

ECE1779

AWS Lambda Final Report

MAJORITY RULES!

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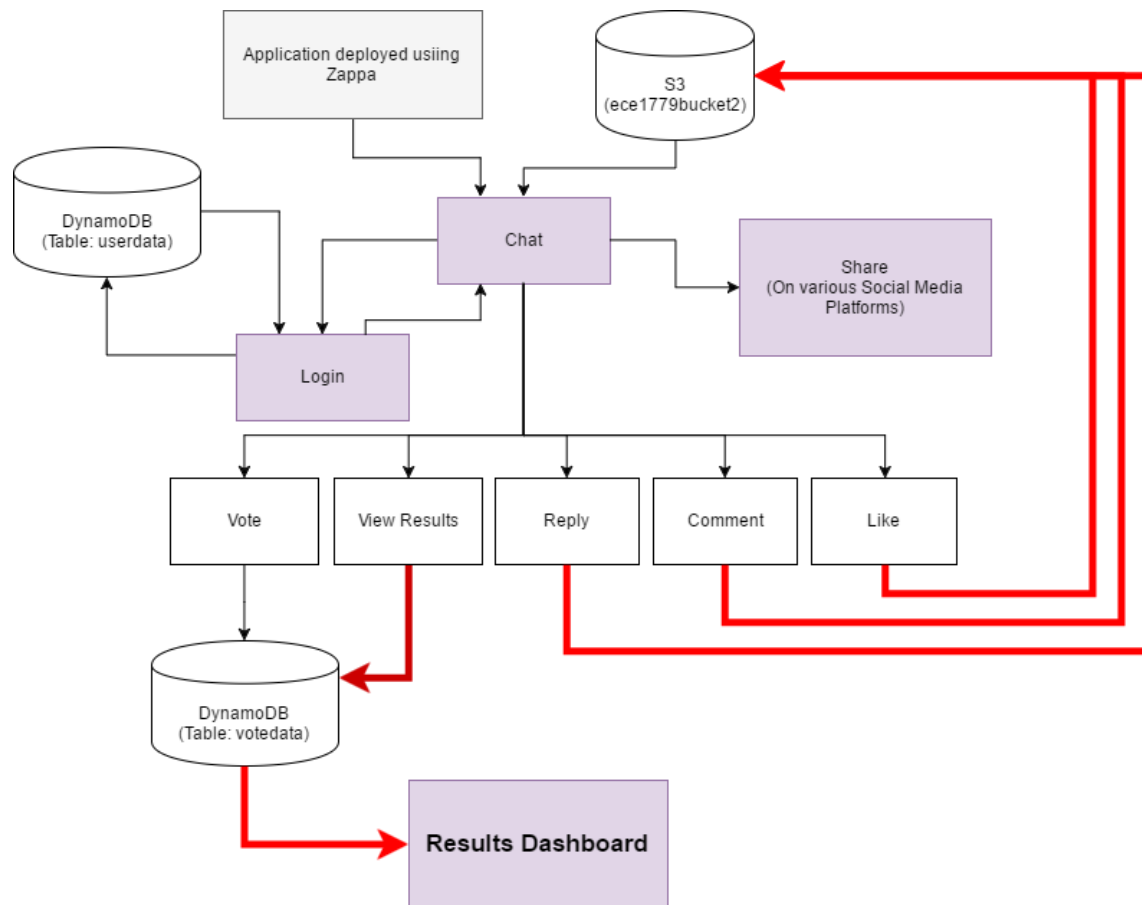
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1.) Description of Application

This application is a social networking website that aims to decrease the divide that currently exists amongst individuals by generating constructive discussion. Users are given the option to voice their approval or disapproval on issues. The results of these tallies are important as they give the world a sense of how the majority of the public feels about an issue that has global consequences. This application combines the traditional forum based websites and survey websites. Each week one current events issue is discussed to allow the users to focus on one topic and channel out sources of “noise” which are used by politicians to divert the attention of the public away from topics that matter.

