MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Report

on

Internship

An internship report submitted in partial fulfilment of the requirement of the degree of

BACHELOR OF TECHNOLOGY

in

INFORMATION TECHNOLOGY

Submitted By:

Abhishek Singh

0901IT181004

Internship – 160801

Faculty Mentor:

Dr. Bhagat Singh Raghuwanshi, Assistant Professor (IT department)

Submitted to:

DEPARTMENT OF INFORMATION TECHNOLOGY

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE

GWALIOR – 474005

MAY-JUNE 2022

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

CERTIFICATE

This is certified **Abhishek Singh (0901IT181004)** has submitted the internship report under the mentorship of **Dr. Bhagat Singh Raghuwanshi**, in partial fulfillment of the requirement for the award of degree of Bachelor of Technology in **Information Technology** from Madhav Institute of Technology and Science, Gwalior.

Dr. Bhagat Singh Raghuwanshi

Assistant Professor

Information Technology

Dr. Akhilesh Tiwari

Professor and Head,

Department of IT

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

DECLARATION

I hereby declare that the work being presented in this internship report, for the partial fulfilment of requirement for the award of the degree of Bachelor of Technology in Information Technology at Madhav Institute of Technology & Science, Gwalior is an authenticated and original record of my work under the mentorship of Dr. Bhagat Singh Raghuwanshi, Assistant Professor, Dept. of Information Technology.

I declare that I have not submitted the matter embodied in this report for the award of any degree or diploma anywhere else.

Date:

Place: Gwalior

Abhishek Singh

0901IT181004

IV Year,

Information Technology

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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ACKNOWLEDGEMENT

The full semester internship has proved to be pivotal to my career. I am thankful to my institute, **Madhav Institute of Technology and Science** to allow me to continue my disciplinary/interdisciplinary internship as a curriculum requirement, under the provisions of the Flexible Curriculum Scheme (based on the AICTE Model Curriculum 2018), approved by the Academic Council of the institute. I extend my gratitude to the Director of the institute, **Dr. R. K. Pandit** and Dean Academics, **Dr. Manjaree Pandit** for this.

I would sincerely like to thank my department, **Department of Information Technology,** for allowing me to explore this internship. I humbly thank **Dr. Akhilesh Tiwari**, Professor and Head, Department of Information Technology, for his continued support during the course of this engagement, which eased the process and formalities involved.

I am sincerely thankful to my faculty mentors. I am grateful to the guidance of **Dr. Bhagat Singh Raghuwanshi**, Assistant Professor, Information Technology, for his continued support and guidance throughout the project. I am also very thankful to the faculty and staff of the department.

Abhishek Singh

0901IT181004

IV Year, Information Technology

TABLE OF CONTENTS

1. Introduction

1.1 Company Profile:

Company name: Kloudspot Inc.

Blend physical and digital insights to deliver an enriched customer experience. Monetize your IT investments, drive engagement and deliver more personalized and enriched experiences to customers with Kloudspot. Serve up ‘spot on’ communications to customizable Wi-Fi portals and digital displays, including demographic-based advertisements and more.

Hybrid work experiences are much more than just combining physical location options with remote collaboration tools. It’s about creating new workspaces that are safe, engaging, and collaborative. Hybrid work designed with data, insights, and metrics delivers flexible spaces with real cost savings. Kloudspot hybrid work solutions bring the context you need to reframe your workspaces. Today and tomorrow.

1.2 Purpose:

The purpose of this company is to:

- To define the technical & operational feasibility.
- To ensure that there are no misunderstanding or omissions in functionality.
- To ensure that requirements of the proposed system are complete and clear.
- To provide a basis for the subsequent design, development and testing phases of entire application.

1.3 Objectives of Proposed Work:

Currently I am working as a SDE (Full stack) interns at kloudspot Inc. I have completed my full stack training conducted by external industry training experts. Various real time projects of the company has been assigned to us. Project assigned to me is a application name “kloud Infinity” which is basically a cloud based data storage similar to Google Drive, Box etc. I am working on this real time project and almost completed the basic applications of the project.

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2. Technical Description

2.1 System Analysis & Requirements:

The selection of hardware is very important in the existence and proper working of any software. When selecting hardware, the size and requirements are also important.

- Processor – Intel CORE i5 8th Gen
- RAM – 8.0 GB
- Hard Disk Drive – 1 TB

2.2 Software Requirements:

- **Linux Ubuntu**
- **Java**
- **Java IDE (Eclipse/Intellij)**
- **Spring Framework**
- **Mongo DB**
- **NodeJS & NPM**
- **Angular JS**
- **VS Code**
- **Amazon AWS**
- **Bitbucket**

2.3 Technology Used:

- **JAVA**: Java is a high-level, class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible. It is a general-purpose programming language intended to let programmers *write once, run anywhere* (WORA), meaning that compiled Java code can run on all platforms that support Java without the need to recompile. Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of the underlying computer architecture. The syntax of Java is similar to C and C++, but has fewer low-level facilities than either of them. The Java runtime provides dynamic capabilities (such as reflection and runtime code modification) that are typically not available in traditional compiled languages.

- **Linux**: Linux is the best-known and most-used open-source operating system. As an operating system, Linux is software that sits underneath all of the other software on a computer, receiving requests from those programs and relaying these requests to the computer's hardware.
- **GIT**: Git is software for tracking changes in any set of files, usually used for coordinating work among programmers collaboratively developing source code during software development. Its goals include speed, data integrity, and support for distributed, non-linear workflows. For management of our projects, we are using bitbucket.

