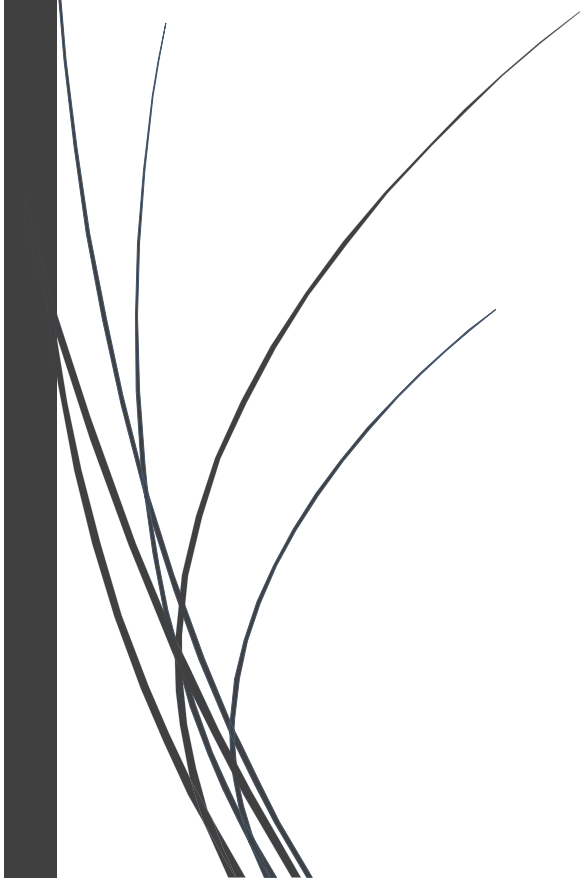


A thick dark grey vertical bar on the left side of the page. A horizontal arrow-like shape points to the right from the bar, containing the text 'ONLINE COMPILER & EDITOR'.

ONLINE COMPILER & EDITOR

ONLINE COMPILER & EDITOR

C, C++, HTML, CSS, Bootstrap and Java Script,



Sindh Madressatul Islam University
Karachi

ONLINE COMPILER & EDITOR
(C, C++, HTML, CSS, JS, Bootstrap)

Version: 1.0

Prepared by:

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BSCS-4A

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Table of Contents

Acknowledgement	3
Abstract.....	4
Section 1. Introduction	5
1.1 Purpose	5
1.2 Scope.....	5
Section 2. General System Description	6
2.1 Current System.....	6
2.2 Proposed System.....	7
Section 3. System Functionalities, Capabilities, Conditions.....	8
3.1 Functional Requirements	8
3.1.1 Languages	8
3.1.2 Run/Compile	8
3.2 Non-Functional Requirements.....	9
3.2.1 Usability.....	9
3.2.2 Reliability	9
3.2.3 Performance.....	9
Section 4. System Models.....	10
4.1 Scenarios	10
Section 5. UML Diagram.....	11
Section 6. Source Code	12
Section 7. Screenshots.....	19
Section 8. Software Tools.....	22
Section 9. Deployment.....	22
Section 10. Hardware Specification	22
Section 11. Conclusion	23
Section 12. References	23

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Yours's Sincerely,
Shahbaz Khan
Baqir Iqbal
Muhammad Hasan

Abstract

Compilers are used to run programs and convert them from a text format to executable format. A compiler that is to be installed manually on every system physically requires a lot of space and configuring of it if not installed using default parameters. Also, once a program is compiled it becomes platform dependent. It is also not easy to carry the same program code to multiple systems if situation does not permit the usage of a single system. Another drawback is that we would need to install a different compiler on each language on which we wish to work. We propose a solution to this in the form of a C, C++, HTML5, JS, Bootstrap compiler. Online compiler is a model for enabling convenient, on demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort. Our project aims to create an online compiler which helps to reduce the problems of portability of storage and space by making use of the concept. The ability to use different compilers allows the programmer to pick up the fastest or the most convenient tool to compile the code and remove the errors. Moreover, a web-based application can be used remotely through any network connection which is platform independent. The errors/output of the compiled program can be stored in a more convenient way. Also, the trouble of installing a compiler on each computer is avoided. Thus, these advantages make this application ideal for conducting online examinations. We would be implementing a private server on which the software would be hosted. The software would contain a system that has a text editor and a terminal. The user would be given an option to select the language in which he wants to compile the program. The software will compile the program and return the output to the user. Additional functionalities such as monitoring of the system, user usage, user forums, and collaborative development can be added as needed.

