**Daily Diary for Computer Challenges Module**

**11/01/2022**

* Received the email from John that confirms my first choice of the industry simulation project

“F.1.i Industry from Data Analysis course. A number of industries have been examined in detail, including interviewing experts from the industry, to identify what are the most important positive and negative events that occur within them. Also, data sources that provide real metrics that can be used to quantify the simulations are also available. These include Farming, Youtuber/Social media creator and many more.”

* John sent a few folders with an example simulation of a coffee shop which isn’t complete. Hard to get to grips with it as I’ve never used js before so finding it a bit difficult to follow what’s going on.
* Another folder that John sent to me included lots of data analysis, several documents talking about the beef farming industry
* Being from a beef and arable farm that is the industry I would like to create the simulation on however I know firsthand just how many variables come into the industry and I’m not sure I’d be able to quantify many of them in a meaningful way
* Currently thinking about doing some web scraping (which I’ve never successfully done) in order to gather data on average local weather conditions as this would help a simulation massively in its flexibility. Making it much more useful for others, which seems to be being stressed as important.
* However, I don’t feel like that’s a good place to start as I should get some of the backbones of the simulation in place. Just need to find out what the backbones might be…..

**12/01/22**

* Found a very useful python library called ‘simpy’ today, seems to do a lot of the heavy lifting for creating any simulation within python. Not sure if it would be allowed as it may take away some of the struggles of creating a program that can simulate something rather than just creating an algorithm that can accurately simulate the farming industry…. Haha ‘just’. But why invent the wheel right?
* I think I’m starting to find my starting point for the project. Need to define a rough idea of a simulation algorithm, figuring out which parameters I want to use to control the simulation. However to do this I need to narrow down what exactly I’m simulating as the entire industry wouldn’t be feasible. Needs to be something useful….
* One idea that has just came to me would be to simulate the net carbon output per unit of beef produced by a farm or something due to it being so relevant at the moment… will keep thinking of other ideas.

**17/01/2022**

* After deliberating over it for a few days the ideas of what to simulate within the industry of farming are:

Impact of fertiliser, different types of fertiliser, their impact on yield and the environment and profitability

Yield of different crop types/varieties dependant on different conditions which can be set by the user

Net carbon output per unit of beef produced by a farmer

**Outcome of First Friday Meeting**

* Meeting went well got a lot of issues ironed out
* In terms of the direction of the project we discussed that it was to become a model simulation of an entire farm, not a simulation of something to specific that occurs on the farm.
* It was also pointed out why java script would be by far the best language to develop the program in as it makes it extremely easy to use as a portfolio piece as all you need is a browser to run it within.
* Web scrapping was also immediately ruled out.
* The next stages that we discussed was to remove parts of the sample code that aren’t relevant to my simulation and start to add comments which denote an event that may happen on the farm
* These comments can then start to be turned into methods which can be called to simulate the events that occur within the working day.
* It was also pointed out that for this sort of simulation style program, procedural program would allow a much clearer approach that can be more easily modified and built upon by other users.

**24/01/22**

* As discussed in the meeting I spent some time today removing any code from the sample program that wasn’t relevant to my simulation
* I also inserted many comments referring to some of the events that occur on the farm from day to day.
* I also started to add some basic common variables to be used to help to implement functions later
* Plan is to start converting comments to rudimentary methods throughout the rest of the week.
* I’ll also continue to add many more comments as they come to me.

**25/01/22**

* Spent some time today learning some basic javascript syntax as I’ve only ever made one program in javascript and it was a mod for a game so I don’t know that it even counts!
* Had some coursework to do for webTechnologies so spent the rest of my time getting it done to enable me to spend more time later in the week on this module.

**26/01/22**

* Finally started programming properly. Feels like I’m actually making progress now
* I feel like I had been trying to plan everything out far too much before I got started as last term we were told over and over if we plan out the program properly before starting to code it will cause a lot less hassle in the long run. However for this type of project I’m realising it’s much better to get stuck in and actually have something started as then it becomes easier to see where you want to go.
* Have decided for simplicities sake I will leave all my data variables in the same js file for now, just to get something running. Perhaps will have to move them to a separate file in the future when the simulation becomes much bigger and one file just becomes impractical to read and work in.

