

## DECLARATION

I declare that this report presented in it is my own and has been generated by me as the result of my own original work.

I confirm that:

- This Work is done wholly or mainly while in candidature for a degree at this University.
- This report has not been previously submitted for any degree at this university or any other educational institutes.
- I have quoted from the work of others; the source is always given. With the exception of such quotations, this report is entire our own work.

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Mehedi Hasan Rabbi

## ABSTRACT

This is a report band on the web application project named “Web Based Code Editor”. The world of Internet is growing rapidly, many applications that previously created on the desktop start moving to the web. Many applications could be accessed anytime and anywhere easily using Internet. Developers need tools to create their applications, one of them named code editor. The purpose of this project is to design and develop a real-time code editor application using web. This application provides a feature where users can run code in real-time. Code Playground is a web application that provides workspace to writing, perform, display the results of the code through the web and terminal in real-time. The application main features are providing workspace to make, execute and build the source code, and build the terminal. This application supports C, C++, and web technologies like HTML, CSS, JavaScript.

## ACKNOWLEDGEMENTS

Primarily, I would thank Allah for being able to complete this project with success. Also I would like to thank my teachers who gave me this opportunity to work on this project. I got to learn a lot from this project about web technology.

At last, I would like to extend my heartfelt thanks to my parents because without their help this project would not have been successful. Finally, I would like to thank my faculty senior Maruf Al Hasan and all my friends who have been with me all the time.

## Table of Contents

DECLARATION .....	1
ABSTRACT .....	2
ACKNOWLEDGEMENTS .....	2
1. INTRODUCTION .....	4
2. OBJECTIVES .....	4
3 FEATURES, TECHNOLOGY, TOOLS .....	5
3.1 Features.....	5
3.2 Technology Used.....	5
3.3 Tools Used.....	5
4. Proposed System Analysis & Design .....	6
4.1 Problem Statement.....	6
4.2 Analysis .....	6
4.2.1 Feasibility Study .....	6
4.2.2 Requirement Analysis.....	7
4.3 System Design.....	7
4.3.1 Algorithms Used .....	7
4.3.2 Working Methodology .....	8
4.3.3 Use case Diagram.....	8
5. System Execution Details .....	9
5.1 Home .....	9
5.2 Users Signup.....	9
5.3 Users Login.....	10
5.4 Users Dashboard.....	10
5.5 In Browser IDE .....	11
5.6 Web Playground .....	11
5.7 Quiz Section .....	12
5.8 Sorting Visualizer .....	12
6. Conclusion and future work.....	13
6.1 Conclusion .....	13
6.2 Future work.....	13

## 1. INTRODUCTION

Recently, computer software in writing computer program source code is very popular. Even though, the ability of software is less capable than the Integrated Development Environments (IDE), many programmers who want to edit the source code urgently might not access convenient resource without installing any application on the computer or notebook. Text editors are good tools for programmers to use within small resources. Nevertheless, text editors also need to be installed on the computers before using. Therefore, programmers need to have at least one computer in order to edit program source code. If one does not own any computer, to urgently modify any source code is impossible. Thus, Online Code Editor was proposed to solve this problem. It helps programmers to write or modify their source code at any place and any time they want. The online text editor was built and run on web-based application. Open source software called Ace was used to highlight the text. Programmers can compile and run source code via web browser and the code will be done at server-side. Then, the output from the compilation will be displayed at the browser of client-side. Programmers can use any computer or even tablet PC to write the computer program, without having to install software they just use only internet and browser. It helps the organization to reduce the expense in purchasing many personal computers.

## 2. OBJECTIVES

The major objective of this project is to write or develop the code without using any type of external code editors and IDE.

