ONLINE COMPILER USING CLOUD COMPUTING

Computer Science Project II– CS692

Anchal Singh
Ramesh Kyasaram
Brandon Mercado
Tushar Rakholiya
Sanath Gholap
Harshada Chaudhari

INTRODUCTION

In today's fast and competitive world everything is available on internet, and on web. So, we developed an online compiler using cloud computing. The main objective of this project is to develop a centralized compiler that helps to reduce problems like portability storage, cost, and space.

It is the most convenient tool to compile code, remove errors and debug code. Moreover, we can run the web-based application remotely from any network connection that is independent of platform. The challenge of installing a compiler on each machine is also avoided and one can perform online exams therefore, all these benefits make this application suitable of cloud based online compiler.

PERSONA 1

PICTURE & NAME

Name: John McCarthy.
Age: 27
Designation: Student

DETAILS

Role: Student

John is a student at Pace University. Being a Graduate student in Computer Science, writing and compiling codes in different languages is part of his daily life. Sometimes, He finds it difficult to get the subscription for different IDEs because it's costly and time consuming. It will become more costly if he will take subscription for all different IDEs for each coding languages. Therefore, he yearns for a single platform where he can compile, run and save time at least more frequently used languages (Java, Python, C#, C, C++) at the same platform by making the coder's life easier.

GOAL

He wants a different compiler at single platform, where he can compile at least more frequently used languages (Java, python, C#, C/C++) to make his coding life easier and save time.

PERSONA 2

PICTURE & NAME	DETAILS	GOAL
 Name: Ethan Coufal Age: 30 Designation: Software Developer	Role: Software Developer Ethan is an independent mother of her single child. She is a struggling software developer working from home. She has to code in java as well as she has got a task to learn python from her company. But she barely has time to download multiple IDEs to learn, test and save her code simultaneously by keeping in mind the storage space of her computer.	She needs a single platform where she can write, test and save her code without wasting the memory of her PC. So that, she can save the time and access her code for long term by saving the code.

PERSONA 3

PICTURE & NAME	DETAILS	GOAL
 Name: Dan William Age: 24 Designation: Student	Role: Student Dan is a Student at Pace University. As a Information Technology student he is struggling to learn and practice at least two most demanding computer languages so that he can prepare for his interviews to crack coding assessments by practicing his skills at a single platform which is available online where he can write, test and save his code without wasting extra memory space of his computer and save time as well. He can subscribe an online compiler platform, write, save and share the codes for future use.	**He wants to get rid of installing multiple IDE's and save his time to practice his coding skills for the assessment tests. Also he wants to save it for later use.**

MVP

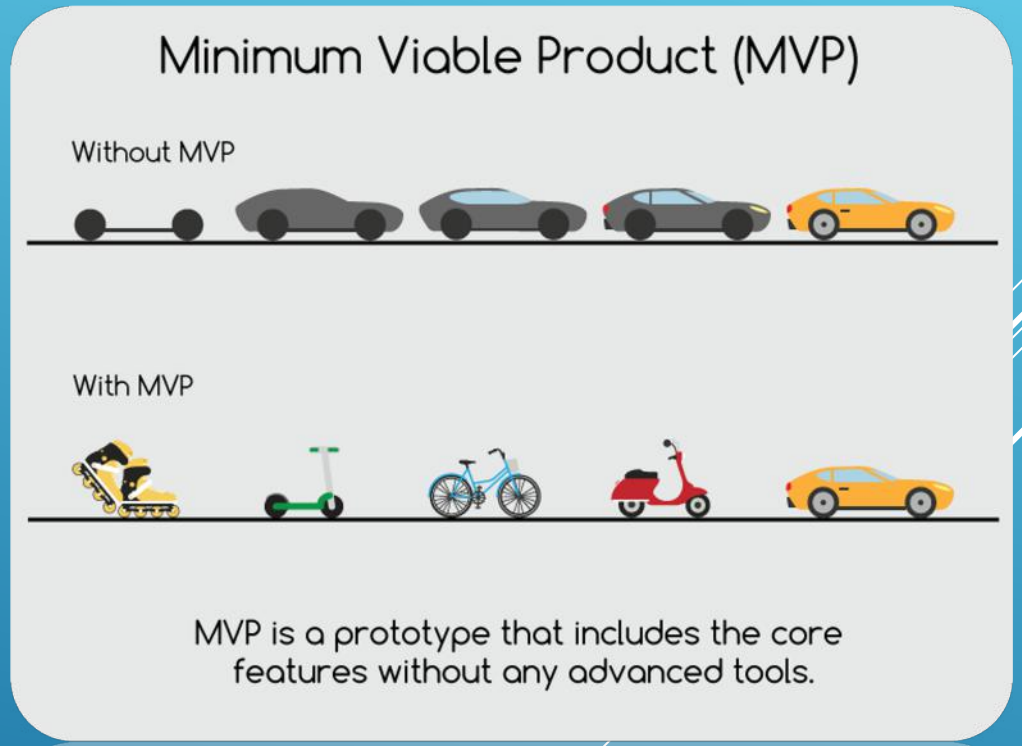
Which Problem does it solve!

