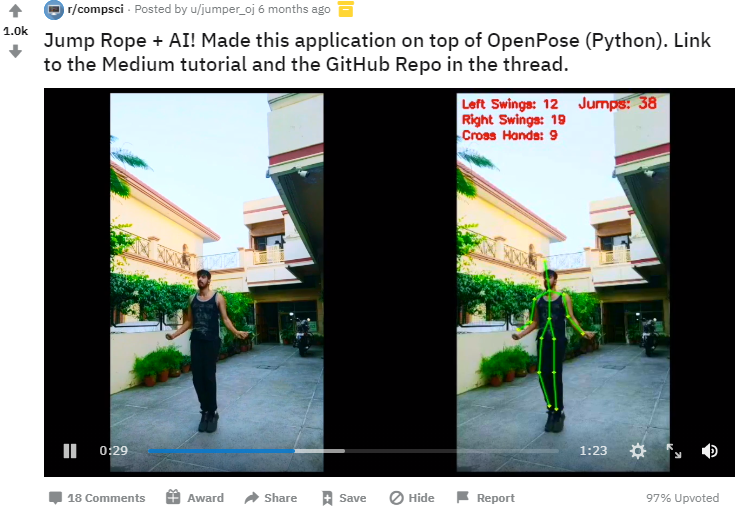
* Today I done some research and complied a series of questions that I found that were related to GUN and wanted to test in order to provide value.
* I complied the list of questions from the internet and discord and will be added to the testing document.
* I will provide the question the user asked and the results of the test I conducted here in my diary, I will also speak about how the results of the test can impact the functionality and possible uses of GUN as a result of this test.

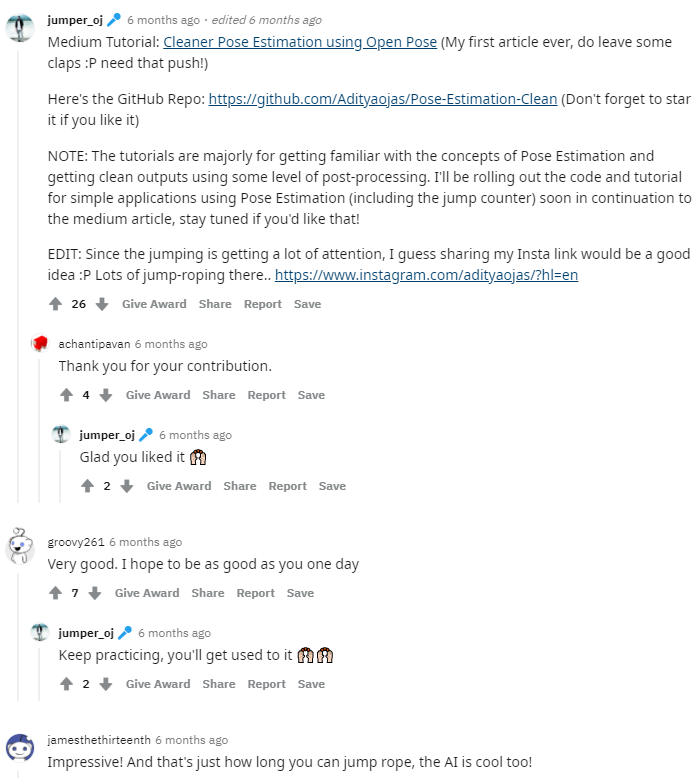
**Monday 22nd March**

* I’m currently at a crossroads in my project were I want to add more functionality and make progress but I’m not sure how to do this in a timely manner as realistically I done have enough time to implement something brand new into the project and develop it to the level of polish that I would be happy with for someone else coming into the project as a result of this I am going to focus on making the work I have already done fully fleshed out and refined to make it as useful as possible rather than providing a larger amount of lower quality content.
* I am still going to work on testing and will consistently expand my test cases to cover as much as possible so if someone was to come in and pick this up they could

**Monday 29th March**

* My progress got slowed last week due to a hand in on Friday taking much more time to finish off than expected due to the volume of testing that had to be done as well as having to travel.
* Today I started again and planning the improvements I am going to make to what I have done so far and thinking how I can provide more value that has been missing from my project thus far.
* Part of the final hand in is a social media post, we have to choose a place where we feel it will be best received and get the most interest, the place I feel will be best is the r/compsci subreddit which covers all things computer science. A lot of the users I feel will be interested in the area of my project and there has been many successful post of people showing of their projects in a quick post. From the screenshots below you can see this post has over 1000 upvotes and it was upvoted 97% of the time clearly showing interest. As well as this the great reception and interest of projects on this subreddit can be seen in the comments where people are very enthusiastic about the project, this would indicate to me this would be an ideal place to put my post.
* The key of a lot of the top posts including the one below is a grabbing visual weather that be a image or video I really feel this is crucial to getting attention, as well as having a bold to the point title to further pull attention. Once these are done a short sweet and interesting description of the project along with GitHub and promotion links to either my how to guide or blog post will quickly leave the reader with a curious interest and an easy way to progress.