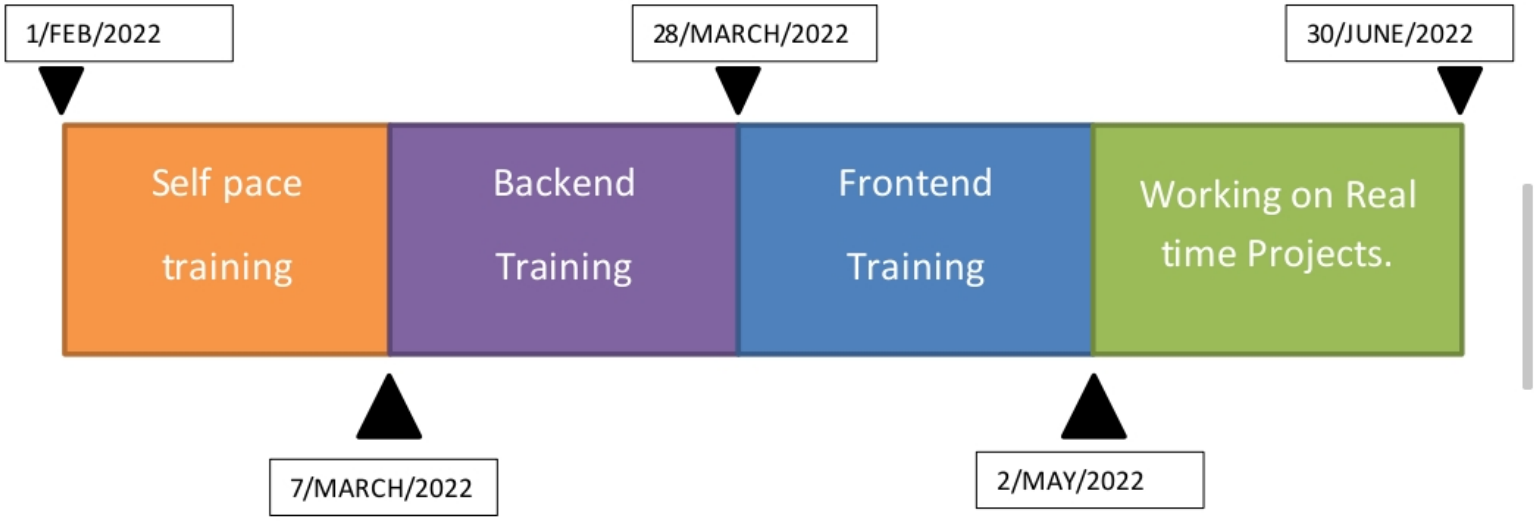
- **Spring Framework**: The Spring Framework is an application framework and inversion of control container for the Java platform. The framework's core features can be used by any Java application, but there are extensions for building web applications on top of the Java EE platform

- **Spring Boot**: Spring Boot is an open source Java-based framework used to create a micro Service. It is developed by Pivotal Team and is used to build stand-alone and production ready spring applications. The main motive of using springboot is for the backend development, REST-API creation and Database Management.
- **MongoDB:** MongoDB is a source-available cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents

with optional schemas. MongoDB is developed by MongoDB Inc. and licensed under the Server Side Public License.

- **HTMl** - The HyperText Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets and scripting languages such as JavaScript
- **CSS** - Cascading Style Sheets is a style sheet language used for describing the presentation of a document written in a markup language such as HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.
- **JavaScript** - JavaScript, often abbreviated JS, is a programming language that is one of the core technologies of the World Wide Web, alongside HTML and CSS. Over 97% of websites use JavaScript on the client side for web page behavior, often incorporating third-party libraries.
- **TypeScript** - TypeScript is a programming language developed and maintained by Microsoft. It is a strict syntactical superset of JavaScript and adds optional static typing to the language. TypeScript is designed for the development of large applications and transcompiles to JavaScript.
- **Angular JS** - AngularJS is **a structural framework for dynamic web apps**. With AngularJS, designers can use HTML as the template language and it allows for the extension of HTML's syntax to convey the application's components effortlessly. Angular makes much of the code you would otherwise have to write completely redundant.
- **RxJS** - RxJS is a library for reactive programming using Observables, to make it easier to compose asynchronous or callback-based code. This project is a rewrite of Reactive-Extensions/RxJS with better performance, better modularity, better debuggable call stacks, while staying mostly backwards compatible, with some breaking changes that reduce the API surface.

3. Internship Timeline



The internship duration is for 5 months

4.Training

3.1 Self pace training:

Training (1 FEB 2022 – 7 MARCH 2022)

- I joined kloudspot as a intern on 1st feb 2022 remotely. From 1st feb our self pace training was started. We were assigned JAVA udemy courses which we have to complete it and submit the assignments.
- Along with that we were assigned video lectures of using Git and Linux.
- I successfully completed the JAVA Udemy course and submitted its all assignments and earned the certificate of completion from UDEMY.
- The link for all of my Udemy assignments can be found here.

https://bitbucket.org/devanshsharma/udemyassignments/src/master/

3.2 Backend Training:

(7/March/2022 – 28/March/2022)

Topics Covered Were

- Maven, JDBC
- Spring boot – Spring IOC, Autowiring, Scope and reading from application. properties, Introduction to Spring Boot, Spring Core with boot, Spring MVC, Spring Rest-API, Integrating Rest-Api with mongoDB, Exception handling
- Spring Security using JWT
- MongoDB

https://bitbucket.org/devanshsharma/backendtraining/src/master/

3.3 Frontend Training:

(28/March/2022 – 12/April/2022)

- Learned HTML, CSS and JS
- Learned Typescript
- Learned AngularJS
- Learned Advanced JavaScript
- Learned RxJS

5.Project

3.4 Problem Statement & Requirements

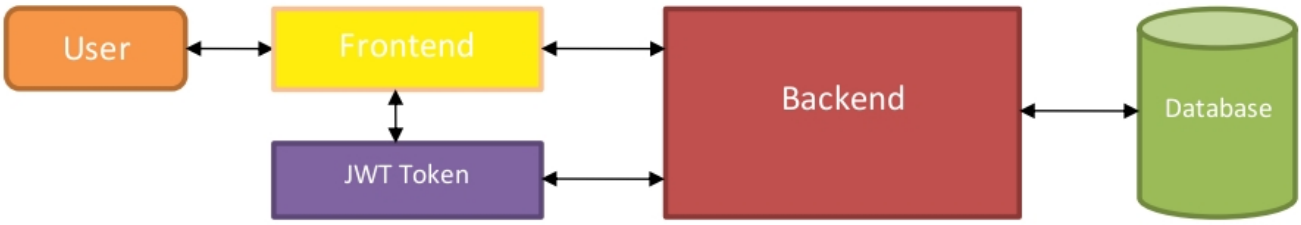
To develop a cloud-based data storage application which have the following applications in it:

- **Cloud-based storage:** It is a digital storage solution which utilizes multiple servers to store data in logical pools.
- **Security:** To protect your data integrity.
- **Collaboration:** Share your data to your connections.
- **Sync & Backup:** Data security, if you lose your data.

