# ENHANCING DIGITAL GOVERNMENT AND ECONOMY

Digital Skills for Students

## Final Project

# Math Master – Arithmetic Quiz Game

Submitted By

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Venue: International University of Business, Agriculture and Technology (IUBAT)

Dept./Institute/Centre: Computer Science and Engineering (CSE)

Unique Batch Number: 03

Training Track/Course Name: Front-End Development (ReactJS)

## 1. Project Overview

Math Master is a responsive web-based quiz game that challenges users with arithmetic equations within a 30-second time limit. The game allows users to choose an arithmetic operation (addition, subtraction, multiplication, or division) and define a number range. Based on the selected configuration, the game generates random math problems that the user must solve before time runs out. The player earns points for each correct answer, encouraging both speed and accuracy.

## 2. Project Objective

The objective of this project is to create an educational and interactive platform that sharpens mental math skills. It emphasizes:  
- Enhancing quick thinking and accuracy under time pressure.  
- Providing an accessible and fun way for users (especially students) to practice arithmetic.  
- Demonstrating the integration of HTML, CSS, and JavaScript in creating an interactive web application.

## 3. Features

* Operator Selection:

Users can select one of the four operations: + Addition, - Subtraction, \* Multiplication, / Division. The selected operation button is highlighted for clarity.

* Range Configuration:

Users input a start and end value to define the range from which random numbers will be generated in the questions.

* Dynamic Equation Generation:

The game generates equations based on the selected operation and range.

* Countdown Timer:

Each question has a 30-second timer. If the user does not answer in time, the correct answer is shown, and the next question appears.

* Scoring System:

Users earn 10 points for every correct answer. Scores are updated and displayed in real-time.

* Responsive UI:

The game adjusts its layout for various screen sizes, ensuring accessibility from desktops, tablets, and mobile devices.

* Instant Feedback:

The user is notified instantly whether the submitted answer is correct or incorrect.

## 4. Technical Details

Frontend Technologies:  
- HTML5: Structuring the layout – input fields, buttons, and display areas.  
- CSS3: Styling the interface to be visually appealing and responsive.  
- JavaScript (ES6): Handling the logic for question generation, timer countdown, score updates, and user interaction.

Game Logic:  
- Generates random numbers from a user-defined range.  
- Builds arithmetic problems using the selected operation.  
- Uses a timer to limit user response time.  
- Validates and compares user input with the correct answer.  
- Keeps score and updates the display after each attempt.

UI Components:  
- Operation Buttons: Interactive and visually responsive.  
- Input Fields: User-configurable numeric range.  
- Equation Display: Dynamic math question shown on screen.  
- Answer Field: User input for solution.  
- Timer and Score Display: Shown in real-time during gameplay.

## 5. Future Improvements

* - Game Over Logic: Add a limited number of lives or wrong attempts.
* - Leaderboard: Store and show top scores using browser storage or backend.
* - Difficulty Levels: Allow users to choose easy, medium, or hard.
* - Sound Effects: Add audio for correct/incorrect answers and timer events.
* - Dark Mode: Toggle between light and dark themes for visual comfort.
* - Math Symbols UI: Use icons instead of plain text for operations.

## 6. Conclusion

Math Master is a fun, fast-paced arithmetic quiz game that helps users practice math in an engaging way. Built with core web technologies, the game emphasizes real-time interaction, responsive design, and time-based challenge. It’s a strong demonstration of HTML, CSS, and JavaScript skills, and a foundation for more advanced features like levels, animations, and persistent scores.  
  
This project showcases how web development can be used not only for productivity and information but also for learning and interactive entertainment.