Other objectives of the project included:

- Practicality
- Efficiency
- Cost
- Flexibility
- Portability

## 3 FEATURES, TECHNOLOGY, TOOLS

### 3.1 Features

- User Registration
- User Login
- Admin Login
- Admin panel
- Report Generation
- Write or develop the code that powers the web
- Run C and C++ code
- Give quiz exam
- Sorting algorithms visualizer to see how sorting works

### 3.2 Technology Used

#### Frontend Technology

- HTML
- CSS
- JavaScript
- Bootstrap
- jQuery

#### Backend Technology

- PHP
- MySQL

### 3.3 Tools Used

As the functional requirements, we have indicated:

- 1) Development tools, Visual Studio Code and a sustainable environment for development.
- 2) The apache web server for deploying the application and establish the relational-database connections.
- 3) Different Compilers which will compile code of different type of programming languages.

## 4. Proposed System Analysis & Design

### 4.1 Problem Statement

As in editing code and see the output we need to install all the related software for performing the practical on C/C++, HTML, CSS, JS Execution. So our motive is to solve this problem by building a web based editor.

### 4.2 Analysis

Practical is one of the most important assets of student life that help them to gain practical knowledge. Today when practical session for the core subjects of computer engineering (C/C++/JavaScript) starts, we need to install different IDE or compilers in every individual system. Problems occur when some software for performing the practical is not compatible with the system. This modern method of performing practical leads to the end of all the above issues discussed. To make this practical system interesting and fruitful to every student, Code Playground can be easy to implement. Code Playground is a web based editor means any computer system can access this practical system connected to the server and can perform practical on various subjects.

#### 4.2.1 Feasibility Study

Feasibility means whether some idea will work or not. In other work, feasibility study involves an examination of the operations. A project feasibility study is an exercise that involves documenting each of the potential solutions to a particular business problem or opportunity. Feasibility studies can be undertaken by any type of business, project or team and as a critical part of the project life cycle. A procedure that identifies, describes, and evaluates candidate systems and selects the best system for the job is called as Feasibility study.

Three key considerations are involved in the feasibility analysis:

- 1) Technical Feasibility: - The use of HTML, CSS, Java Script and JSP makes form design easy and convenient. The project can be run on any system with minimum requirements. It reduces data entry errors because of applying validation in most of all the forms.

- 2) Economic Feasibility: - Cost benefit analysis is very important in deciding whether the project is economically feasible or not. It is alone sufficient to save our time and money. It is one-time investment and does not require regular maintenance. Through cost benefit analysis it was concluded that the benefits outweigh costs and thus the project is economically feasible.
- 3) Behavioral Feasibility: - Behavioral feasibility determines how much effort will go into educating, selling and training the users on a candidate system. As everyone now-a-days are users of social Network it is very easy to handle normally by anyone.

#### 4.2.2 Requirement Analysis

Analysis shows that, unfortunately users struggle to set up and maintain status of practical performed hence this process is little bit tedious and time consuming. This proposed practical system mainly consisting of user interface for performing practical, server interface for managing and configuring the compiler and interpreter for performing C, C++ and others programs successfully.

### 4.3 System Design

#### 4.3.1 Algorithms Used

- Step 1: Classify the code based on the programming language.
- Step 2: Execute the respective function based the programming language.
- Step 3: Take the input and code provided and save it into file with respective extension
- Step 4: Compile the file providing inputs (if any).
- Step 5: Save the output in a variable.
- Step 6: Return the variable.
- Step 7: Display the output.

