INTRODUCTION

OVERVIEW

This report discusses the result of the work done in development of "Bulk Email Aggregator" on JavaScript Platform. The project aims at the development of an application to enable Customer Relationship Managers of a company to send bulk emails for collecting feedback of their own electronic products.

BACKGROUND AND MOTIVATION

Electronic product companies assign the task of collecting feedback to the CRM's.

Companies like Croma send text messages to customers to collect feedback where they have to send individual messages to each person.

Therefore, with this system we are trying to send emails to collect feedback from the customers who had purchased products from their company much more efficiently and getting abstract of performance of the electronics in the market.

OBJECTIVE

The final goal of the project is twofold.

1. A web application that is used to provide a paid service to the end user which will enable them to send bulk emails for collecting feedback of their own electronic products once they do payment through the Stripe payment gateway which we have used in the application.

2. Since our service will be provided on usage of assigned credit points to user. So once the Customer Relationship Manager (CRM) who will be using the application does transaction, a credit of 5 points will be automatically added to the individual's account and then that person can make the best use of the points by using it to send bulk email to as many people as needed. Each time the person sends a bulk email, 1 credit point is deduced.

METHODOLOGY

To implement the above goals, the following methodology needs to be followed:

1. Specifying the application and various components of the architecture.
2. Specifying the bindings between the various modules and JavaScript packages.
3. Specifying the server ports between the modules.
4. Analysis: Extracting the required data for analysis and then doing the analysis.

ANALYSIS

On the basis of analysis and literature survey regarding the present difficulties faced by the CRM's of companies like Croma as they have to send individual emails or text messages to collect feedback from each person.

Therefore, with the system of ours we are trying to send bulk emails to collect feedback from the customers who has purchased products from their company much more efficiently and getting abstract of performance of the electronics in the market.

Secondly, our application works based on assigned credit points to user. Therefore, once the CRM does transaction through our app, 5 credit points will be automatically added to the account and the user can make the best use of the credit points to send bulk email as 1 credit point get deduced each time a mail is sent.

REQUIREMENT ANALYSIS:

SOFTWARE REQUIREMENTS:

Operating System: Windows 10 / Ubuntu

Front end: React.js v16.x

Back end: Node.js v11.x

Database: MongoDB Atlas

Authentication API: Google OAuth

Payment Gateway API: Stripe

Cloud Deployment: Heroku Deployment

Other Technologies used: Twilio SendGrid, Git and GitHub

HARDWARE REQUIREMENTS:

RAM: 8GB and above

Hard disk: 120GB and above

Processor: Intel i3 and above

FUNCTIONAL REQUIREMENTS:

1. CRM Signs Up via **Google OAuth.**
2. CRM **Pays for email credits** via Stripe.
3. CRM **creates a new feedback.**
4. CRM **enters list of emails to collect feedback.**
5. Application **send emails to list of customers.**
6. **Customers click on the link provided in the email to send feedback.**
7. Application will **tabulate feedback received**.
8. CRM **can see list of all feedback responses.**
9. Logout

NON-FUNCTIONAL REQUIREMENTS:

1. Availability
2. Maintainability
3. Performance
4. Supportability

TOOLS AND TECHNOLOGIES:

APPLICATION DEVELOPMENT TECHNOLOGIES:

This application is built using MERN stack ie MongoDB (MongoDB Atlas), Express, React.js and Node.js.

MongoDB is an open-source database software which is NoSQL in architecture. It stores data as JSON document. It is fast, reliable and efficient.

Express is a web application framework for Node.js. It is designed for building web applications and APIs. It has been called the de facto standard server framework for Node.js.

React.js is a JavaScript library for building user interfaces. Facebook and a community of individual developers and companies maintain it. React can be used as a base in the development of single-page or mobile applications.

Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine.

Google OAuth use the OAuth 2.0 protocol for authentication and authorization. Google supports common OAuth 2.0 scenarios such as those for web server, installed, and client-side applications.

Stripe is a service that allows users to accept payments online, specifically developers. With the **Stripe** application, users can keep track of payments, search past payments, create recurring charges, and keep track of customers.

Twilio SendGrid provides a cloud-based service that assists businesses with email delivery.

INTEGRATION TOOLS:

GIT AND GITHUB:

Git is a distributed version-control system for tracking changes in source code during software development. It is designed for coordinating work among programmers, but it can be used to track changes in any set of files. Its goals include speed, data integrity and support for distributed, non-linear workflows.