3.5 Development & Work Flow:

Authentication & Authorization:

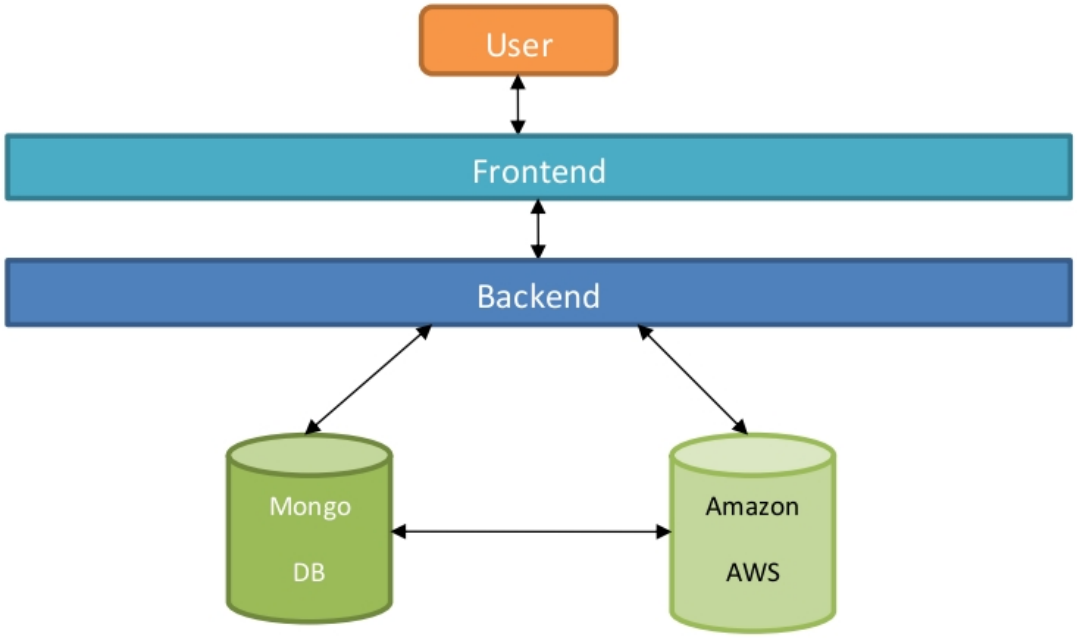
Every web application is well protected with the facility of Authentication and Authorization. It simply means the registration of new user and login of already existing user to take all benefits of the application.



For achieving this we are using spring security in the backend which is fetching the data from database and ultimately creating an Authorization token as JWT token and sending it to the frontend.

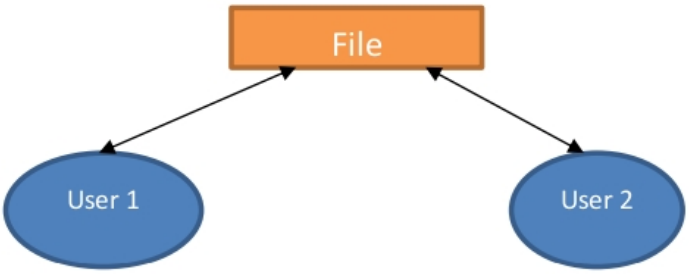
File System Storage Architecture:

For creating a file storage-cloud we are using Amazon AWS which is in constant touch of the database. When any user tries to access the files, we share the file along with its details to the user in BLOB format. The file address is stored in the data base with full security. Any spammer cannot access the file because it requires proper authorization to access any file.



Sharing Architecture:

For sharing of files, we are simply giving user access to particular user to whom any user want to share the file.



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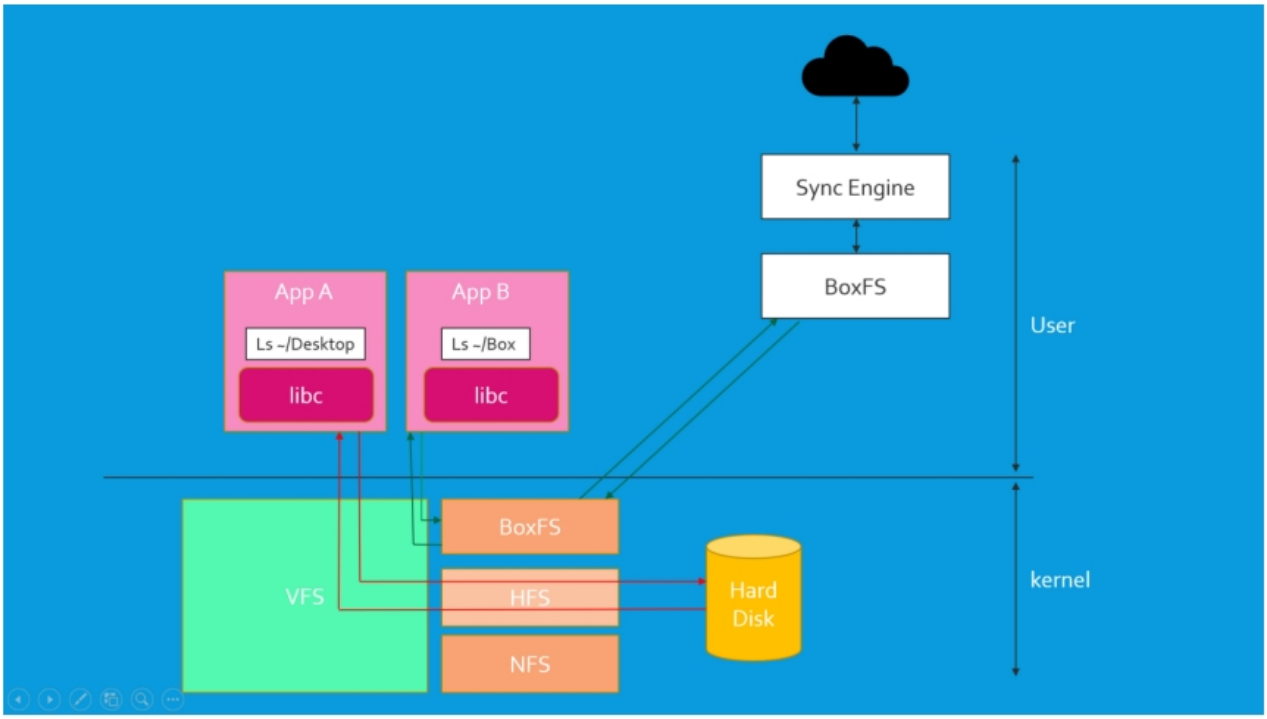
FILE SYNCING

Challenges in Designing a Typical Sync Product:

- detecting local changes
- applying remote changes locally
- Applying remote changes locally is tricky as sync products must have a way to distinguish between changes made by the user and changes made by the sync application itself.