It can be hectic for students or working professionals to download IDEs and virtual machines for individual languages to run their programs in very short amount of time.

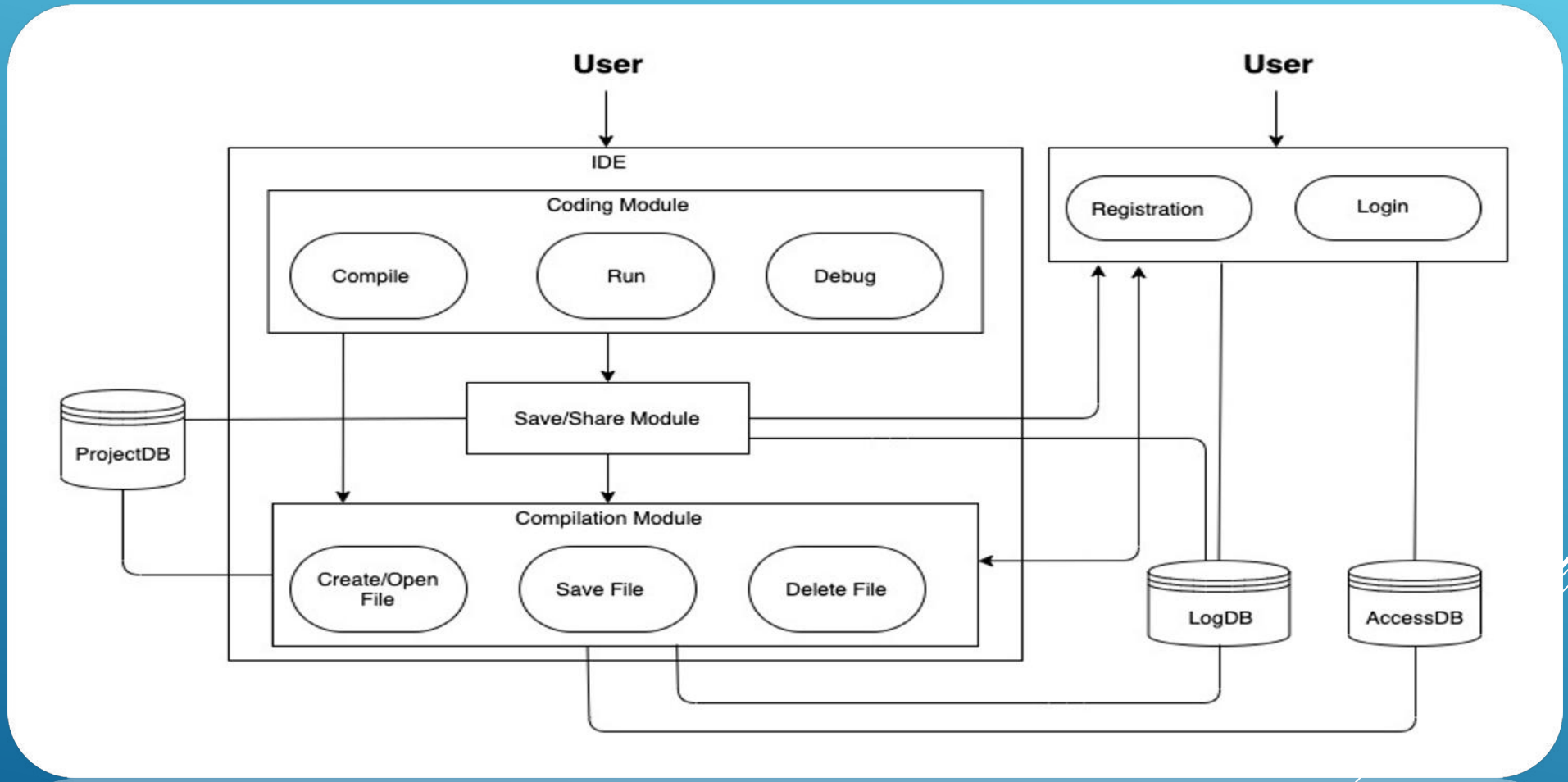
Minimum :- An application which can compile or debug the code and get the desired output.