### 4.3.2 Working Methodology

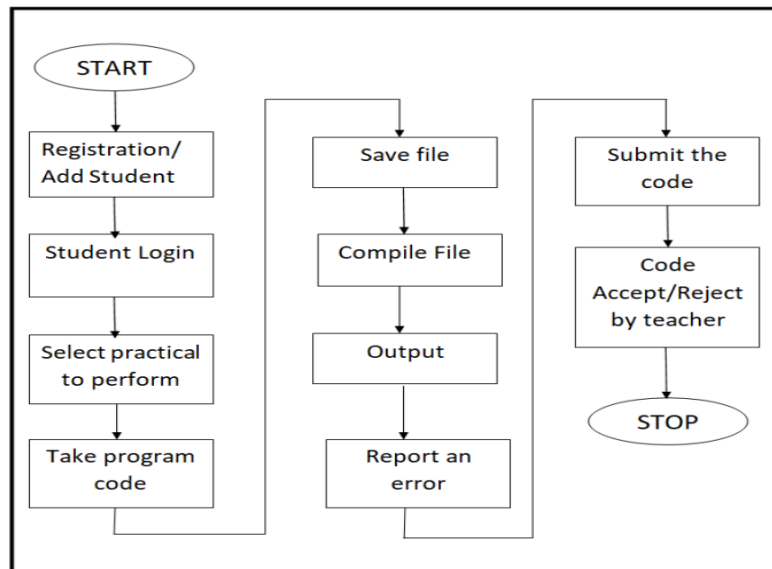


Figure: Dataflow Diagram of Proposed System

### 4.3.3 Use case Diagram

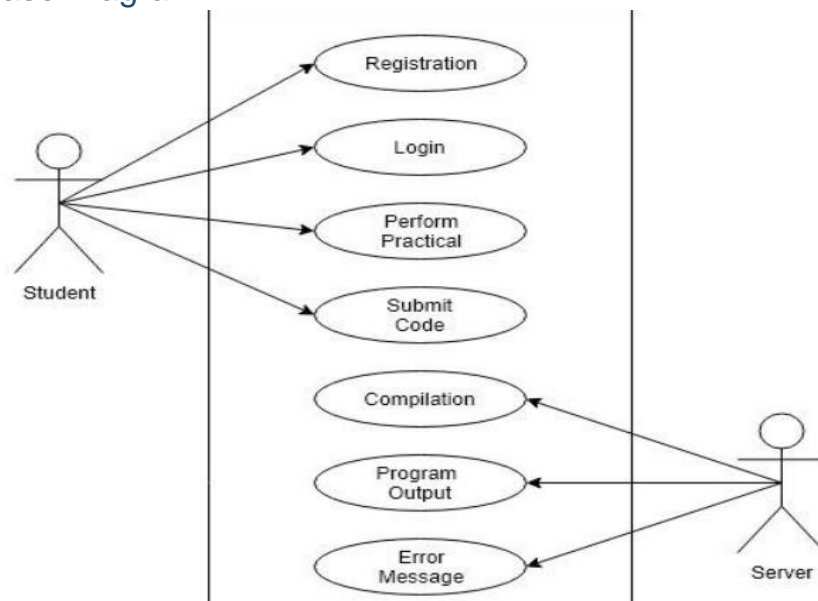


Figure: Use Case Diagram



## 5. System Execution Details

### 5.1 Home

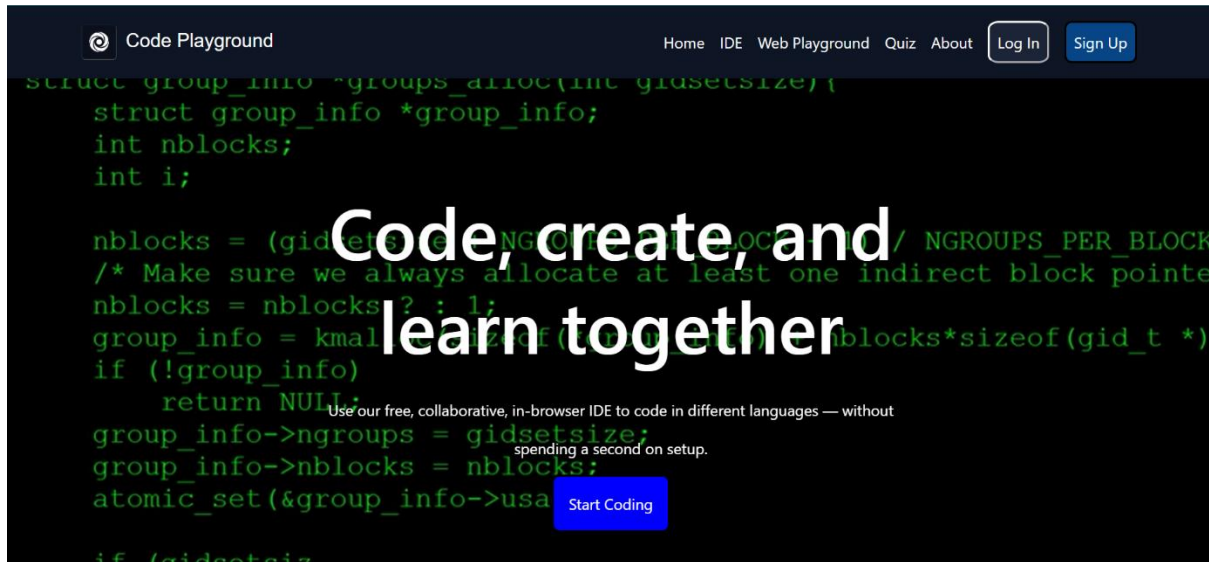



Figure: Home Page

### 5.2 Users Signup

The screenshot displays the 'Create an account' form on the Code Playground website. The form is centered on a light gray background. It includes input fields for 'Username', 'Email', 'Password', and 'Confirm Password'. Below these fields is a checkbox labeled 'Agree with terms and conditions'. A blue 'Sign in' button is located at the bottom of the form. At the very bottom, there is a link that says 'Have an account? [Login](#)'.

Figure: Users Signup

## 5.3 Users Login

 Code Playground Admin Login

### Log in to your account

Username

Enter Username

Password

Enter Password


☐ Remember Me

Log in

New to Code Playground? [Sign Up](#)

Figure: Users Login

## 5.4 Users Dashboard

 Code Playground Welcome, Mehedi Hasan ▾

IDE


Web Playground

Algo-Visualizer

Quiz

## Get started


See what you can accomplish on Code Playground



**In-browser IDE**

Start coding with your favorite language on any platform, OS, and device.


[See now](#)



**Web Playground**

The best place to build, test, and discover front-end code.


[See now](#)



**Algorithm**

Visualising data structures and algorithms through animation

[See now](#)



**Quiz**

Take our 15-question quiz to see how much you know about the world of coding!

[See now](#)