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**Tuesday 30th March**

* Today my first step in improving my project overall is I’m going to make a complete rework of my how to guide, there are many reasons for this, the main is with feedback I have received I went back and really took a look at what I had produced with a more focused eye on what would actually be enjoyed and seem interesting to people online. So I am going to take the approach of creating a how to guide which provides value but more importantly is a quick fun project to get the user involved.
* I have come to realise there is not much point outputting information on how to use the basics of GUN itself due to the already fairly high quality and intuitive guides they provide. The how to guide this time I will include some information about GUN but a lot of the more basic aspects like installation of prerequisites will just be referenced as when looking at other guides that were successful they were focusing on the more interesting parts and just referencing quickly what you need and where to get it.
* I am putting a lot of emphasis on the fact that this project is a great foundation to built off so the user is excited, I let them know the possible apps they could create from this with a little more work, in this way the project really is the beginning of a evolving project the user takes on themselves
* So for this rework my guide will be based around a quick Gun project which will be deployed on google cloud, this will be quick and easy for a user to do and most importantly is free , it will provide the information on how to do It but as well as this I will also provide information on what the user can do to further this quick project as well as provide different tests they can carry out to make sure the project works correctly.
* The main idea of the actual app will be simple a basic CRUD app which will be hosted online so it can be accessed anywhere by anyone.

**Wednesday 31st March**

* Today Im still working on my how to guide and the main thing im working on is the user experience, I am using a post by bath university who published recommended formatting and tips for creating how to guides, I am using much of what they recommended like numbered lists for steps to be taken, using visual media to help guide the user in the form of pictures and video. As well as ensuring my language is concise and mainly non-technical to make it accessible to more users.
* The first section I completed today and its based around pre requisites needed to get started. I have included all of the things they need including install guides, the thinking behind getting everything set up first is that when they start the project they wont have to break flow and loose momentum, which should increase the likely hood of success and completion of the project.

**Thursday 1st April**

* Today I finished off the first section of the how to guide, by taking advice from the post I referenced yesterday from bath university I decided to not create a whole install guide for google cloud sdk as they already have a very comprehensive guide that covers all operating systems so I decided to direct the reader there for that section as they have to go there anyway for the download link.
* Im now moving on to the biggest section and the biggest change from the last version of my blog post, the last time I had a quick guide to deploy a basically empty app with gun installed this looking back was fairly boring and uninspired to potential user. I have developed a quick app which is takes a basic app the GUN documentation shows and I improve ad advance on it, the reason I want to do this as it shows off genuinely what GUN can achieve using its peer to peer network. The app will allow the user to easily create a CRUD app that could be used as a chat room in a primitive form. I really feel this is a huge leap from the last how to guide showing off a greater user experience and now a much more interesting and engaging project for them to undertake.

**Monday 5th April**

* Today im finishing off my new and improved how to guide enabling me to move on to the next task I have. The section I finished off was on the creation of a CRUD app and also how that would be deployed.
* My next thing im going to work on is the social media post.
* As detailed before I have a very good foundation on where I am going to make the post, however one task I must do is create a appealing graphic to encourage users to stop and read what the project is about
* I also need to create a short paragraph that concisely sums up the overall project.

**Tuesday 6th April**

* I reviewed a few more popular posts on r/compsci and many of them have the same format in terms on the text the use.
* A picture containing logo

  Description automatically generatedThe largest portion of their posts contains a nice graphic so I created this one which should be eye catching and fitting to inform the reader quickly about the very general contents.
* Next the heading is usually all bold with a catchy heading much like the title of my, how to guide “How to build and deploy a gun app”.
* The next part is usually a link to the how to guide so if a user is interested they can be directed to the how to guide quickly without having to search and have a clear path to take. This is important as you need to quickly convert attention into people going to your guide this is difficult due to the often-low attention span of most people when browsing social media.
* Lastly the actual overview of the project giving slightly more specific details but still quite vague as you do not want to overdo and bore the user or make it too daunting to read in the first place.

**Wednesday 7th April**

* I am beginning work on fleshing out my testing plan and the testing I have carried out, I have decided that I will have two separate testing documents the first of which will be a testing plan that will be based on GUN so anyone new that is picking up the project will have a measure on how to systematically test their creation.
* The way I am going to do this is create sections of test cases that are broken into different sections and have more general cases so that no matter what the user develops it is still applicable to testing GUN.
* The other testing document will be the testing that I have carried out in regards to the application I made, this is very important as it provides a almost proof of concept so that users can have faith that data will be stored correctly, this faith is very important as new developers and adopters of the software will want evidence of it functioning correctly.
* So today I am going to make a quick word document which will be part of the plan outlining why the testing plan is laid out like it is and how it should be used, this will accompany the testing plan excel document where the actual testing can be carried out by the user. I want to do this to make it as easy as possible for the user to carry out testing and know they are getting results they can verify.
* Having this will give new people taking on the project a basis for what results they should be getting as well as using the other document to compare to and use as a basis for the direction they take because of the functionality available.