**27/01/22**

* Getting confused now, every time I try to test the code to understand it better I’m getting completely unexpected numbers for all of my variables.
* I’m pretty sure I’m not getting how the debugger works on chrome properly and that’s causing confusion. When I attempt to step through the code by putting breakpoints I assume it stops on the breakpoint in the first iteration. At which point no variables should be changed but yet all of them have been changed as though several cycles have been ran
* Going to take some time to teach myself how to use the debugger properly and then we’ll see if that helps.
* Should have started with that. Knowing how to actually use it helped a lot and now have some working code
* Even though we were told to keep it procedural and the benefits were pointed out, it’s hard to see how you could get an accurate simulation without modelling the cows as objects and being able to control variables for individual cows rather than an entire herd. However I’m sure there’s a perfectly logical reason why this wouldn’t be practical.
* So far most of the numbers I’ve used are fairly random. I could find out some more accurate figures by discussing more deeply with my family, the variable differentiation technique that was discussed in the last meeting sounds like a much more interesting way to go about this however it sounded a lot more like something for the end of the project, so maybe I just put up with less than accurate results for now?

**Outcomes of second meeting**

* We discussed the issue of creating the cows as objects, it was pointed out that every cow could have an individual set of vars within the json file, worrying about repetitiveness of writing jsons on a large scale for larger farms to use the program it was pointed out that a program can easily be written in order to help automate the productions of jsons if that were to become an issue
* We also confirmed the fact that probability variables etc aren’t important currently as they can easily be made more accurate with the use of software later in the process
* We also discussed the option of changing the tick time to simulate an entire day every tick rather than seconds of a day. This would result in a large simplification of the program without losing much accuracy or detail. This will be something I plan on utilising going forward.
* John talked to me about the basic structure of a json as they aren’t something I’ve ever worked with before
* Instead of tick through the actions of the entire herd of cows I should have a set of actions that a cow can carry out and then loop through all of the cows stored in the json and have some cows do some actions whilst other cows do other actions.
* The how to guide should be based around how to make a simulator of a farm, discussing what’s important to capture and what are the causes of the important events that take place
* The entire website should be contained within a folder with an index.html file that is the main file to open the website containing all the details of the how to guide.

**31/1/22**

* Spent some time today looking at other how to guides for software projects. Focusing especially on ones I’ve found useful in past projects
* Noticed that the ones I find easiest to follow are broken up into smaller sections which are in chronological order. This make the guide easier to follow as you work through the project as you can quickly find the stage that you’re at and continue from there rather than scanning the entire document in order to find your place.
* Trying to break up large chunks of text into smaller sections visually makes the how to guide seem a lot less daunting and made me much more likely to be able to follow the guide right to the end.

**1/2/22**

* Spent some time today setting up the basic layout of the website, getting the general colour scheme sorted etc
* Didn’t have much time to continue to work on the guide as I was preparing for my scholarship interview which was the next morning

**2/2/22**

* Started adding the content of the guide to the webpage, typing up all the different sections.
* Added a box around the main headings in another attempt to break up the guide a bit more. Also helps to highlight that these will be the main talking points of the document.
* Added large headings with plenty of spacing to make clear breaks between sections in order to make the document a lot less daunting as previously discussed.

**3/2/33**

* Added a navigation bar to the page in order to make it easy to quickly jump to the section that the reader has got to in order to make it easier to follow as the reader progresses through their project as discussed previously.
* Had some fun adding in extra details like highlighting the option on the menu that is hovered over, just to increase the appeal of the webpage to the user, the little things that aid engagement all add up to help create a much better guide, providing the user with a better overall experience.
* Included images, where appropriate, depicting code to help the user visualise what is being talked about in the text. This further aids breaking up the text into smaller more manageable chunks whilst also keeping the reader engaged by providing a visual element to the guide.
* The use of images is very important for guides, too many and it becomes too large of a document to load quickly on slower internet speeds (something I’m very conscious of considering my internet speed) I tried to keep images minimal by mainly using them in order to aid descriptions rather than for aesthetics, with the one exception being the main image at the top of the page which helps prevent the user being thrown straight into reading large chunks of text.
* I got John to send me the code for optimising the variables within the program. Thinking that it would be a good code snippit to add to show how to improve the accuracy of the program.
* However, as it was sent as a github open source repository I thought it would be much more useful to link the repository itself in order to allow the user to reuse the code and adapt however they see necessary. I felt that as it seems to be openly available to the public it can just be something that people wanting to complete a similar project can reuse rather than having to recreate.

**4/2/21**

* I realised that most of the guides I follow are never for the exact project that I am doing, rather something that’s close enough for me to get the general idea.
* Therefore, I added a ‘primary goals’ section in an attempt to help the user to follow the guide whilst adapting it to their application by pointing out the main areas that would change in a different variation of the project.