Viable : An online platform for everyone where anyone can run the code in any of the given programming languages with features like save the source code.

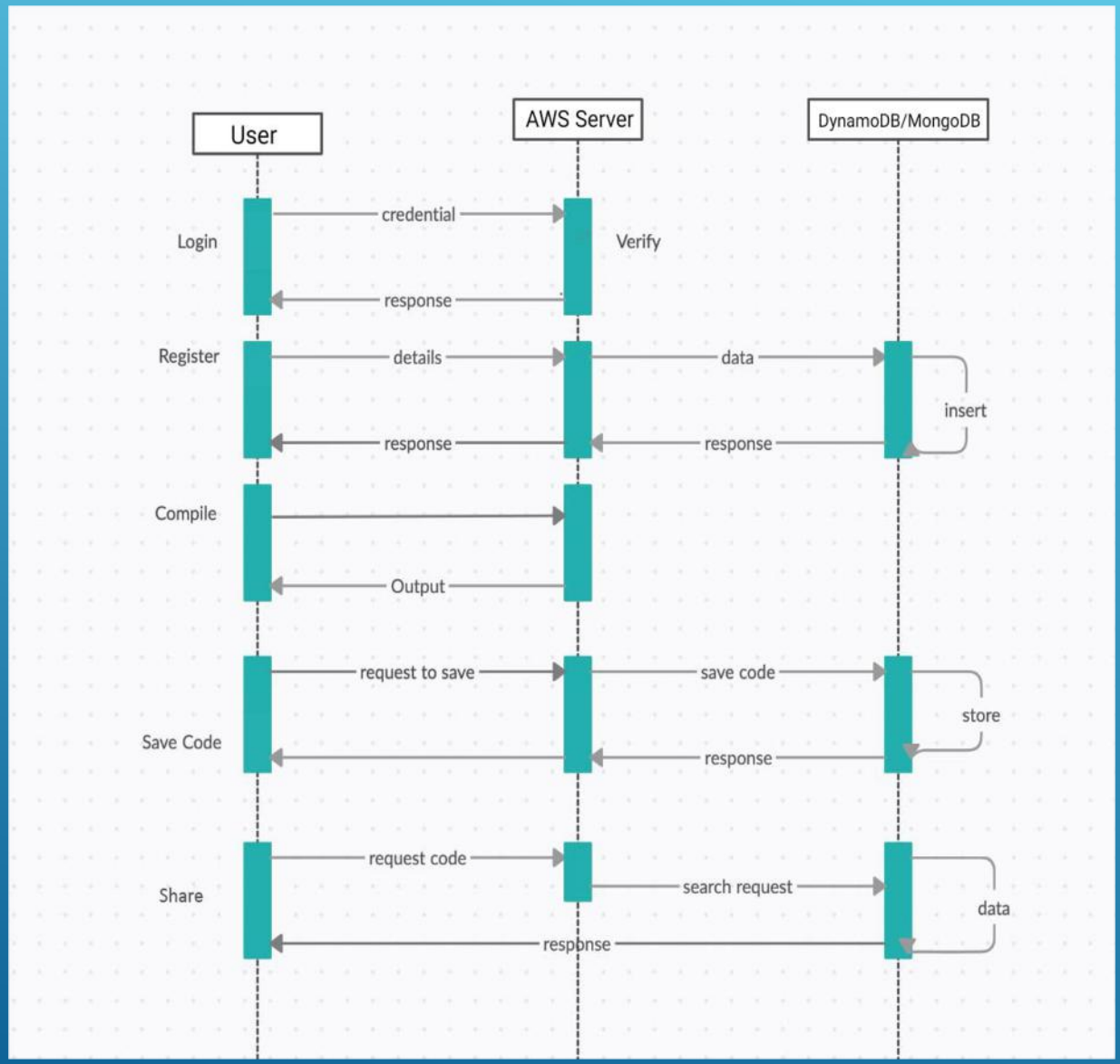
Minimum + Viable :- We are presenting a product which is based on cloud computing with features like login, registration with authentication and compilation of source code.