Keywords:

Compiler, Multiple Language Support.

Section 1.

Introduction

Category: Web Application

1.1 Purpose:

The purpose of developing this project “**Online Compiler & Editor**” is to keep users in one environment of the compiler interface, because of in that compiler we have added **The C, C++, HTML, CSS , Bootstrap and JS** languages. So, the user can compile all that Markup languages, Programming languages, Scripting language in one platform.

1.2 Scope:

This project is for compile the languages from text format into executable format, also it takes less space whereas the other compilers can take large amount of space because of that they are not in one parameter. Also, the software would contain a system that has a text editor and a terminal.

Section 2.

General System Description

2.1 Current System:

The current system of our compiler is like that we are compiling each of the language on the different platform of the compiler e.g. for C we have separate compiler and for HTML we have another editor. That is why we are facing problems from that environment. Compilers are used to run programs and convert them from a text format to executable format. A compiler that is to be installed manually on every system physically requires a lot of space and also configuring of it if not installed using default parameter. Also, once a program is compiled it becomes platform dependent. It is also not easy to carry the same program code to multiple systems if situation does not permit the usage of a single system.

The current system has also some drawbacks which are following:

- Every compiler installed manually on every system.
- It also requires a lot of space of system.
- Another drawback is that we would need to install a different compiler on each language on which we wish to work.
- It is also high costly application
- We need to buy Software Development Kit (SDK) which is costly.

2.2 Proposed System:

The proposed system of our online compiler and editor is that are giving to user one platform for compile all the language as the languages mentioned above. We decided to make a project that aims to create an online compiler which helps to reduce the problems of portability of storage and space by making . The ability to use different compilers allows the programmer to pick up the fastest or the most convenient tool to compile the code and remove the errors. Moreover, a web-based application can be used remotely through any network connection which is platform independent. The errors/Output of the compiled program can be stored in a more convenient way. Also, the trouble of installing a compiler on each computer is avoided. Thus, these advantages make this application ideal for conducting online examinations.

The system after the developing careful analysis in this system, the following modules of this compiler

- In that compiler there is ability to compile the multiple languages in one platform.
- Output files save in the system through web-based online compiler.
- The errors of the code and error of output can be stored in a convenient environment.
- It is also cost efficient.
- No need to download the Software Development Kit (SDK) of any compiler.
- Elegant and simple to use GUI for better coding.

Section 3.

System Functionalities, Capabilities, Conditions

3.1 Functional Requirements:

In computing, a system call is the programmatic way in which a computer program requests a service from the kernel of the operating system it is executed on. A system call is a way for programs to interact with the operating system. A computer program makes a system call when it makes a request to the operating system's kernel. System call provides the services of the operating system to the user programs via Application Program Interface(API). It provides an interface between a process and operating system to allow user-level processes to request services of the operating system. System calls are the only entry points into the kernel system.

A kernel system call, or systemcalls, is an entry point via which user code can call functions in the kernel. A systemcalls table is a mapping between the systemcalls ID and the kernel address of its implementation.

3.1.1 Languages:

In this Selection bar, we can select our desired language for compiling or editing.

3.1.2 Run/Compile:

Run/Compile is the button in this compiler to compile and run your formatting code and display your compiled code.

3.2 Non-Functional Requirements:

The non-functional requirements of this system are following

3.2.1 Usability:

- The compiler must be easy to use by users.
- The compiler must be quickly accessible by users
- The system must be intuitive and simple in the way it displays and code.
- The menus of the system must be easily navigable by the users with button that are easy to understand.

3.2.2 Reliability:

- The System must give accurate result of the code.
- The System must successfully compile and run the code.
- The system should provide the user updates on completion of compiling and execution processes and if the requested processes fail, it should provide the user the error for the failure.

3.2.3 Performance:

- The compiler must not lag, because the user using it do not have down-time to wait so for it to complete an action.
- All the functions of the system must be available to the user every time the compiler is turned on.
- The kernel system calls must call functions to complete the process according to the calls.

Section 4.

System Models

4.1 Scenarios:

- Compile the code

Scenario Name	compile_code
Initiating Actors	user: User
Flow of events	<ol style="list-style-type: none">1. There is a sidebar of the language selecting, in this list you must select your language for the compile.2. The compiler brings up the UI, in this interface you must write your code.3. After that, you write your code then you must click on the Run/Compile button.4. Then it shows the output of the code, if the code has error then it also shows the bugs of the code.