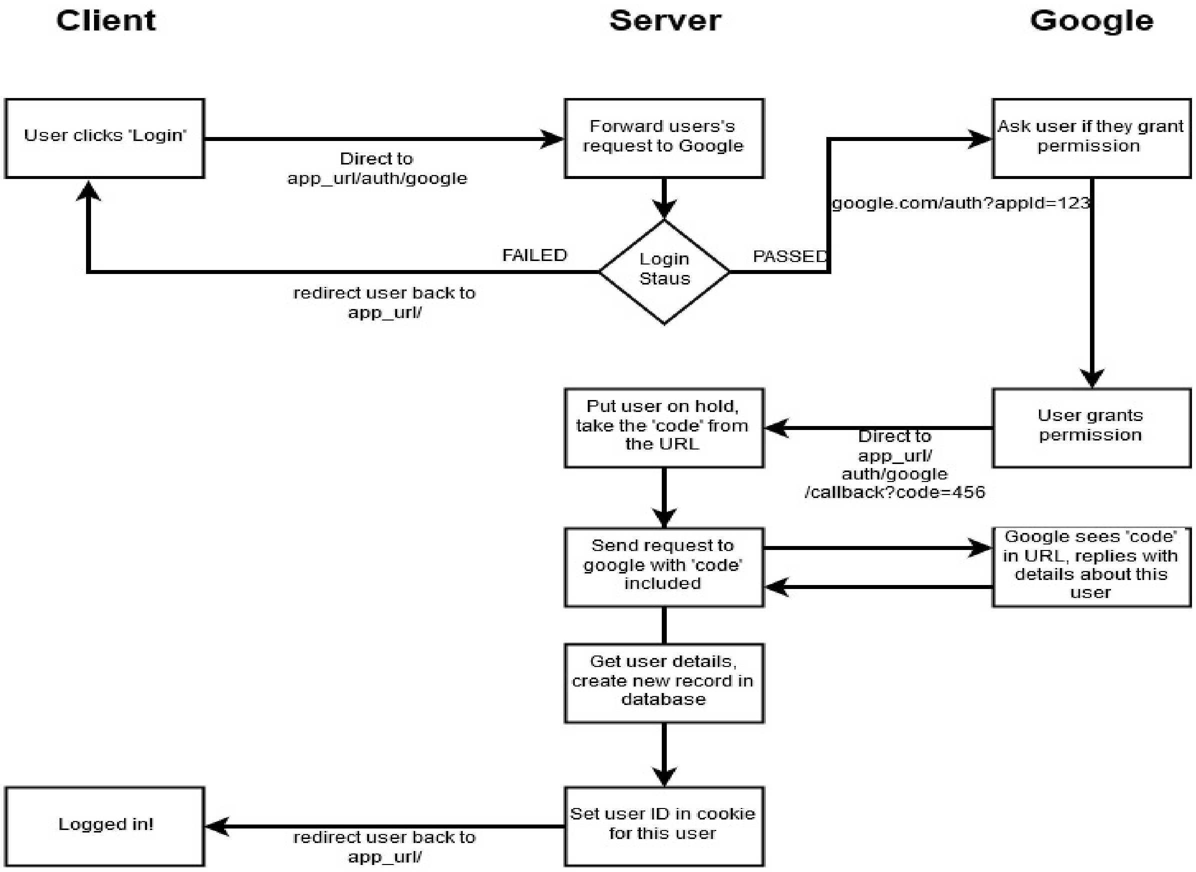
GitHub is a web based hoisting service for version control using Git. It is mostly used for computer code. It offers all of the distributed version control and source code management functionality of Git as adding its own features.

HEROKU:

