Project Charter

Math Jungle Game

Aaron Beumeler

Dr. Pierce & Mr. Bauer

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Executive Summary

The Math Jungle is a multiplication game for elementary school children. It was developed using HTML, CSS and JavaScript as a fun way to practice memorizing the multiplication tables that children are often tested on in third grade. The game was created beginning with a small idea which was expanded on, but the development process had not been carefully planned. After adding many features, the code became messy. It was also discovered that the game only displays well on screens with a particular resolution and aspect ratio. The game does not display correctly on lower resolution screens or mobile devices. The goal of this project is to clean up the existing Math Jungle code and add the capability to display the game to be played on a variety of different devices.

Project Purpose/Justification

Memorization of multiplication tables is a basic necessity in order for a student to continue their education as a competent math student. As mathematical complexity grows over the course of a student's educational advancement, time cannot be wasted on double checking simple multiplication. There are many ways to practice math skills and educational tools continue to shift to an online format.

The Math Jungle game offers a new addition to the variety of fun learning tools on the internet, but it fails to display properly on screens that differ from the aspect ratio and resolution of the screen it was developed on. Math Jungle was designed on a screen with a resolution of 1920 x 1080, giving it the aspect ratio of 16:9. When Math Jungle is accessed on a monitor with a lower resolution, the main game user interface expands off the bottom of the screen and behind the footer. When the game is displayed on a mobile device with a vertical orientation, the main panel of the game shrinks and moves to the top. There is also not a practical way for the user to quickly enter their responses in the timed rounds of the game. These problems render the game unplayable on mobile devices. According to Pew Research, "80% of parents with a child age 5 to 11 say their child uses or interacts with a tablet computer" (pewresearch.org). This is the target audience for the Math Jungle game, so it needs to be playable and easily viewed on tablets.

Business Need/Case

There is always a demand for new learning tools. Those which are entertaining and stray from a typical study format tend to encourage a student to practice their skills beyond the limitations of a text book. When learning becomes a form of entertainment, that acts as an incentive to continue learning. There are many learning tools on the internet,

but this one is different because few cater to this particular test which is commonly administered to young students.

Business Objectives

Within the scope of this project, the intent is to give children and teachers free access to the game to encourage learning. Informal feedback from users will help debug and add features to the game in the future. Ultimately, it may be worthwhile to add either a donation option that unlocks additional features for teachers and/or students, or advertisements to the game. This would serve to monetize the game and provide funds to aid in improving the game. Upon the end of the project phase documented here, these features will not be added.

Project Description

This project will improve upon the organization of existing code. Some unused code may be removed as well as some names of functions, classes and ID's. The bulk of the project will be focused on improving the way that the game is displayed on mobile devices and PCs with varying aspect ratios and resolutions. It may be necessary to add a number entry pad for the mobile touch screen display version. There will be minimal changes in the code as far as the way the game generally looks, sounds and functions. The primary objective is to make the current game display properly and allow it to be played on mobile devices and a variety of screen sizes and resolutions.

Project Objectives and Success Criteria

The final objectives of this project are centered around making the game easily viewable and playable across devices which have differing screen sizes and aspect ratios. The success of this Math Jungle project will be measured by the following criteria.

-   The game should fit multiple screen sizes and aspect ratios.
-   It should be possible to play on a variety of devices.
-   Previously existing code should be cleaned up enough to add Bootstrap and meet primary project objectives.
-   The project needs to be completed by the end of the Spring 2022 semester.

Requirements

The project must meet these requirements to be successful.

- Math Jungle must be successfully tested using at least two different screen sizes and two different aspect ratios.
- The game must function as it did prior to changes. The only allowable exception will be for functionality improvements.

Constraints

The Math Jungle project must adhere to the following constraints:

- There is not budget associated with the project.
- The project is to be completed by Aaron Beumeler.
- Device access for coding and testing consists of one Samsung laptop PC, one iPhone 12, and one Dell external monitor.
- The Google Chrome browser's developer tools include tools that will be used for testing the Math Jungle on different screen sizes.
- Versions of the code will be kept in GitHub.

Assumptions

The following is a list of assumptions about the Math Jungle project:

- The game will not necessarily work the same on every browser. It will be tested mainly using Chrome.
- There are some existing bugs in the existing code which will not necessarily be fixed upon completion.
- There will be some outside assistance as provided as part of the UALR Capstone II and Mobile Web Development courses.