Part – 1 (Developing a file System)

- Designing a file system, the traditional way is hard. Kernel code has less protections and a crash caused by a bug can lead to system crashes or disk corruptions.
- Instead, the Box Drive team chose a solution that breaks the filesystem into two parts
- one that lives in the kernel space and delegates filesystem functions to an application running in the user space, where most normal applications live.
- The kernel component of the filesystem is intended to be simple and extremely stable, while the more complex logic lives in the user-space application which can be used and updated like any normal application.



A syncing Engine:

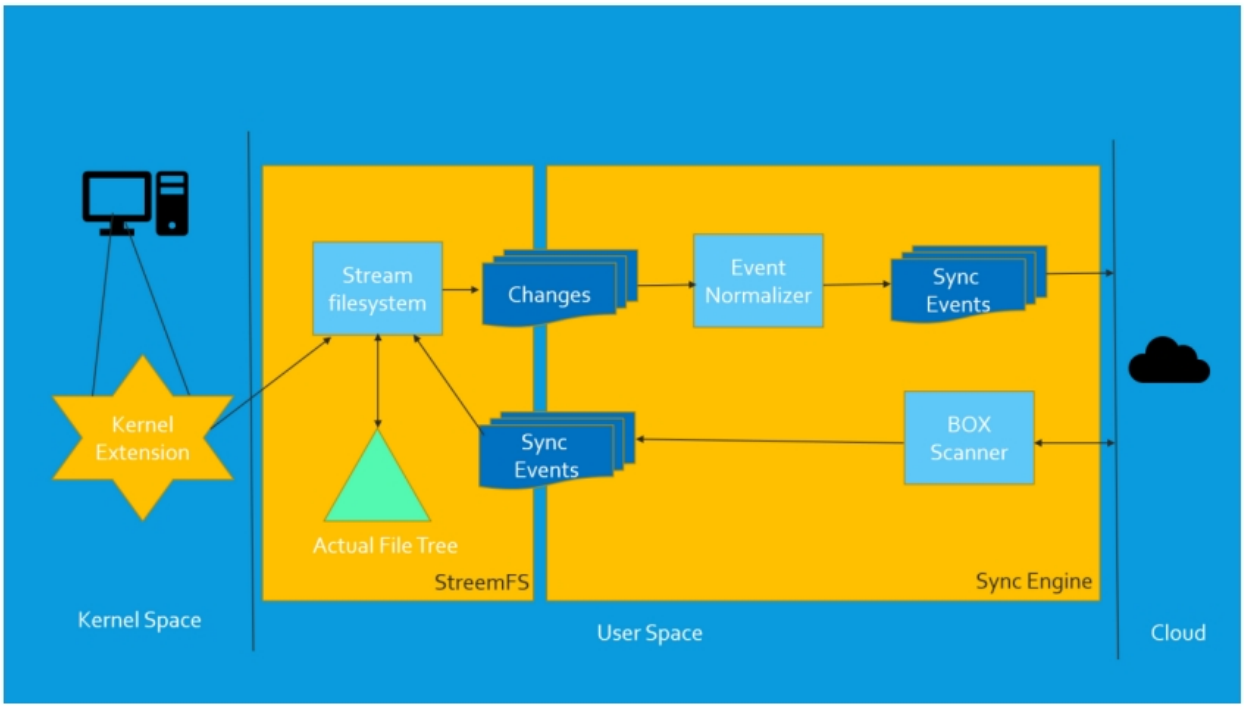
We have reused a lot of the code that was originally written for Box Sync, with few of the crucial modifications as follows:

1. The folder scanning/change detection logic was reworked to accept change events directly from the filesystem.

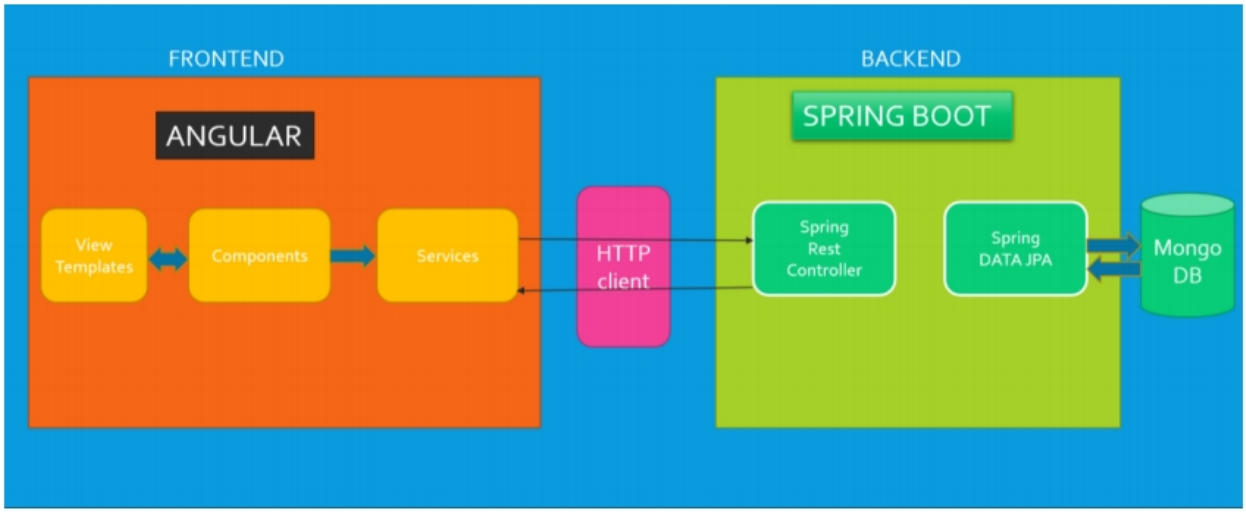
2. To execute remote changes locally, the Sync Engine now directly communicates with the local filesystem, which:

- Allows the Sync Engine to distinguish trivially between changes caused by the user and the remote changes applied by the Sync Engine itself.