SYSTEM ARCHITECTURE



SEQUENCE DIAGRAM



PRODUCT BACKLOG

ID	Stories	As a	I want to	So that	Priority
1	Compile code	New/ Existing User	Write or paste the source code in the "Enter your code" text area and compile it by clicking on the "Run" button.	I can compile and test my source code.	High
2	Compilers for C, C++, C#, java and Python	New/ Existing User	Select any of the compilers from the drop-down menu.	I can compile the code in any of the programming languages.	High
3	Save Code	Existing User	Save code by clicking on the "Save" button.	So that I can store my source code and view it whenever I login using my credentials.	High
4	Share Code	Existing User	Share code by clicking on the "Share" button.	So that I can share my source code.	Moderate
5	User Registration	New User	Enter login details that is the first and last name, e-mail and password.	I can create my profile and register myself on the cloud computing service.	Low
6	Login	Existing User	Enter registered e-mail and password.	I can authenticate my account and after that I can retrieve previously stored source code.	Low

ACCEPTANCE CRITERIA

ID	Stories	As a	Acceptance Criteria
1	User Registration	New User	1. Display Website. 2. Display Register or sign in option. 3. A user cannot register without completing all mandatory fields. 4. Information from the form is stored in the registration database. 5. Existing user cannot register again. 6. Commencement and maintaining the session while logged in. 7. Triggers session termination.
2	Login	Existing User	1. Login with username/e-mail. 2. Enter password. 3. Forgot username/password.
3	Compilers for C, C++, C#, Java and Python	New/ Existing User	1. Display a drop-down menu of the programming languages. 2. Display two text areas for entering the source code and for viewing output/error of the code.
4	Compile code	New/ Existing User	1. Display a run button. 2. Programming language should be selected by user from the drop-down menu. 3. There should be code written by the user in the "Enter your code" text area.
5	Save Code	Existing User	1. The user must me registered and logged in in-order to use the save feature. 2. Display "Save" button. 3. The programming language should be selected and there should be a code written by the user in the source code area.
6	Share Code	Existing User	1. The user must be registered and logged tin-order to use the share feature. 2. Display “Share” button.