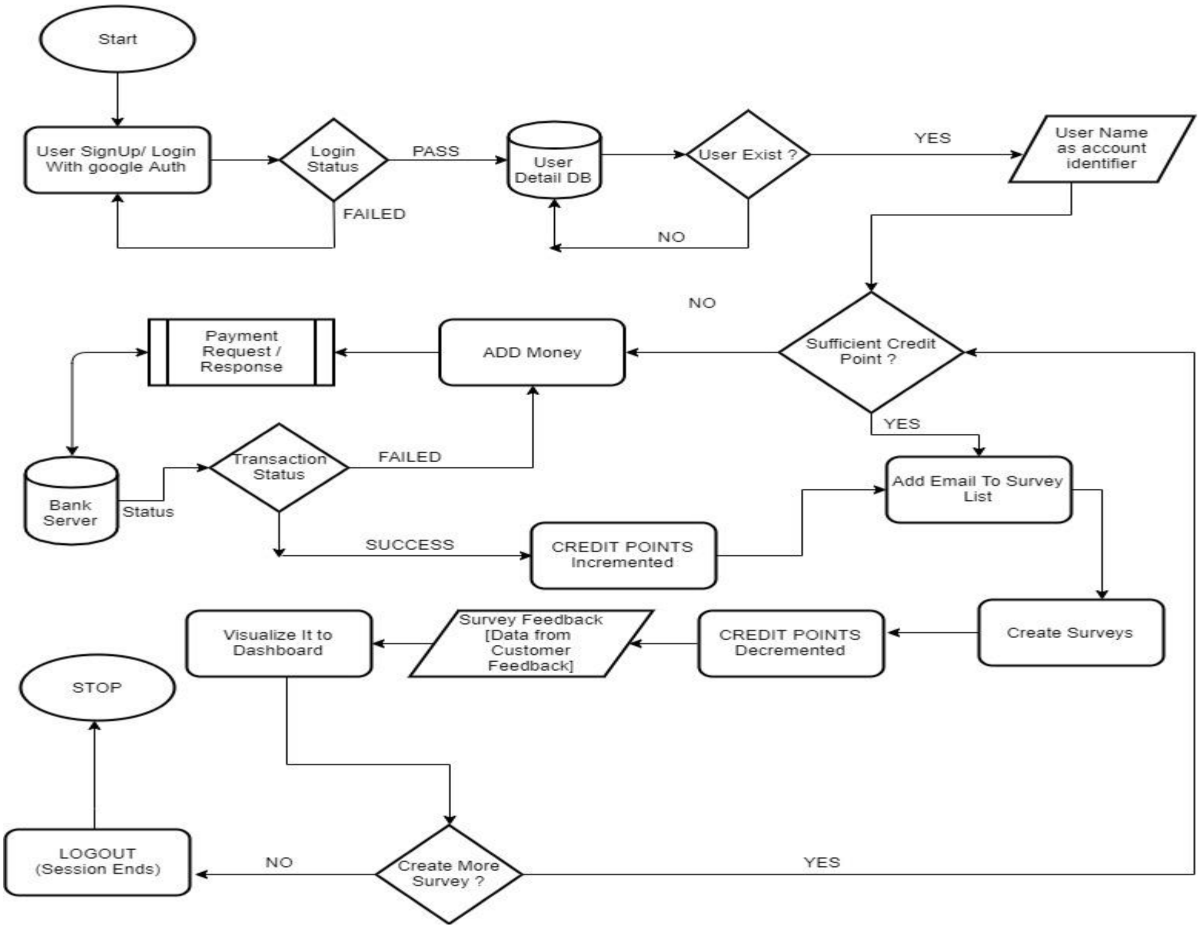
Heroku is a container-based cloud Platform as a Service (PaaS). Developers use **Heroku** to deploy, manage, and scale modern apps. Our platform is elegant, flexible, and easy to use, offering developers the simplest path to getting their apps to market.