- Lets the Sync Engine apply remote changes locally while preventing conflicting local changes.

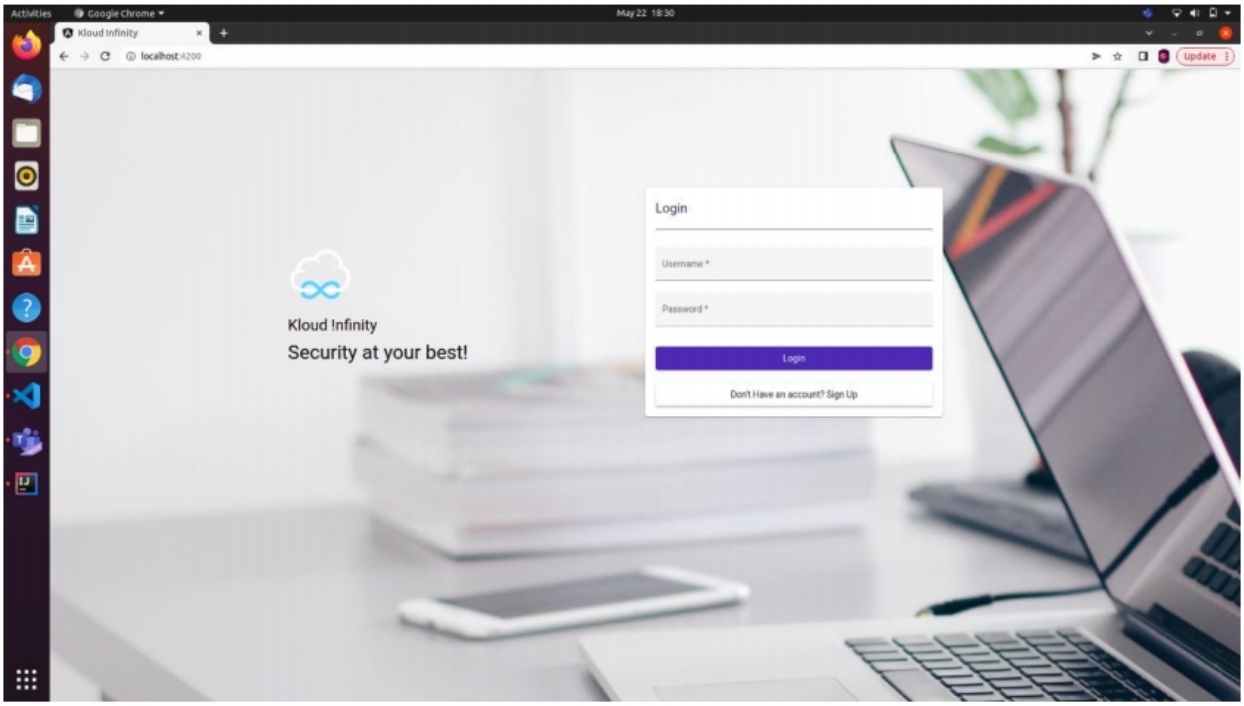

Stream filesystem
Changes
Event Normalizer
Sync Events
Kernel Extension
Sync Events
BOX Scanner
Actual File Tree
StreemFS
Sync Engine
Kernel Space
User Space
Cloud

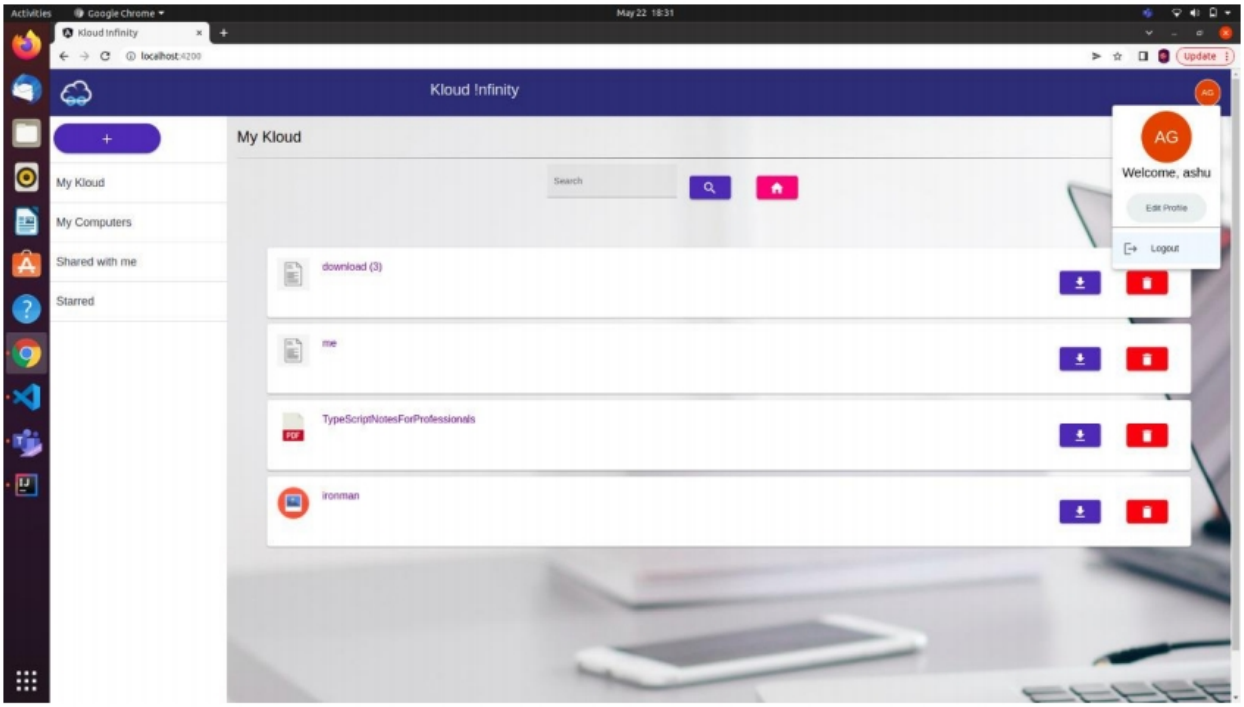
Tech Stack:

