

Introduction to Programming II

Report

Project title:	CM1010 ITP2 coursework by Devansh Gupta
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List the modifications and extension that you have made to the template file (400 words).

From the template file, I have added the UK Food Attitudes 2018, Nutrients: 1974-2019, Climate Change and the Take-Two Interactive Software, Inc. (TTWO) extension. I followed the coursera content to code the first three extensions and the Share-TTWO.js was my own original extension. for the majority of this project, my efforts have been concentrated on this extension. the Share-TTWO.js extensions are meant to be a data visualization of a stock in the stock market. It takes raw price-date data, performs calculations, and displays it onto different methods of visualizations. This is to help a user take decisions in a stock by making meaningful patterns and connections that would otherwise not be possible just by looking at raw data. The Share-TTWO.js extensions has numerous features such as 3 types of data plotting methods, custom date range selection, a moving average display, zoom and scroll capabilities, a drawing on the graph feature etc. This extension is fitting for this project as the main goal is to introduce animation and drawing into visualization of data. The extension does this by making use of the features to identify trends in the prices, help making in decisions whether to buy or sell the stock using the moving average indicator, allowing to make choices between a long term or short-term decision. The extension does slightly go beyond this in terms of making calculation with the data available and making more plots. The structure of the code has been tailored to minimize the time complexity. This extension uses a dataset with 9 columns and 273 rows. This requires the code to be as optimal as possible so that it does not hinder the performance of the system. To do this, the code revolves around a loop that extracts data from the source in the form of an object in an array and distributes it throughout the code. The use functions allowed this distribution to be efficient as no unnecessary memory was wasted in storing data which would be the case if there were multiple loops for each function. The code also makes use of event listeners provided in the p5.js library. This code uses the mouseWheel() and mouseClicked() functions. This helps minimize time complexity further as these functions are only called when the event is called so it saves on computing power instead of constantly running code that isn't required all the time.

Describe how effective your plan was in completing your project (250 words).

My project was quite ahead of schedule as I have overestimated the time I would have required to complete the scaling feature (the zoom and scroll). Therefore, I was able to implement a lot of extra features that were not in my Gantt chart I submitted for the midterm submission. My time management was quite good as I did manage to include quite a few features after completing my main function. Although I think in the future I would invest more time in testing and finding bugs as my current testing methods have helped me find a quite a few system breaking errors. There could be more that I still don't know about. An expected difficulty was that brackets' live server would sometimes not detect my files and push out load errors. A simple restart of my computer or a change on the file path of the project usually worked but in weeks 11 and 12 none of these solutions worked. This had caused a stall in my progress. Please be advised

that this could happen again and it is not a build error from my end.

Evaluate the process of completing the project and how effective the final product is. (250 words)

I am really happy with the final product as it is quite close to how I imagined it to come out. A lot of references from other data visualizations helped me create this product. Things I would do differently would be getting more data and look into more features which are relevant for this application. I would also try and document more in detail my progress through the project which would help me trace back any problems. During testing I did find bugs that were from features I had worked on a while ago. A detailed log would have helped me to pinpoint the origin of the problem and saved time. I did carry out some user and system testing (the system testing snapshots are in the progress log pdf). User feedback was mainly “it’s very intuitive, easy to use, also very informative”. My sample size was 3, containing computer science students and a stock visualization tool user like <https://finance.yahoo.com/>. System testing uncovered many base level problems that were identified when the code was ready as whole. It revealed build errors, features that were not connected with other ones, lag when changing between the many extensions. Although these were easy fixes, they were still system breaking glitches. In the future, I would create a more extensive testing plan for any application I build to test for these cavities and eradicate them

List any external sources that you have actively utilized in your project.

- Drawing feature reference – drawing a line between two points-
<https://stackoverflow.com/questions/62578181/javascript-p5-unable-to-draw-line-between-two-points>