Figure: Users Dashboard

Report on Web Based Code Editor

## 5.5 In Browser IDE

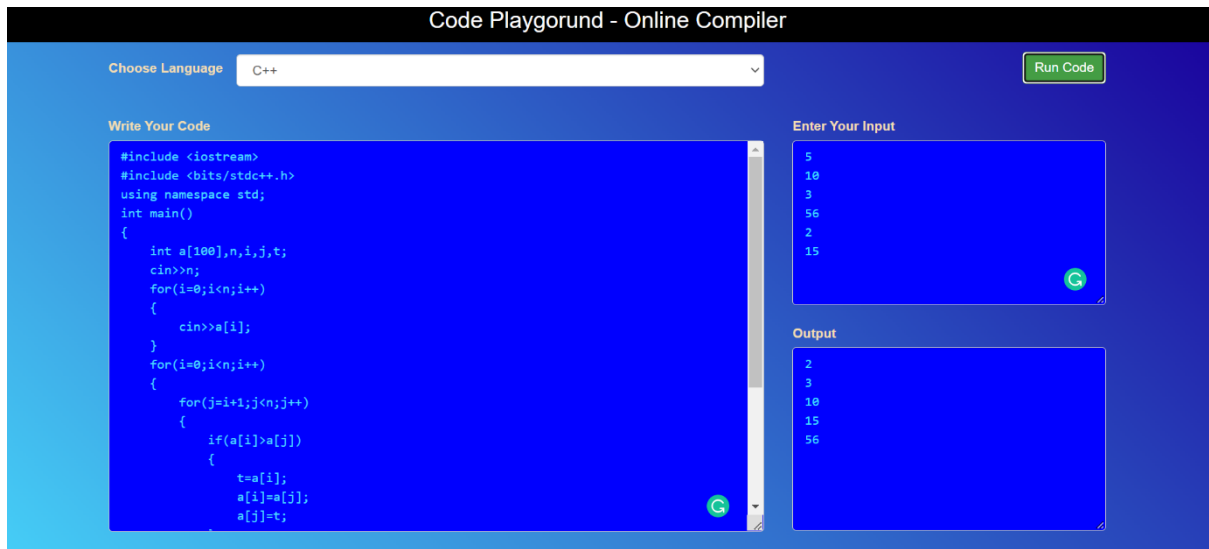


Figure: In Browser IDE

## 5.6 Web Playground

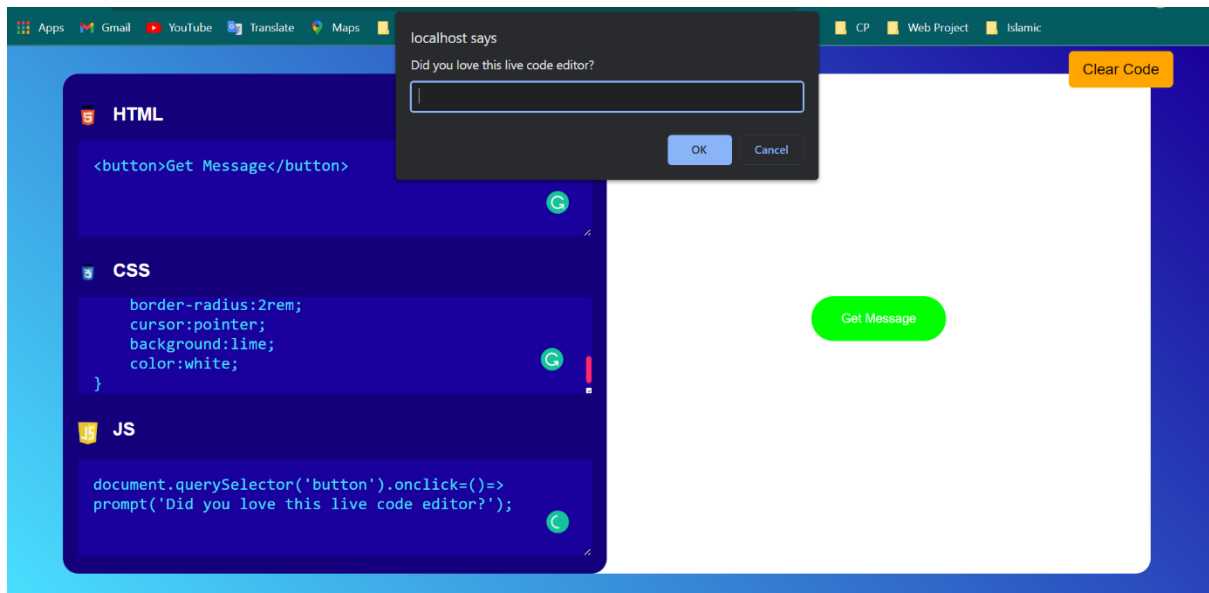


Figure: Web Playground

## 5.7 Quiz Section

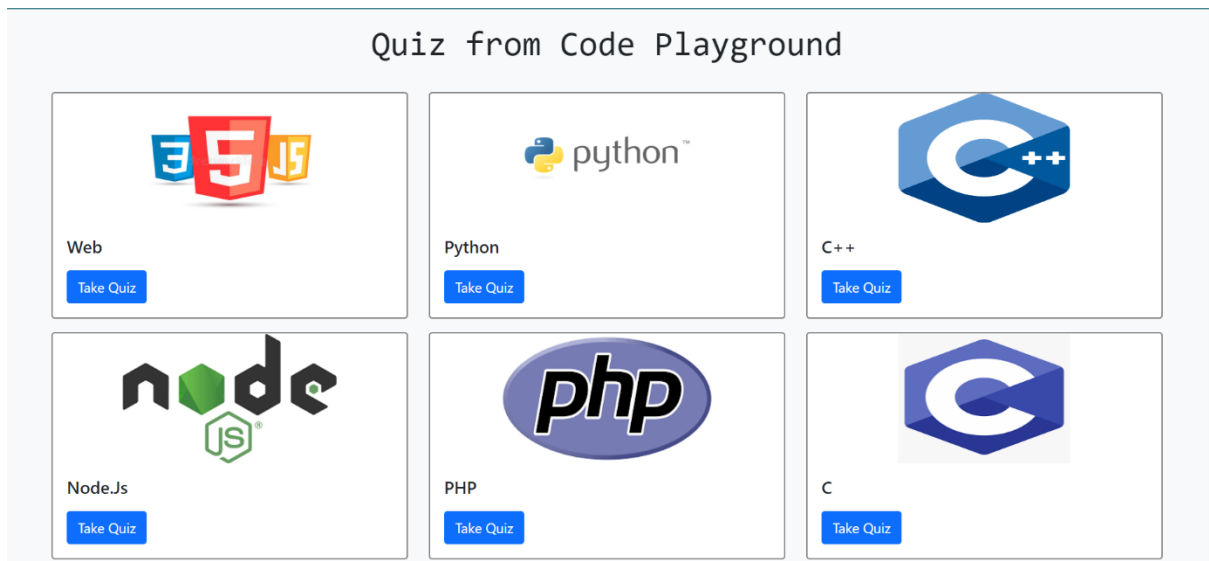


Figure: Quiz Section

## 5.8 Sorting Visualizer

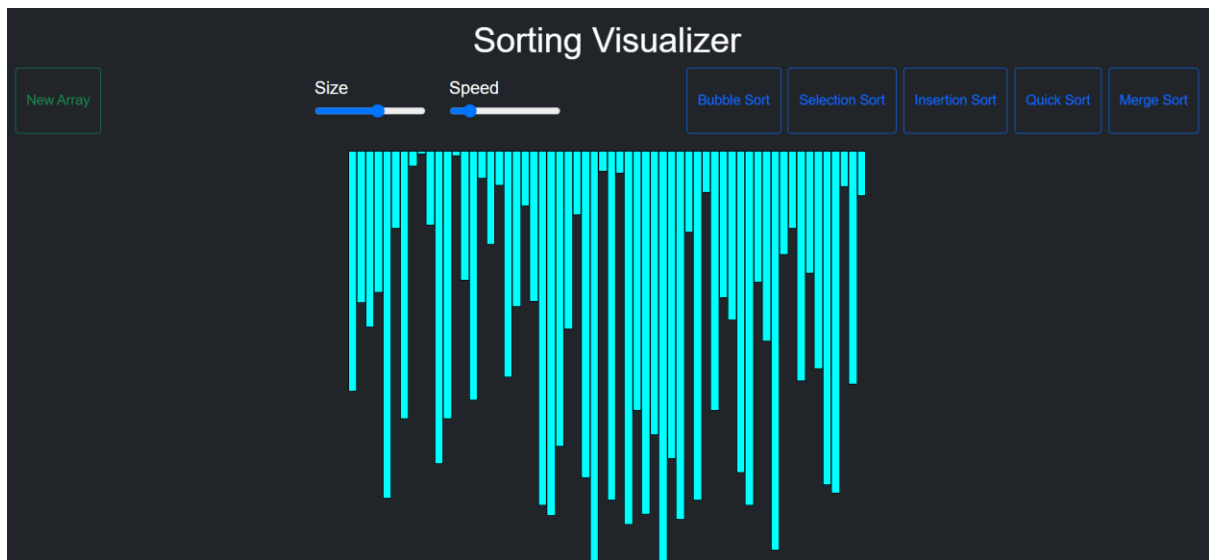


Figure: Sorting Visualizer

## 6. Conclusion and future work

### 6.1 Conclusion

In today's world we require everything online so this all systems provide the best solution to these problems. Code Playground provides a key solution for online compilation and execution of C, C++ and other programming languages for everyone. Code Playground enables students to compile and execute their programs without having to configuring their machine for C, C++ and other program compilation.

### 6.2 Future work

There is always space for improvement in every project. This project can be further developed and additional features can be added like debugging the code, providing practice problems related to C, C++ and other programming. Initially this website includes three programming languages i.e. C, C++, HTML, CSS, JavaScript. We can improve this system by adding some more programming languages in future. We are also planning to develop this system into a mobile application for android and iOS devices. So that it can reach to a much larger audience.