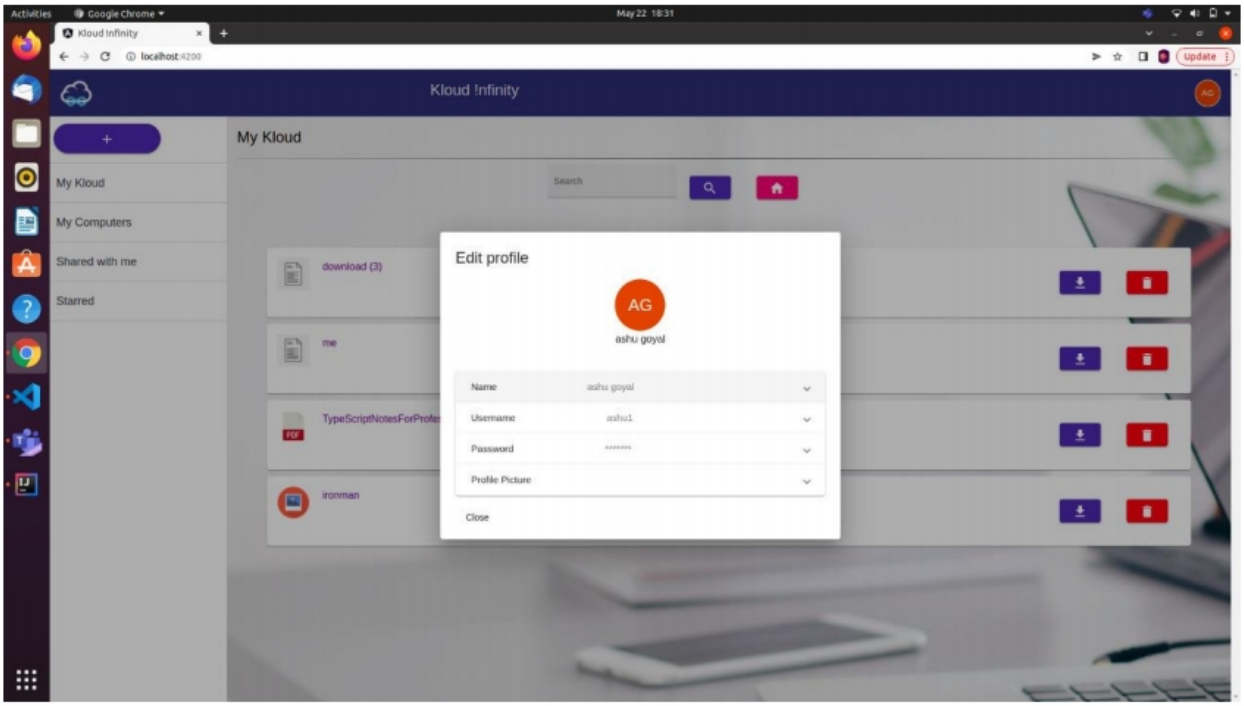


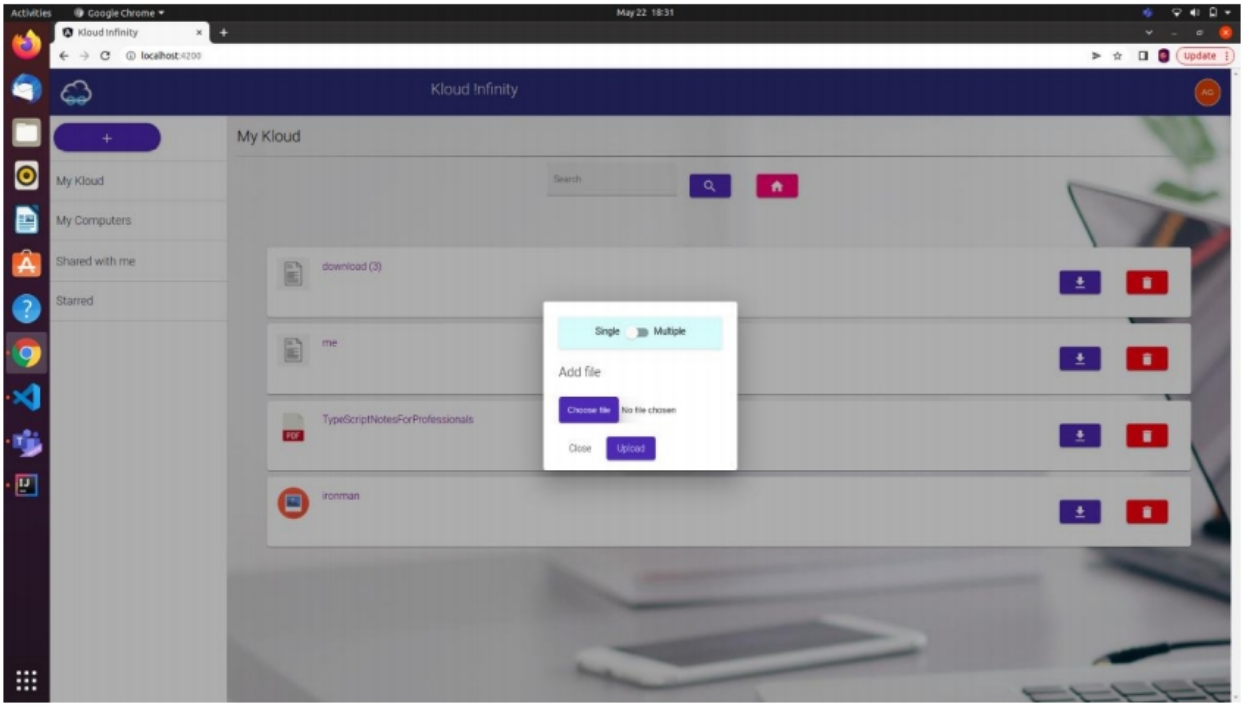
- For storing the data in database, we are using MongoDB which is a kind of NOSQL.
- In the backend architecture we are using Spring Boot for generation of APIs and managing requests and responses. Backend is also used for connectivity with our database.
- For the frontend we are using angular and for better UI experience we are using Material UI.