DESIGN

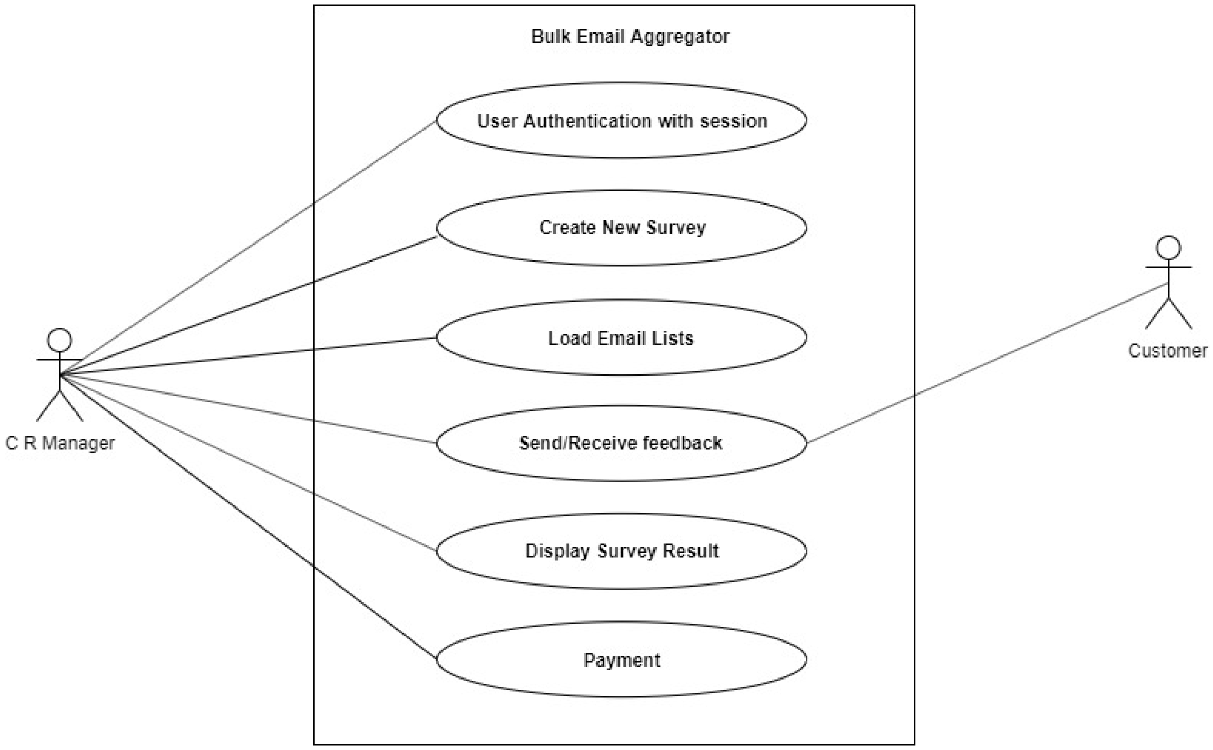
GOOGLE OAUTH FLOW DIAGRAM


Client
Server
Google
User clicks 'Login'
Direct to app_url/auth/google
Forward users's request to Google
Ask user if they grant permission
google.com/auth?appId=123
Login Staus
FAILED
PASSED
redirect user back to app_url/
User grants permission
Direct to app_url/ auth/google /callback?code=456
Put user on hold, take the 'code' from the URL
Send request to google with 'code' included
Google sees 'code' in URL, replies with details about this user
Get user details, create new record in database
Set user ID in cookie for this user
redirect user back to app_url/
Logged in!

FLOW DIAGRAM OF THE SYSTEM

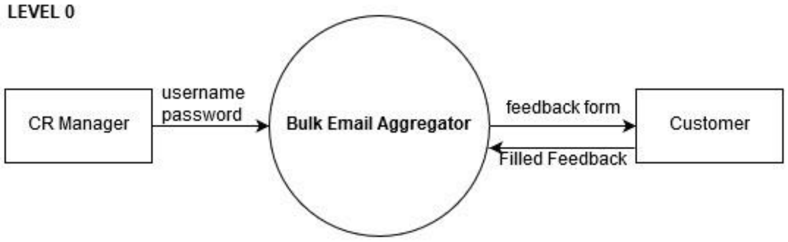

Start
User SignUp/ Login With google Auth
Login Status
PASS
FAILED
User Detail DB
User Exist ?
YES
NO
User Name as account identifier
NO
Sufficient Credit Point ?
YES
ADD Money
Payment Request / Response
Bank Server
Status
Transaction Status
FAILED
SUCCESS
CREDIT POINTS Incremented
Add Email To Survey List
Create Surveys
CREDIT POINTS Decremented
Survey Feedback [Data from Customer Feedback]
Visualize It to Dashboard
STOP
Create More Survey ?
NO
YES
LOGOUT (Session Ends)