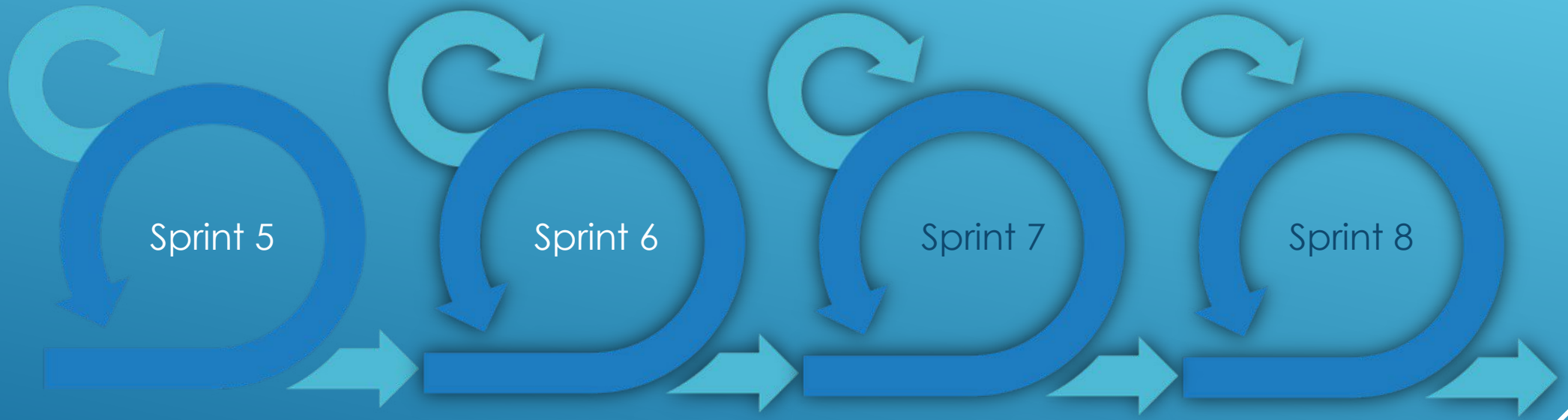
TEST CASES

Test Cases for	Test Case ID	Test Scenario	Test Data	Expected Results	Actual Results	Pass/Fail
Registration	1	Check registration form with First name	Sanath	NO Validation Errors	NO Validation Errors	PASS
	2	Check registration form without first name	*Blank*	Validation Errors	Validation Errors	PASS
	2	Check registration form with Last name	Gholap	NO Validation Errors	NO Validation Errors	PASS
	4	Check registration form without Last name	*Blank*	Validation Errors	Validation Errors	PASS
	5	Check registration form with vaild email	sanath2097@gmail.com	NO Validation Errors	NO Validation Errors	PASS
	6	Check registration form without email	*Blank*	Validation Errors	Validation Errors	PASS
	7	Check registration form with Password	testpassword	NO Validation Errors	NO Validation Errors	PASS
	8	Check registration form without Password	*Blank*	Validation Errors	Validation Errors	PASS
	9	Check registration form with invalid email	sanathgholap.com	Validation Errors	Validation Errors	PASS
	10	Check registration form with confirming Password	*Wrong password in confirm field*	NO Validation Errors	NO Validation Errors	PASS
Login	11	Check Login page with Password	testpassword	NO Validation Errors	NO Validation Errors	PASS
	12	Check Login page without Password	*Blank*	Validation Errors	Validation Errors	PASS
	13	Registration with pre-registered e-mail ID	sanath2097@gmail.com	User Already Exsists Error	User Already Exsists Error	PASS
Compile	14	Choosing the language from the drop-down menu with selecting a language	Java/Python/C/C++/C#	NO Validation Errors	NO Validation Errors	PASS
	15	Choosing the language from the drop-down menu without selecting a language	*Blank*	Validation Errors	Validation Errors	PASS
	16	Enter source code in the text area with entering text	Any code	NO Validation Errors	NO Validation Errors	PASS
	17	Enter source code in the text area without entering text	*Blank*	Validation Errors	Validation Errors	PASS
Save	18	Check if the source code text area contains code with actual code	Any code	NO Validation Errors	NO Validation Errors	PASS
	19	Check if the source code text area contains code without actual code	*Blank*	Validation Errors	Validation Errors	PASS

