Major Project Report

Heterogeneous communication in a distributed environment

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INTRODUCTION

CodeVilla is much more than a mere application, rather it is a development platform that enables you to not only edit your files from underlying services like FTP, Google Drive, Dropbox and the like, but on top of that gives you the ability to collaborate, embed and share through CodeVilla.

CodeVilla is a multi platform cloud based code editor that enables you to code and collaborate no matter where you are. CodeVilla has been tested across all modern web browsers like Firefox, Chrome, Safari. You could even write code from your mobile or tablet device.

Whether you are writing your first “Hello World” application or you want to build an amazing application, CodeVilla can handle it all. Interface is easy to use and fully functional.

So just say goodbye to your localhost and code in cloud.

LITERATURE SURVEY

**2.1 Heterogeneous communication in a distributed environment**

1. [codeanywhere.com](http://codeanywhere.com)
2. [authorea.com](http://authorea.com)
3. [ideone.com](http://ideone.com)
4. Software Development with Real-Time Collaborative Editing.
5. Online Code Editor on Private Cloud Computing.

**2.2 Summary of Relevant Papers**

**Paper 1**

Title -Online Code Editor on Private Cloud Computing

Author - Warangkhana Kimpan, Theerasak Meebunrot, Busaya Sricharoen

Year - 2013

Published - International Computer Science and Engineering Conference (ICSEC)

Summary - Programming tools are important for programmers to develop software. If the developers have a good tool, it can help them develop system faster and more accurate. This paper proposed the Online Code Editor that was created for programmers or developers who want to write programs without any platform requirements or without any specific physical computers. It bases on web application running on the Private cloud computing. The feature of the editor are performed on any programming language. The editor is able to isolate programming languages by highlighting syntax of programs. Users can create new projects and files, import and export files that they want on a server. Moreover, Save, Auto save, Delete, and etc. are the additional functions of the editor.

The experimental results indicated that the proposed editor can be practically used on Private cloud computing. Moreover, the comparison of the features among the proposed editor running on Private cloud, Notepad++, and EditPlus which running on personal computers, was summarised.

Web Link -http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6694748

**Paper 2**

Title -Social Cloud Computing

Author - Kyler Chard, Simon Caton

Year - 2012

Published - IEEE

Summary - Online relationships in social networks are often based on real world relationships and can therefore be used to infer a level of trust between users. We propose leveraging these relationships to form a dynamic “Social Cloud,” thereby enabling users to share heterogeneous resources within the context of a social network. In addition, the inherent socially corrective mechanisms (incentives, disincentives) can be used to enable a cloud-based framework for long term sharing with lower privacy concerns and security overheads than are present in traditional cloud environments.

A social collaborative cloud. Increasingly, collaborations are turning to social networking concepts to share information and resources within diverse user communities. Storage services can be used to store/share data and information. A Social Cloud approach is advantageous as there is no requirement for dedicated infrastructure or management, fewer barriers to entry for new communities.

Web Link -http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=5928319

**Paper 3**

Title - Data Sharing in Social Science Repositories.

Author - Victoria Stodden

Published - Columbia University

Summary - From new types of data to new computational methodologies, computation is engendering a revolution in social science research and with this comes the issue of facilitating data and code sharing to encourage collaboration and reproducibility in scientific publishing. Using these findings we suggest a sharing framework for social science data to expand engagement of the larger social science community and encourage verification of research findings.

Web Link - https://web.stanford.edu/~vcs/papers/nips2010Stodden12062010.pdf

**2.3 Summary of Field Survey**

There is a need of a collaborative and live code editor. Till date there is no code editor that provides a editing of files from existing clouds eg - Dropbox, Google Drive, and then store back there only. Though we can create new files on existing editors, but we cannot save them on Dropbox or google drive etc.

1. Ideone - Provides code editor, compiler,sharing but does not provide storing service on the existing cloud servers.
2. Brackets - Provides creating of code only in HTML, CSS, JAVSCRIPT but not in cpp, java, python.
3. Compilr - Provides everything except storage of code on any existing cloud server.
4. Pastebin - Does not provide editing or creating of new code until you sign up.
5. jsFiddle - only for web technologies.
6. Codepad - only code compiling and editing. No sharing, no storage.
7. Codeanywhere - Only a few features are free, rest are paid.