Risks

There are a variety of risks associated with the Math Jungle project. Reasonable precautions will be taken to minimize the impact these risks have on the project outcome:
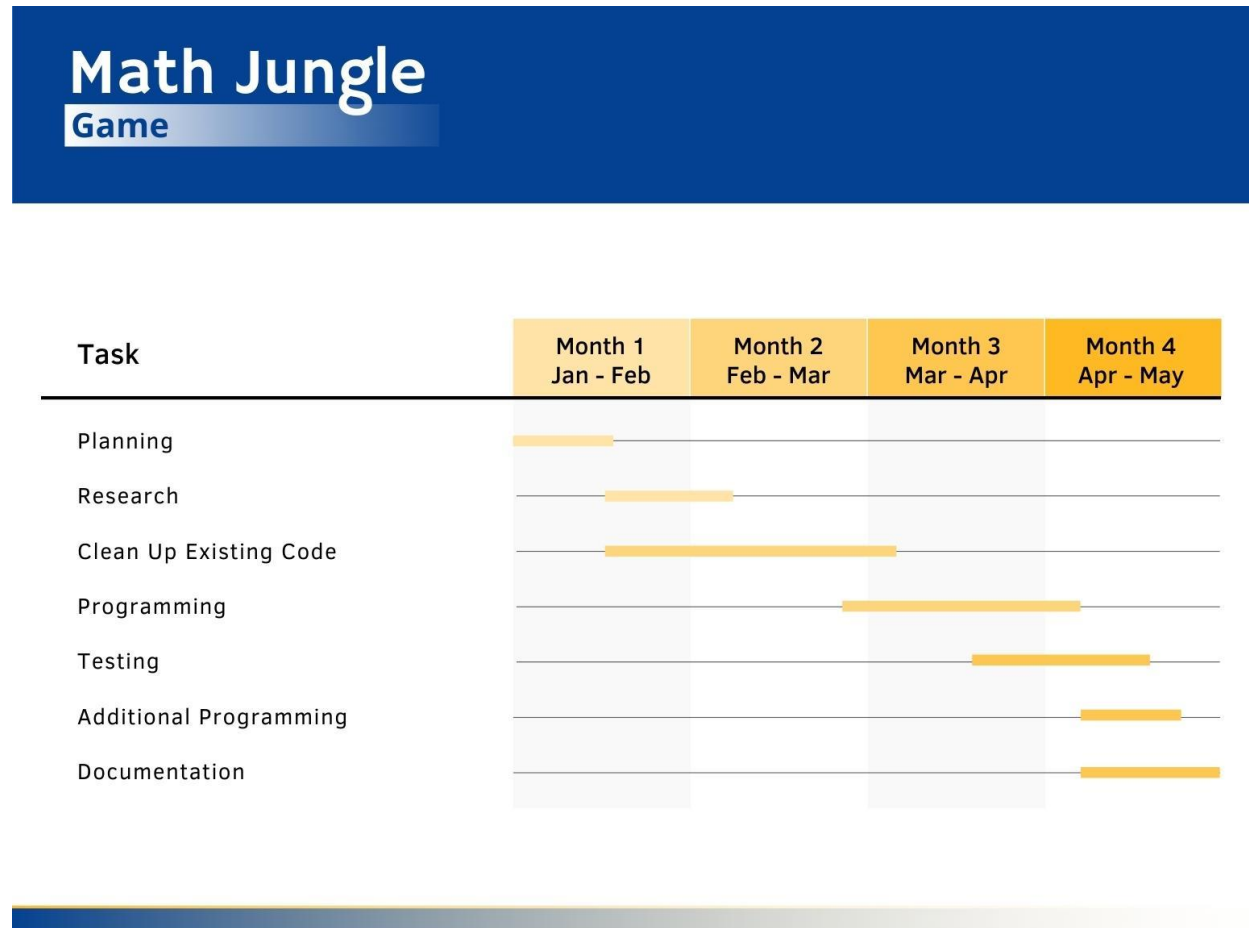
- Failure of machine used to create and edit the code for the project.
- Problems with GitHub, where versions of code will be stored.
- Internet security threats such as hacking and viruses.

Project Deliverables

The following list of deliverables will be available upon completion of the Math Jungle project:

- Math Jungle game access on multiple screen sizes.
- Documentation for the completed project.
- List of any goals that were not met.

Project Timeline/Gantt Chart

Math Jungle
Game

Task	Month 1 Jan – Feb	Month 2 Feb – Mar	Month 3 Mar – Apr	Month 4 Apr – May
Planning	▬			
Research		▬		
Clean Up Existing Code		▬▬▬		
Programming			▬▬▬	
Testing			▬▬	
Additional Programming				▬
Documentation				▬▬

Project Manager

Aaron Beumeler will serve in all roles associated with the Math Jungle project. No other parties will have significant roles in the project. The only outside help will be advice provided by instructors in the Information Science Department at University of Arkansas at Little Rock and volunteer testers providing insight on software usability.