**Thursday 8th April**

* To round out my testing and to do the final and arguably the most important test by far, it is to test the storage capacity of gun.
* To do this I added to my deployed test app a upload function for files specifically for pictures in this case.
* The reason we want to do this I then used the getimagedata() function which turned the image into a huge amount of data in an attempt to populate the database as much as possible to see if it would all be stored.
* When storing this it seems that when checking across devices the data is stored fully in GUN, However it runs very slowly on my mobile device im assuming this is down to the fact it is so large.

**Friday 9th April**

* My next goal is to improve my blog post as it had a few issues during the last hand in, the first thing I need to do is repair the download link for my source code this was simply fixed by making the link direct the user towards my GitHub where they can access the source code.
* I am also adding an in-depth direction on what the next steps are for the project as it was missing the depth in the first version, but this will be fixed and the user will have a good understanding on how to progress on from where I left off.
* This will outline where to go next and the steps the user can take to work towards the end goal or the next steps so they can develop what they have created or learned.
* I will show some possible directions a user can take firstly using PySelenium to create a way for non-technical users to develop apps using GUN, next is the creation of a JavaScript library to imitate the firebase library which would massively increase developer support.

**Monday 12th April**

* Today I added the Snapshot of GUN code into my project so that tested and working GUN code will be used at all times, this is important as its not taking the most recent instance of GUN which could be broken by changes to the code as a result breaking my code.
* Upon more inspection and looking through the code and errors that I received before I believe the code was only one half of the problem the other was the peers that were broken, for some reason it is only the peers GUN offer for anyone to use that don’t work this may be as a result of too many people using them and GUN not being able to handle this. Creating your own peer is very important and I think in my blog post I will be directing users how to do this. If that large amount of data is potentially breaking those peers then maybe that could be something someone in the future look into.

**Tuesday 13th April**

* To continue developing my blog post I am going to add a full section on testing, this will cover how I tested, why I tested and some of the results I got.
* This will give the reader a clear reference point for some queries that they may have about any of the testing I have already conducted and could use this as a basis for any future cases they would like to add.
* Along with this the user will be made aware of the testing that I have done and I will provide a link to where they can access it via GITHUB hopefully this can help them make good progress and identify if their code is also running correctly by getting similar results.
* I am going to make this section quick and easy to understand as to not bore the user as testing is not the most fun however still make it contain crucial information just in a digestible form. I am taking inspiration from the social media side of things where information will be short but packs a lot of punch, as well as this I am going to add a graphic to draw the users attention because I really feel that it will be looked over but the value this could have for a new user is huge and I really want to provide as much value as I can.
* The post will mainly speak about the general test plan I have created , this is different from the testing I done on my WebApp (which will also be provided) as It will be shorter due the technologies nature it will only have test cases based around core functionality of GUN that is applicable in any instance of GUN being used. I feel this is helpful for new users as they can test core functionality but also creates a great base for expansion in their own development of the project.

**Wednesday 14th April**

* To improve the blog post further I am going add much more detail to the Heroku guide specifically the sections where I found difficulties and the problems I had.
* Fleshing this out will make this helpful information be even more valuable for a new user as this information isn’t available anywhere else so the only way would be trial and error, since I have got this information it would be very valuable in terms of saving the user as much time as possible.
* The changes I am making Is to clarify how the user is to adjust the code so that the express webserver takes the port assigned to the deployment by Heroku and reverse the self-signed SSL certificate code as this interferes with the deployment working correctly.

**Thursday 15th April**

* Today I will be creating the test plan document which will be a word document running the user through the testing process and how they should ho about doing these tests.
* It will revolve around the general testing document I have created in excel which shows all the tests and fields the user must complete, this document be supportive and describe the purpose of each test in a greater detail than present in the excel document.
* The objective for this document is to make the testing understandable to the user and to walk them through the testing process and how to do it. This is going to help the user try to get comparable results to mine and therefore allow them to quickly see if GUN is working as intended.

**Wednesday 16th April**

* This final week I have been going through touching up what I can in preparation for final submission.
* This module in all honesty has tested me a lot and I believe I have developed a lot of skills as a result I may not have produced the most or best work and likely not the best grades but I am still very happy with what I done I had never experienced a challenge like this and I know I have benefitted a lot as a result.
* It made me realise the work required to keep up in this fast paced sector as well as the difficulty of managing my time, it took probably over half the semester to really nail the time allocation across all of my modules.
* As well as this I don’t believe I have used a single technology involved in my project before I started and the learning curve was large and often very overwhelming but I kept going and now feel much more confident in both using new technologies and he ability to learn new technologies which I believe is a skill in itself.
* I often found myself having to really push and adapt in a different way to other modules and no doubt I missed the bar many times but learning from that I feel has put me in a great place to continue on from here and I really truly feel by doing this module I have developed myself a lot. I don’t think any other module could provide anything close to that amount of value I got during this time I would recommend this to anyone who really wants to further themselves but it requires a lot of hard work and perseverance.