Section 5. UML Diagram

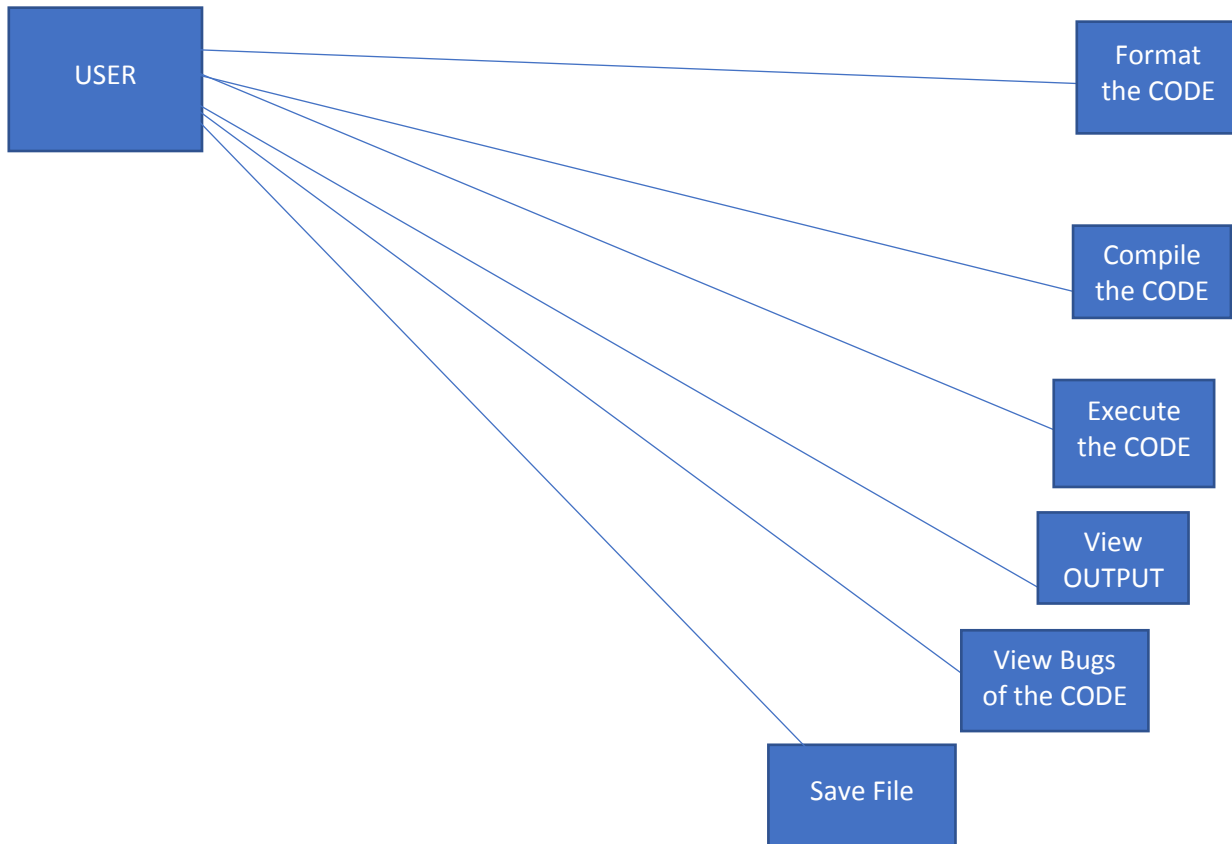


Fig: 5.1

Section 6.

Source Code

C/C++ Compiler:

```

<?php
$current = "";
$answer = "";

if(!empty($_POST)){
    $current=$_POST['cppcode'];
    $file="program.cpp";
    file_put_contents($file, $current);

    putenv("PATH=C:\Program Files\Dev-Cpp\MinGW64\bin");
    shell_exec("g++ program.cpp -o program.exe");

    $answer = shell_exec("program.exe");
}
?>
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-
scale=1.0">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/boot-
strap/4.0.0/css/bootstrap.min.css">
    <script src="https://use.fontawesome.com/3dfadcef79.js"></script>
    <script src="https://code.jquery.com/jquery-
3.2.1.slim.min.js" integrity="sha384-
KJ3o2DKtIkvYIK3UENzmM7KCKRr/rE9/Qpg6aAZGJwFDMVNA/GpGFF93hXpG5KkN" cros
sorigin="anonymous"></script>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.12
.9/umd/popper.min.js" integrity="sha384-
ApNbgh9B+Y1QKtv3Rn7W3mgPxhU9K/ScQsAP7hUibX39j7fakFPskvXusvfa0b4Q" cros
sorigin="anonymous"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0/js/bo
otstrap.min.js" integrity="sha384-
JZR6Spejh4U02d8j0t6vLEHfe/JQGiRRSQQxSfFWpi1MquVdAyjUar5+76PVCmY1" cros
sorigin="anonymous"></script>