USE CASE DIAGRAM

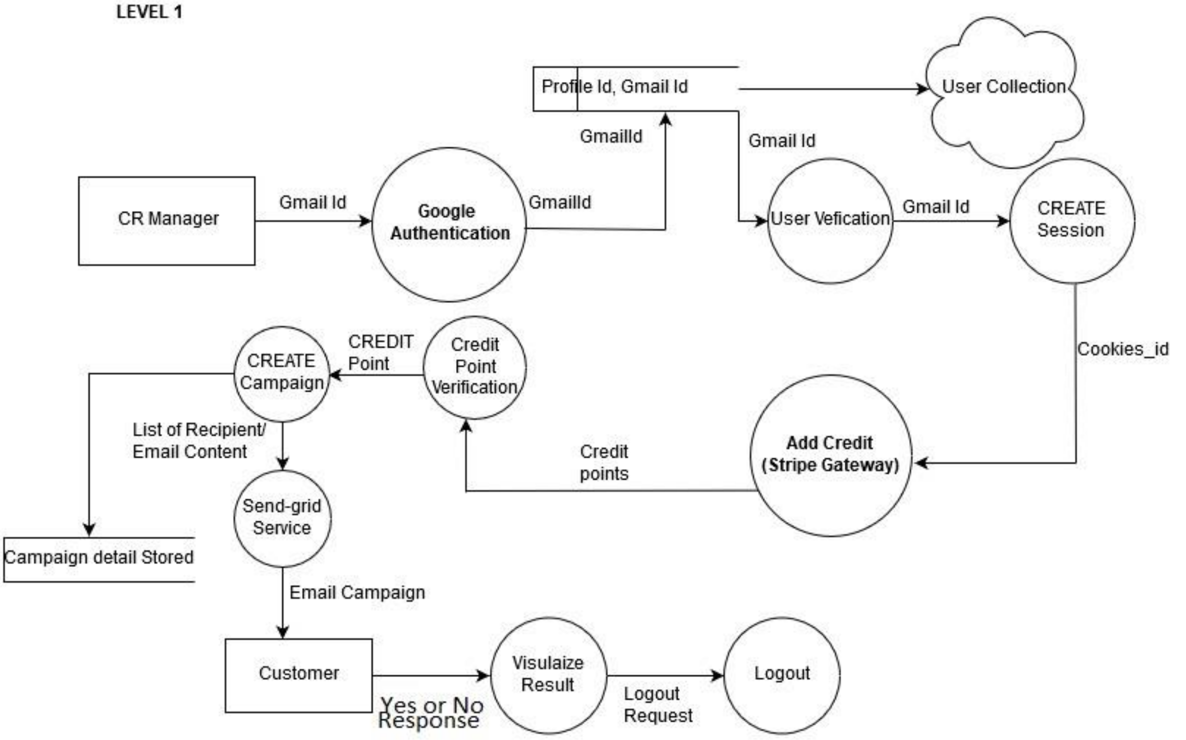


DFD

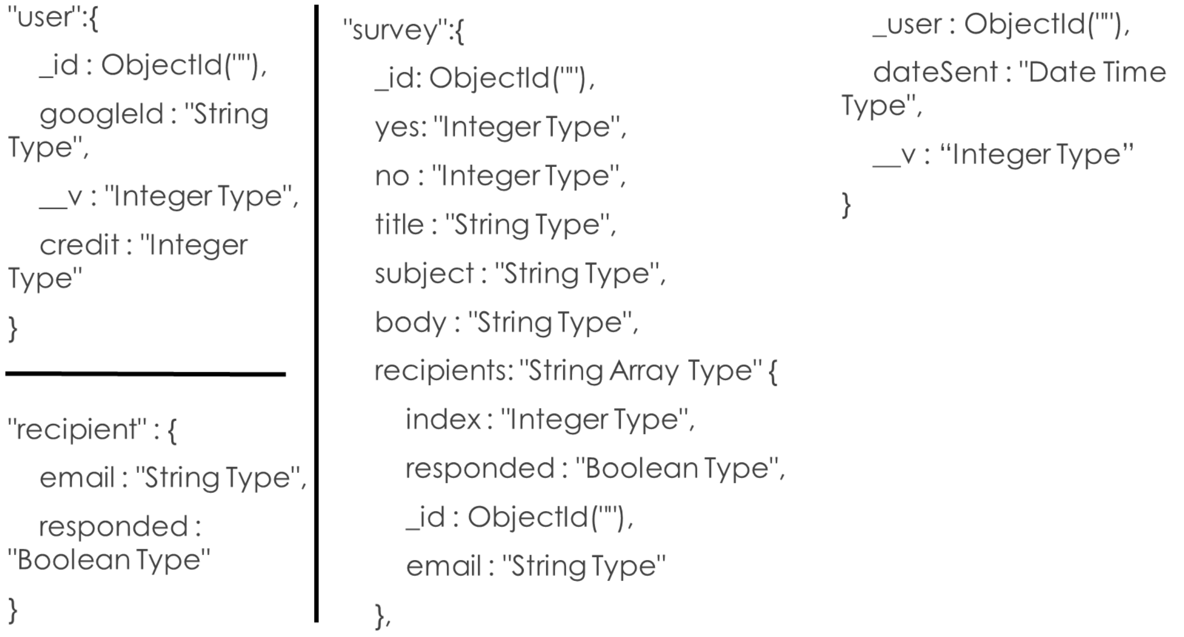
LEVEL 0



LEVEL 1



DOCUMENT STRUCTURE



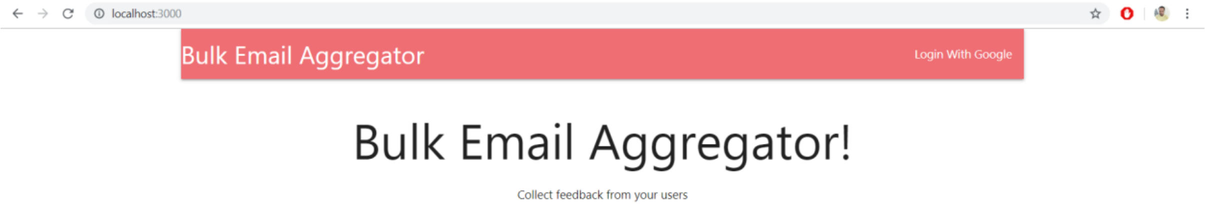
```
"user":{
   _id : ObjectId(""),
   googleId : "String Type",
   __v : "Integer Type",
   credit : "Integer Type"
}

"recipient" : {
   email : "String Type",
   responded : "Boolean Type"
}

"survey":{
   _id: ObjectId(""),
   yes: "Integer Type",
   no : "Integer Type",
   title : "String Type",
   subject : "String Type",