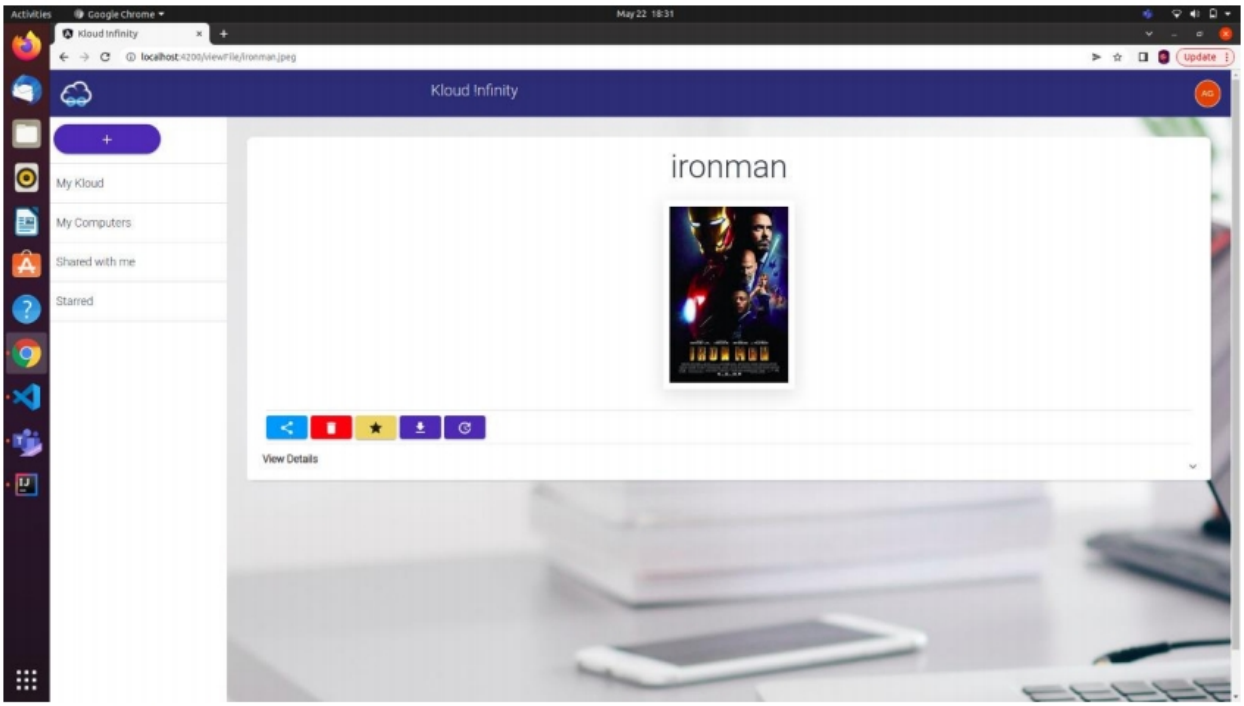
3.6 Screenshots:

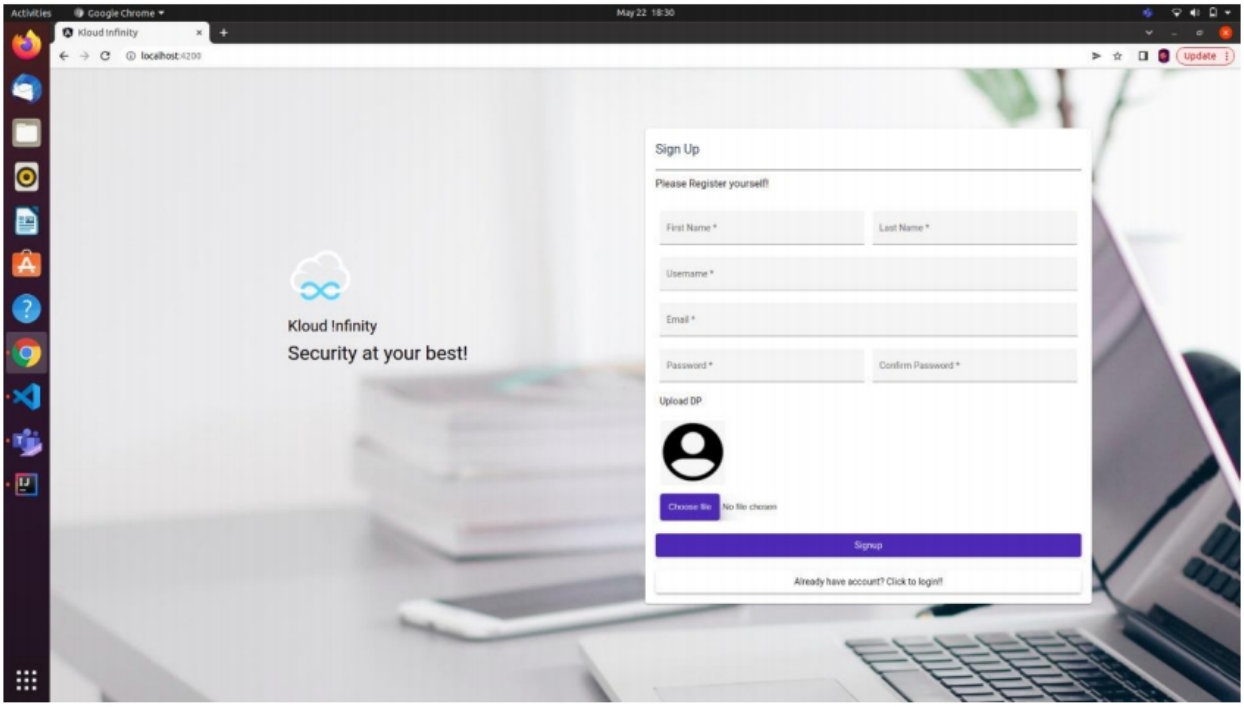





Activities
Google Chrome
May 22 18:31
Kloud Infinity
localhost:4200
Update
Kloud !nfinity
My Kloud
My Kloud
My Computers
Shared with me
Starred
Search
download (3)
me
TypeScriptNotesForProfe
ironman
Edit profile
AG
ashu goyal
Name
ashu goyal
Username
ashu1
Password
Profile Picture
Close


Activities
Google Chrome
May 22 18:31
Kloud Infinity
localhost:4200
Update
Kloud !nfinity
My Kloud
My Kloud
My Computers
Shared with me
Starred
Search
download (3)
me
TypeScriptNotesForProfessionals
ironman
Single
Multiple
Add file
Choose file
No file chosen
Close
Upload


Activities
Google Chrome
May 22 18:31
Kloud Infinity
localhost:4200/viewFile/ironman.jpeg
Update
Kloud !nfinity
My Kloud
My Computers
Shared with me
Starred
ironman
View Details


Activities
Google Chrome
May 22 18:30
Kloud Infinity
localhost:4200
Update
Kloud !nfinity
Security at your best!
Sign Up
Please Register yourself!
First Name *
Last Name *
Username *
Email *
Password *
Confirm Password *
Upload DP
Choose file
No file chosen
Signup
Already have account? Click to login!