```

```
<link rel="stylesheet" href="style.css">
<title>C And C++ Compiler</title>
</head>
<body>
<div class="container-fluid">
    <div class="btn-group mt-2 ml-5">
        <button type="button" class="btn btn-secondary dropdown-
toggle drop_btn" data-toggle="dropdown" aria-haspopup="true" aria-
expanded="false">
            OTHER EDITORS
        </button>
        <div class="dropdown-menu dropdown-menu-right">
            <button class="dropdown-item" type="button">
                <a href="html.php"> HTML / CSS EDITOR</a>
            </button>
            <button class="dropdown-item" type="button">
                <a href="html.php"> JAVASCRIPT EDITOR</a>
            </button>
        </div>
    </div>
</div>
<form method="POST">
    <fieldset>
        <legend class="text-
center"> <h1> C/C++ Compiler </h1></legend>
        <textarea name="cppcode" placeholder=" Enter C++ code" cla
ss="txtarea" id="cEditor"><?php echo $current; ?></textarea>
        <textarea name="cppcode2" disabled placeholder="See Result
" class="output"><?php echo $answer; ?></textarea>
        <input type="submit" class="btn p-2 col-6 mt-
2" value="Compile & Run">
    </form>

</div>

</body>
</html>
```

HTML Compiler And Editor:

```

<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-
scale=1.0">
  <script src="https://cdnjs.cloudflare.com/ajax/libs/ace/1.4.12/ace
.js"></script>
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/boots
trap/4.0.0/css/bootstrap.min.css">
  <script src="https://use.fontawesome.com/3dfadcef79.js"></script>
  <script src="https://code.jquery.com/jquery-
3.2.1.slim.min.js" integrity="sha384-
KJ3o2DKtIkvYIK3UENzmM7KCKRr/rE9/Qpg6aAZGJwFDMVNA/GpGFF93hXpG5KkN" cros
sorigin="anonymous"></script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.12
.9/umd/popper.min.js" integrity="sha384-
ApNbgh9B+Y1QKtv3Rn7W3mgPxhU9K/ScQsAP7hUibX39j7fakFPskvXusvfa0b4Q" cros
sorigin="anonymous"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0/js/bo
otstrap.min.js" integrity="sha384-
JZR6Spejh4U02d8jOt6vLEHfe/JQGiRRSQQxSfFWpi1MquVdAyjUar5+76PVCmYl" cros
sorigin="anonymous"></script>
  <link rel="stylesheet" href="style.css">
  <title>HTML EDITOR</title>
</head>

<body onload="ready()">
  <a href="cmd.php">
    <input type="submit" class="btn p-2 col-3 mt-2 mb-2 ml-
5" value="GOTO C & C++ Compiler">
  </a>
  <div id="container">
    <div id="editor">
      </div>
      <iframe id="iframe">

        </iframe>
      </div>
      <script src="app.js"></script>
    </body>