   body : "String Type",
   recipients: "String Array Type" {
      index : "Integer Type",
      responded : "Boolean Type",
      _id : ObjectId(""),
      email : "String Type"
   },
   _user : ObjectId(""),
   dateSent : "Date Time Type",
   __v : "Integer Type"
}
```

Our project consists of two folds:

1. Customer Relationship Manager (CRM).
2. Customers: Who purchase products from different electronic companies.

SCREEN SHOTS

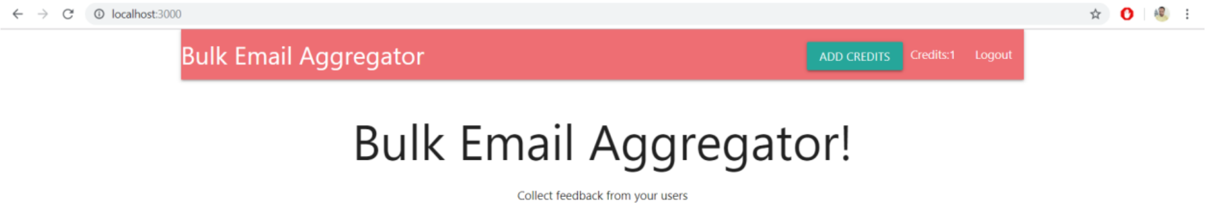
LOGIN SCREEN



Bulk Email Aggregator!