RESULTS OF LITERATURE SURVEY

**3.1 Integrated Summary of Section Literature Survey**

Cloud computing has enabled us to create simpler and sophisticated ways of collaborating work. It is facile for people now to store and code anywhere without worrying about the system resources. Online Code Editor can be created and deployed on in Private cloud computing in SaaS layer. In addition, the advantage of deploying on Private cloud computing is the programmers in the business or organization can urgently write or modify program source code without any specific physical computers or without installing the editor program. This work represents a novel approach to collaborative computing utilizing socially corrective mechanisms to motivate contribution and compliance without requiring extensive incentive and enforcement architectures.

**3.2 Current Problems**

Currently there is no online code editor is available that has all the following features

1. Code Editing
2. Code Compilation
3. Code Sharing
4. Code Storage on website server
5. Code Storage on external cloud servers
6. Collaborative Coding
7. Editing code as a Guest user
8. Live Preview of Code
9. Live coding with your teammates

So we will be providing a platform with all the above features.

**3.3 Problem Statement**

Writing of code can be done anywhere, anytime, even if you are offline. But as soon as you connect to the internet, the code will be pushed to the repository of the respective projects. A notification will be sent to all the respective project members regarding the updates made.

Implementation of Dashboard

View your issues dashboard to stay connected with all the issues you've reported, been assigned, or participating in the discussion on. You can also view and filter a repository's issue list and bookmark it for quick access. Discover, share, and discuss code snippets using the integrated tool.

Use of Cloud Services

All the data and files will be stored in cloud. All the computations will be made by the cloud service providers.

Code can be compiled using Sphere Engine API.

Sphere Engine API allows us to execute code on a remote server within a complete & secure runtime environment and to retrieve results of the execution. Works with 60+ programming languages, which we keep up-to-date and which come equipped with both popular and non-standard libraries.

**3.4 Task Division among group members**

We did all the work sitting together but still there were some specific sections everyone was working on

1. Gaurav Pandvia - Research, Front End Design
2. Saurabh Garg - Research, Back End Design
3. Shikher Mishra - Research, Integration with Dropbox

ANALYSIS, DESIGN & MODELLING

**4.1 Description of Project**

CodeVilla is the place which provides us a platform to work together on any small or medium scaled project with your colleagues or friends anywhere, anytime.

* **Quick View** - Easily view the project code you are working on with a click away.
* **Live Coding** - Real time editing and coding of your file.
* **Dropbox** - Linking with dropbox such that you can open any code stored in your dropbox cloud and after your work is over, you can save it back too.

**4.2 Functional & Non-Functional Requirements**

**FUNCTIONAL**

* **Authentication -** New user needs to register himself by which an account will be created and then he has to login in order to start his work.
* **Administrative Functions** - Permission to access the directory files is to defined members only. Code creation & editing in the text box.
* User will be able to undo, redo, cut, copy, paste in our text editor.
* Syntax highlighting feature will also be provided to the users.
* Web application shall have dynamic form validation.
* **External Interfaces** - Dropbox, File loading and saving in dropbox.

**NON-FUNCTIONAL**

Non functional requirements describes how the system should behave and that it is a constraint upon the systems behaviour.

* **Performance -** Shall be fast and responsive.
* **Scalability -** Scalable as per the hosting site constraints.
* **Availability -** Full time available. User can access the website anytime he wants to.
* **Security -** Shall not be vulnerable to web attacks.
* **Bandwidth -** The web application shall allow around 10000 users to work same time without downgrading performance.
* **Usability -** Application shall be easy to use and have a good graphical user interface.

**4.3 Overall Architecture**

**4.4 Proposed Algorithm**

**4.5 Risk Analysis & Mitigation Plan**

**4.6 Test Plan**

**4.7 Implementation**

APPENDIX

**Project Plan**

**Details of practice with new tool/technology**

**References**