TECHNOLOGIES USED

1. AWS (Cloud Server)
2. Python(Flask) (Middleware Business Logic)
3. HTML/CSS (Front-end)
4. MongoDB (Database)
5. DynamoDB (AWS Service)
6. Authy (for MFA/Security purposes)
7. Boto3 (for communication between pycharm files to AWS)

SPRINT 5

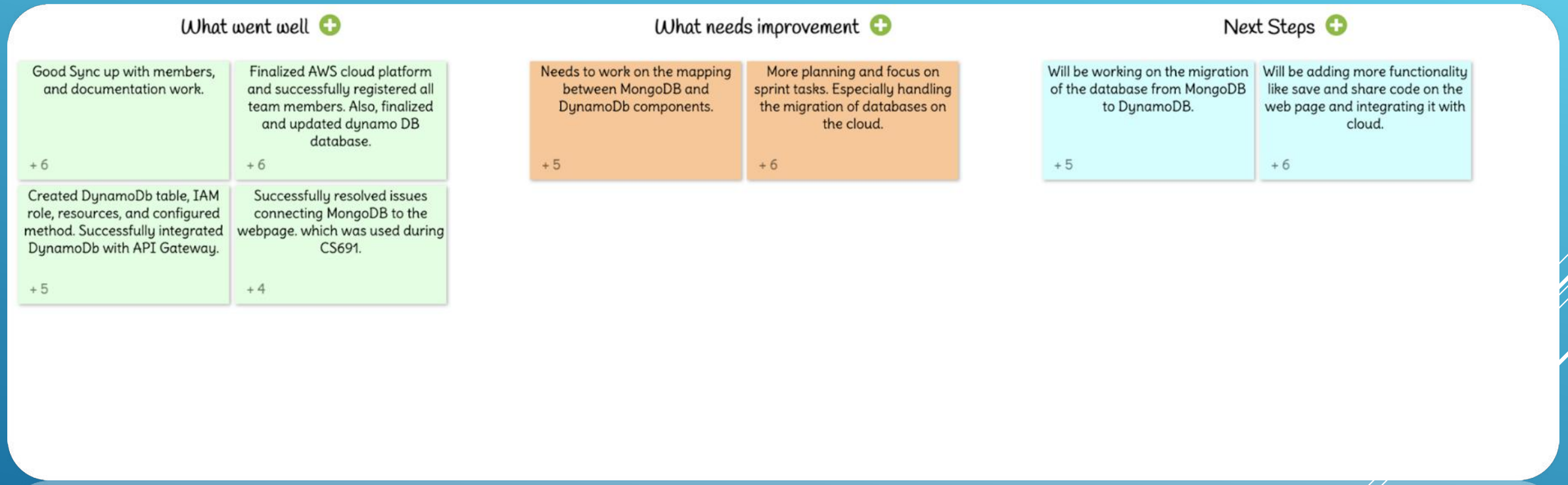


- Finalized the cloud server i.e., AWS vs. Azure.
- Onboarding whole team on AWS platform.
- Integration (DynamoDB + AWS).

SPRINT BACKLOG

Sprint Backlog 5	Module	Priority	Issues Encountered	Start Date	End Date	Status
Sprint 5 : Story 1	Database	High	Integration of DynamoDB on AWS	01/26/2021	02/18/2021	Completed
Sprint 5 : Story 2	Cloud Server	High	Path configuration	02/3/2021	02/19/2021	Completed

RETROSPECTIVE SPRINT 5



SCRUM MEETINGS

We conduct scrum meetings every Tuesday via Zoom and WhatsApp Group. If needed, we conduct short meetings on the required day according to everyone's convenience.

The format of our daily scrum meetings consist of 3 main points :

- What did you do yesterday?
- What is the plan for today?
- How close we are to reaching our sprint objectives?

FUTURE SCOPE

- We can add a discussion area where registered users can help each other with their difficulties in the code.
- We can update our web application to make it more user friendly.
- We can expand our application for compiling various other programming languages.
- Implement strict privacy for user's data safety.

GITHUB LINK

https://github.com/sg99356n/OnlineCC.git

THANK YOU!