2.) Software Architecture



- The application is deployed using Zappa and accessed using API Gateway
- Each user action invokes the lambda function which triggers the application to read the latest json file from S3 to populate the chat.
- The user is required to submit their login credentials to be able to post on the website

- Clicking on the “View Results” button on the homepage, triggers the lambda function that reads DynamoDB (table: votedata) and populates “Results Dashboard”.
- A snapshot of the user interface is displayed in Figure 2.1:

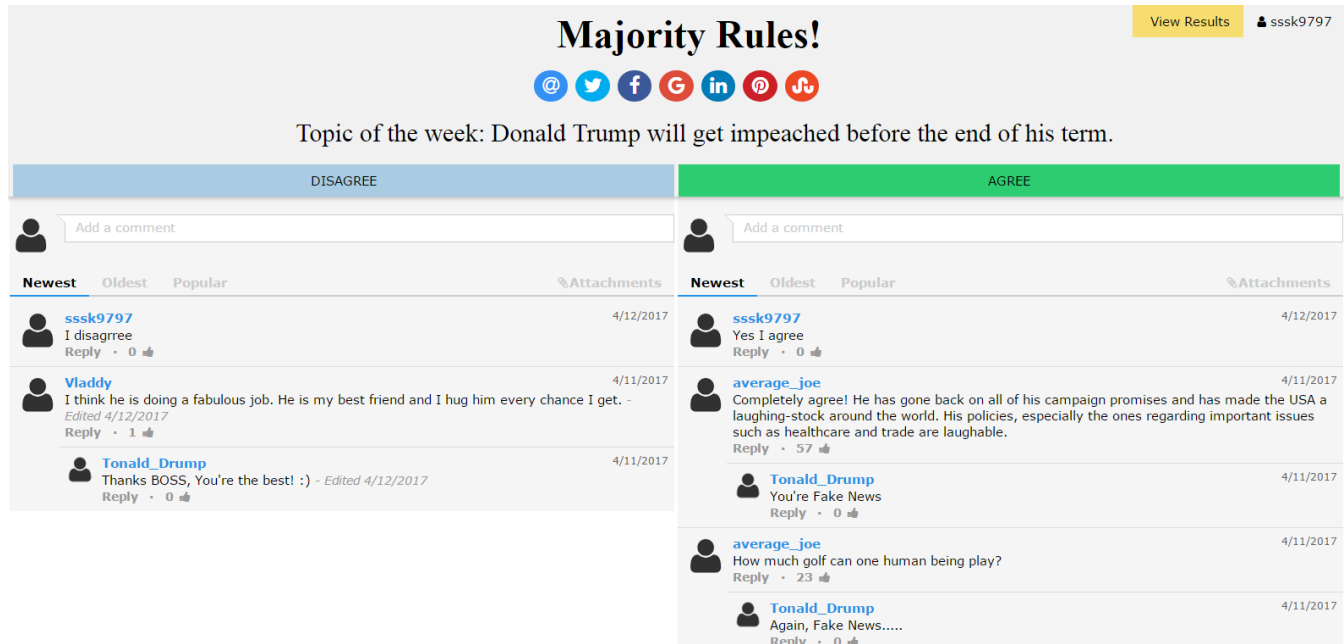


Figure 2.1: Snapshot of User Interface

3.) How to Use:

The project architecture section provides a breakdown for how the website works. The website is user-friendly and it expects that the user will be able to navigate through it without any training. The whole idea behind the website is to maximize voter participation. This can only be achieved by taking into consideration the limitations in technical aptitude of potential users. The self-explanatory design of the website thus allows the user to comment, vote, like and view the results of what the majority of the world thinks!

Note: Registration is required to access application features.

4.) Evaluation:

An evaluation criteria was required to gauge the performance and scalability of the processes used by the website. Lambda triggers based on user inputs produced the desired result (writing to DynamoDB, reading from DynamoDB, putting objects in S3 etc.) but it was necessary to ensure that the json template can be used concurrently by different users at the same time. A simple test was set up that included multiple users accessing the application through API Gateway.