```

```
</html>
```

C/C++ And HTML Compiler Styling Code:

```
*{
    margin: auto;
}
.drop_btn:hover{
    background-color:black ;
    border: 3px solid red;
    border-radius:10px;
}
.drop_btn:active{
    background-color:black ;
    border: 3px solid red;
    border-radius:10px;
}
.dropdown-menu button:hover{
    color: white !important;
    border: 5px solid red;
    background-color: black !important;
}
.dropdown-menu{
    background-color:red ;
    border: 3px solid black;
    border-radius:10px;
}
.dropdown-menu button a{
    text-decoration:none;
    color: white;
}

.txtarea{
    width: 50%;
    height: 700px;
    border: 5px solid red;
    border-radius: 15px;
    background-color: black;
    padding: 5px;
    font-family:Tahoma, Geneva, Verdana, sans-serif;
    background-position: bottom right;
    background-repeat: no-repeat;
    font-size: 25px;
    float: left;
```



```
        color:#FFFFFF;
    }
    .output{
        width: 49%;
        height: 700px;
        margin-left: 10px;
        border: 5px solid red;
        border-radius: 15px;
        background-color: black;
        padding: 5px;
        font-family:Tahoma, Geneva, Verdana, sans-serif;
        background-position: bottom right;
        background-repeat: no-repeat;
        font-size: 25px;
        color:#FFFFFF;
    }
    .btn{
        background-color: red;
        border: 2px solid black;
        color: white;
        font-size: large;
        font-weight: bold;
    }

    /* HTML Editor Style */
    html,body {
        margin: 0;
        padding: 0;
        width: 100%;
        height: 100%;
        overflow: hidden;
    }
    #container{
        height: 100%;
        width: auto;
        white-space: nowrap;
        overflow: hidden;
    }

    #editor {
        width: 50%;
        height: 100%;
        border:5px solid red ;
        border-radius: 10px;
```

```
float: left;
}

#iframe {
width: 50%;
height: 100%;
border: 1px solid black;
}
```

C/C++ And HTML Compiler Php Code:

```
function update() {

    var idoc = document.getElementById('iframe').contentWindow.documen
t;

    idoc.open();
    idoc.write(editor.getValue());
    idoc.close();

}

function setupEditor() {
    window.editor = ace.edit("editor");
    editor.setTheme("ace/theme/monokai");
    editor.getSession().setMode("ace/mode/html");
    editor.setValue(
`<!DOCTYPE html>
<html>
    <head>
        <title>Document</title>
    </head>
<body>
    <h1>Heading</h1>
    <p>Paragraph</p>
</body>
</html>
`,
1
);

    editor.getSession().on('change', function () {
        update();
```

```
});

editor.focus();
editor.setOption({
    fontFamily: "Monaco",
    fontSize: "16pt",
    ShowLineNumber: false,
    ShowGutter: false,           //hide the ace editor line number
    vScrollBarAlwaysVisible: true, //vertical scroll bar always
visible
    enableBasicAutocompletion: false, //does show a drop down list
of suggestions for me when enabled
    enableLiveAutocompletion: false, // error warning console
});

editor.setShowPrintMargin(false);
editor.setBehavioursEnabled(false); // special char behaviour no s
een

}

function ready() {

    setupEditor();
    update();

}
```

Section 7.

OUTPUT:

OTHER EDITORS ▾

C/C++ Compiler

Enter C++ code

See Result

Compile & Run

Other Editor:

OTHER EDITORS ▾

HTML / CSS EDITOR

JAVASCRIPT EDITOR

C/C++ Compiler

Enter C++ code

See Result

HTML Editor Output:

GOTO C & C++ Compiler

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>Document</title>
5   </head>
6 </body>
7   <h1>Heading</h1>
8   <p>Paragraph</p>
9 </body>
10 </html>
11
```

Heading

Paragraph

Section 8.

Software Tools

Client: End Users

Development Tools: HTML, CSS, JS, Xampp

Section 9. Deployment

Operating System: Windows XP, Linux, UNIX Windows 8, Windows 10 and must be able to run on future. releases.

Section 10. Hardware Specification

Processor: Intel Core i5 4th Generation

RAM: 4GB DDR3 3000 MHz Ram

Hard Disk: 512GB SSD

Section 11.

Conclusion

The main reason for creating the project is to provide centralized compiling scheme. Also, it will act as a centralized repository for all the codes written. The other major advantage that this system will have over the others is that it will make the users system lightweight i.e. there will be no need to maintain separate compilers at the client side. Also, the process of maintenance and distribution of dynamic authentication and personalized task distribution will be made possible. A compiler, which is the heart of any computing system, transforms source code from a higher-level language to a lower, machine level language. This is mainly done in order to create executable files which can then be run to execute the program and its instructions. As compared to the current scenario where each compiler required to be installed on each machine separately this would eliminate the need to install compilers separately. So, we can check our code at the centralized server.

Reference:

<http://www.gwtproject.org/doc/latest/DevGuideCompileReport.html>

https://www.researchgate.net/publication/220808473_A_proposal_for_automatic_evaluation_in_a_compiler_construction_course

<https://www.irjet.net/archives/V4/i2/IRJET-V4I2261.pdf>

<https://ijcsmc.com/docs/papers/August2015/V4I8201564.pdf>

http://oa.upm.es/40998/1/INVE_MEM_2015_225137.pdf