Collect feedback from your users

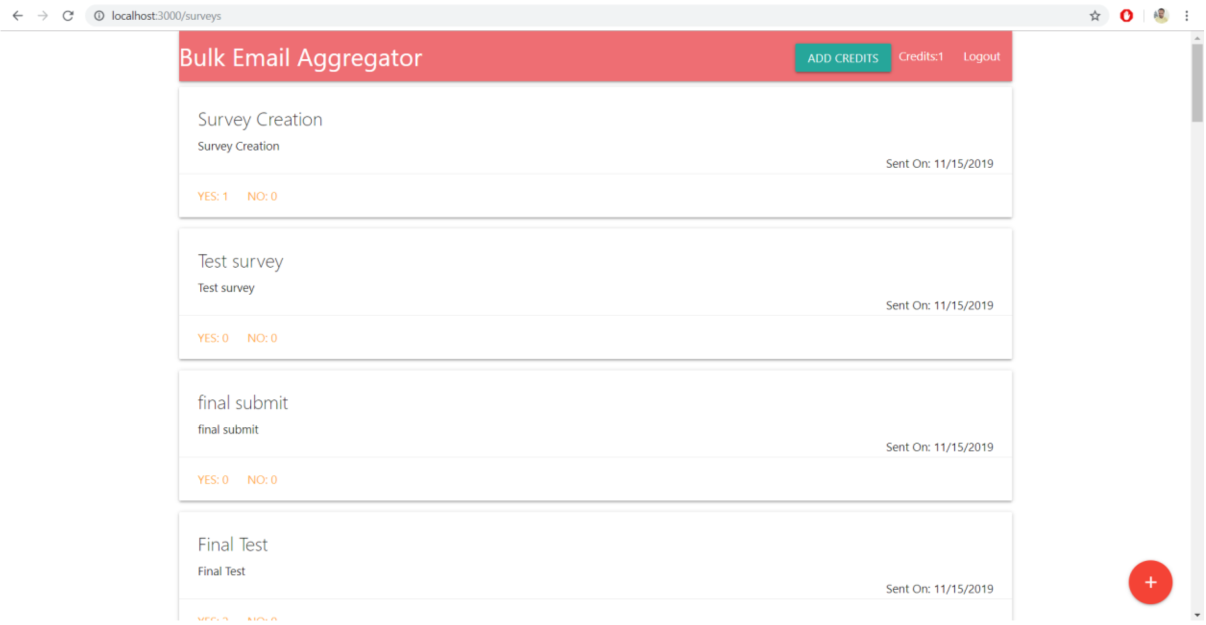
HOMEPAGE



Bulk Email Aggregator!

Collect feedback from your users

DASHBOARD



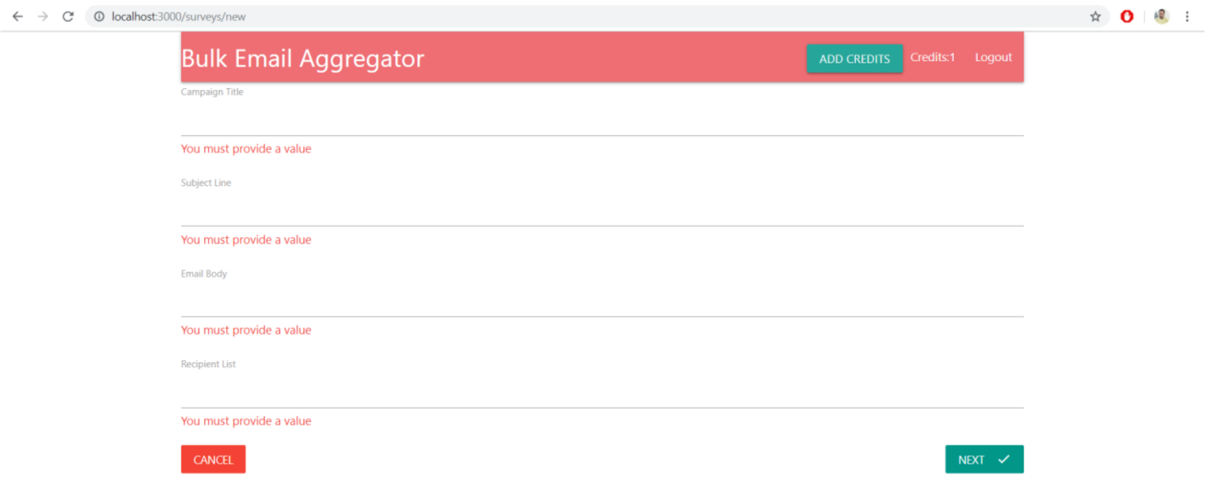
Survey Creation
Survey Creation
Sent On: 11/15/2019
YES: 1 NO: 0