6.Appendix

FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	ABHISHEK SINGH		Department	ENG.	
Industry/Organization	KLOUDSPOT INC.		Date/Duration	2nd Feb – 15 Feb, 22	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge up gradation				✓	
Performance/Quality of work				NA	
Behaviour/Discipline/Team work				✓	
Sincerity/Hard work				NA	
Comment on nature of work done/Area/Topic	Going through JAVA training for now. Performance has not yet assessed				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	NIKHIL RAM				
Signature of Industry Mentor					

Receiving Date		**Name of Faculty Mentor**		**Sign**	

FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	ABHISHEK SINGH		Department	ENGG.	
Industry/Organization	KLOUDSPOT INC.		Date/Duration	15th Feb - 28th Feb, 22	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge up gradation					✓
Performance/Quality of work					✓
Behaviour/Discipline/Team work					✓
Sincerity/Hard work					✓
Comment on nature of work done/Area/Topic	JAVA course completed, Javascript is on progress.				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	NIKHIL RAM				
Signature of Industry Mentor					

Receiving Date		**Name of Faculty Mentor**	Prof. Bhagat Singh Raghuwanshi	**Sign**	

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FORMAT

FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	ABHISHEK SINGH		Department	IT (Engineering)	
Industry/Organization	KLOUDSPOT INC.		Date/Duration	1st March/15th March, 2022.	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge upgradation					✓
Performance/Quality of work					✓
Behaviour /Discipline/Team work					✓
Sincerity/Hard work					✓
Comment on nature of work done/Area/Topic	MongoDB, Maven, JDBC is completed. Traveling on Springboot is going on.				
OVERALL GRADE (Any one)	POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT				
Name of Industry Mentor	NIKHIL RAM				
Signature of Industry Mentor					

Receiving Date		Name of Faculty Mentor	PROF. Bhagat singh Raghuvanshi	Sign	

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FORMAT

FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	ABHISHEK SINGH		Department	IT (Engineering)	
Industry/Organization	KLOUDSPOT INC.		Date/Duration	16/03/2022 - 30/03/2022	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work					✓
Learning capacity/Knowledge upgradation				✓	
Performance/Quality of work				✓	
Behaviour /Discipline/Team work					✓
Sincerity/Hard work					✓
Comment on nature of work done/Area/Topic	Spring MVC, Rest API generation and spring security completed.				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	NIKHIL RAM				
Signature of Industry Mentor					

Receiving Date		Name of Faculty Mentor	PROF. Bhagat Singh Rajpurohit	Sign	

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FORMAT

FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	ABHISHEK SINGH		Department	Engineering (CT)	
Industry/Organization	KLOUDSPOT Inc.		Date/Duration	31/3/2021 - 14/4/21	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge upgradation				✓	
Performance/Quality of work			✓		
Behaviour /Discipline/Team work				✓	
Sincerity/Hard work					✓
Comment on nature of work done/Area/Topic	Training on Angular completed. We have assigned a project				
OVERALL GRADE (Any one)	POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT				
Name of Industry Mentor	Akash Saxena				
Signature of Industry Mentor					

Receiving Date		Name of Faculty Mentor	Prof. Bhagat Singh Raghuwanshi	Sign	

FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	ABHISHEK SINGH		Department	Engineering (IT)	
Industry/Organization	KLOUDSPOT INC.		Date/Duration	15/4/22 - 30/4/22	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge up gradation			✓		
Performance/Quality of work				✓	
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	working on company's project which is a kloud-based storage system. side by side we are also having training on RaTS.				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	PRIYANSHI AGARWAL				
Signature of Industry Mentor	Priyanshi 28/04/2022				

Receiving Date		**Name of Faculty Mentor**		**Sign**	

FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	ABHISHEK SINGH		Department	Engineering (IT)	
Industry/Organization	KLOUDSPOT INC.		Date/Duration	1/5/22 - 14/5/22	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge up gradation			✓		
Performance/Quality of work				✓	
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	working on Kloud - Infinity project.				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	AKASH SAREEN				
Signature of Industry Mentor					

Receiving Date		**Name of Faculty Mentor**	Prof Bhagat Singh Raghuwanshi	**Sign**	

6.Conclusion

I successfully completed my training and also worked on a real time company project. I was successfully able to learn full stack development and implement it. I was successfully able to complete the project on which our data was getting stored on the amazon aws cloud server. We were able to perform all the basic CRUD operations. And also we are on the path of synchronization of data. Finally, we hope this will go a long way in popularizing.

7.References & bibliography

- **https://start.spring.io/**
- **https://stackoverflow.com/**
- **https://www.geeksforgeeks.org/**
- **https://stackblitz.com/**
- **https://angularjs.org/**
- **https://nodejs.org/en/**
- **Wikipedia**

8. Internship Certificate

kloudspot

: +91-8277-111444
: contact@kloudspot.com
: www.kloudspot.com

Date: May 20th 2022

CERTIFICATE OF INTERNSHIP

This is to certify that **Mr. Abhishek Singh**(ID: 0901IT181004, Madhav Institute of Technology & Science, Gwalior) is engaged as an intern in our organization from Feb, 1st 2022 to Jun, 30th 2022. Post completion of his internship, he will be joining us as Software Engineer, as per our offer letter.

During this period Abhishek, has met all expectations of the project and his conduct was found to be satisfactory.

We take this opportunity to thank and wish him well in future.

Sincerely,
For KSPOTFI SYSTEMS INDIA PRIVATE LIMITED,

Deepak Kumar Singhal
Executive Director

KSPOTFI SYSTEMS INDIA PRIVATE LIMITED (A 100% subsidiary of Kloudspot Inc. USA)
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OBJ

10.Contribution

The mentor during the whole duration of the internship has been supportive and conducted various virtual meets for solving queries .It was a good to work under the guidance of Dr. Bhagat Singh Raghuwanshi,Assistant Professor.

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