Table 4.1 and Figure 4.1 represent the no. of failures as the no of user accessing the application increases. The upper limit on the no. of users and the number of data points on the graph for testing purposes was limited to 4 due to time constraints. A successful activity is defined as an activity where the user is able to go through the Login->Voting->Commenting processes without experiencing the loss of any personal data.

No. of Users	User	Successful activity (Login)	Successful activity (Voting)	Successful activity (Commenting)
1	User # 1	Yes	Yes	Yes
2	User # 1	Yes	Yes	Yes
	User # 2	Yes	Yes	Yes
3	User # 1	Yes	Yes	Yes
	User # 2	Yes	Yes	Yes
	User # 3	Yes	Yes	Yes
4	User # 1	Yes	Yes	Yes
	User # 2	Yes	Yes	Yes
	User # 3	Yes	No	No
	User # 4	Yes	Yes	Yes

Table 4.1 – Table of successful activities vs. no. of users

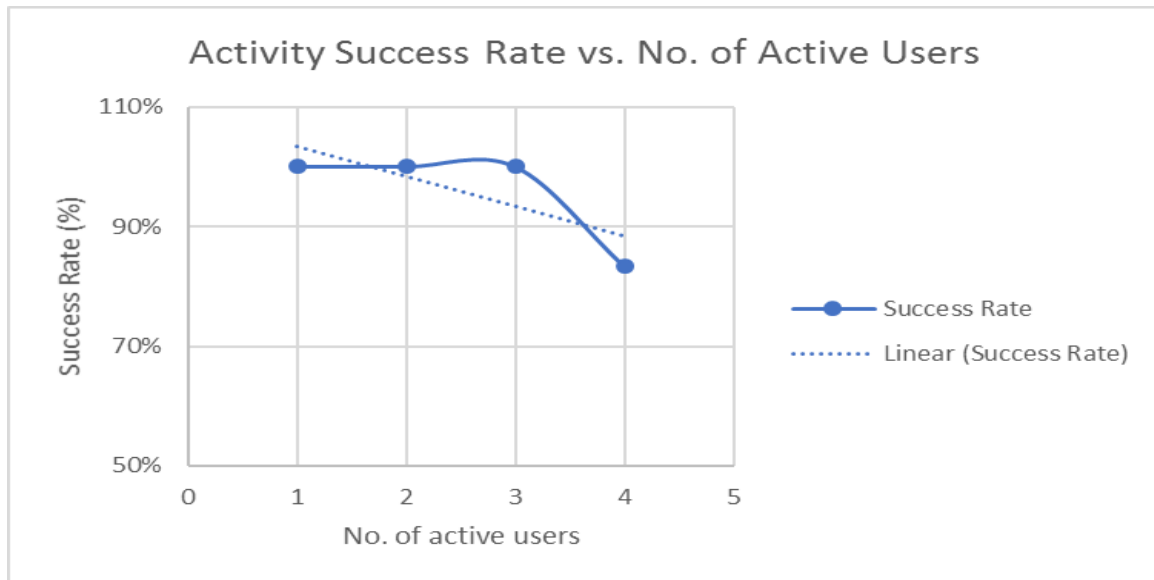


Figure 4.1 – Plot of successful activities vs. No. of users

The figure depicted above indicates that an increase in the number of users has a potential to cause issues of data loss. This is significant as a loss in user data can create a frustrating user experience which will deter users from using the Application. A possible alternative to the method currently being incorporated is using EMR clusters to directly convert the user data from DynamoDB to a json file instead of creating a json file on the fly. The cost associated with an EMR cluster was a hindrance to the adoption of this method.

Note: The 4 instances of the website were run concurrently on the same network and the observed unsuccessful activities could potentially be attributed to connectivity issues.

5.) Future Work:

The application needs to address security issues that might be associated with collecting the user data. This can be improved by using different pre-existing APIs to collect user information and to provide access. This will ensure that the data put forth by the users and their content is kept secure.