Test survey
Test survey
Sent On: 11/15/2019
YES: 0 NO: 0

final submit
final submit
Sent On: 11/15/2019
YES: 0 NO: 0

Final Test
Final Test
Sent On: 11/15/2019

FEEDBACK FORM



Campaign Title

You must provide a value

Subject Line

You must provide a value

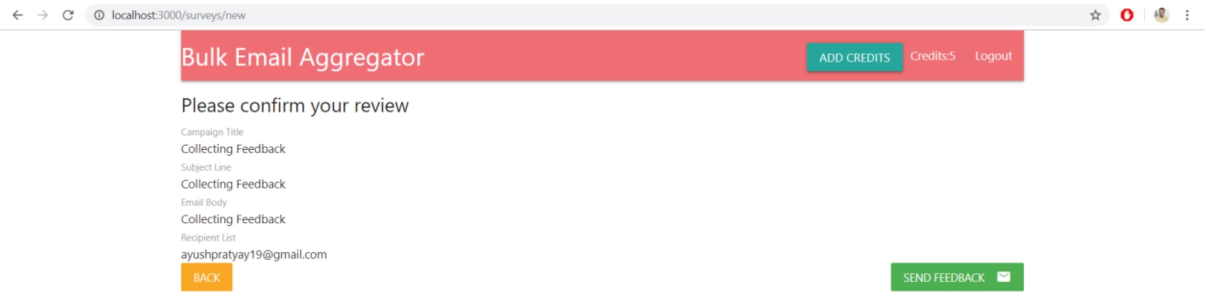
Email Body

You must provide a value

Recipient List

You must provide a value

REVIEW PAGE



Please confirm your review

Campaign Title

Collecting Feedback

Subject Line

Collecting Feedback

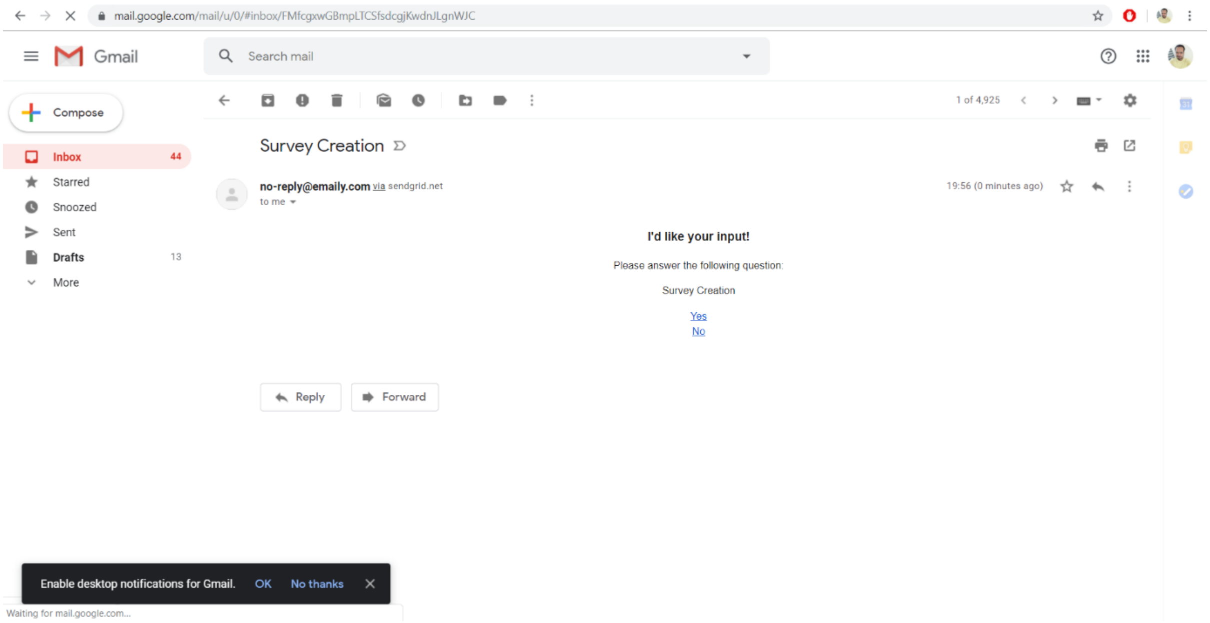
Email Body

Collecting Feedback

Recipient List

ayushpratyay19@gmail.com

USER RECEIVING FEEDBACK



mail.google.com/mail/u/0/#inbox/FMfcgxwGBmpLTCSfsdcgjKwdnJLgnWJC
Gmail
Search mail
Compose
Inbox 44
Starred
Snoozed
Sent
Drafts 13
More
1 of 4,925

Survey Creation

no-reply@emaily.com via sendgrid.net

to me

19:56 (0 minutes ago)

I'd like your input!

Please answer the following question:

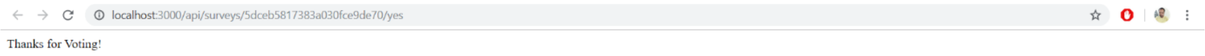
Survey Creation

Yes

No

Reply
Forward
Enable desktop notifications for Gmail. OK No thanks
Waiting for mail.google.com...

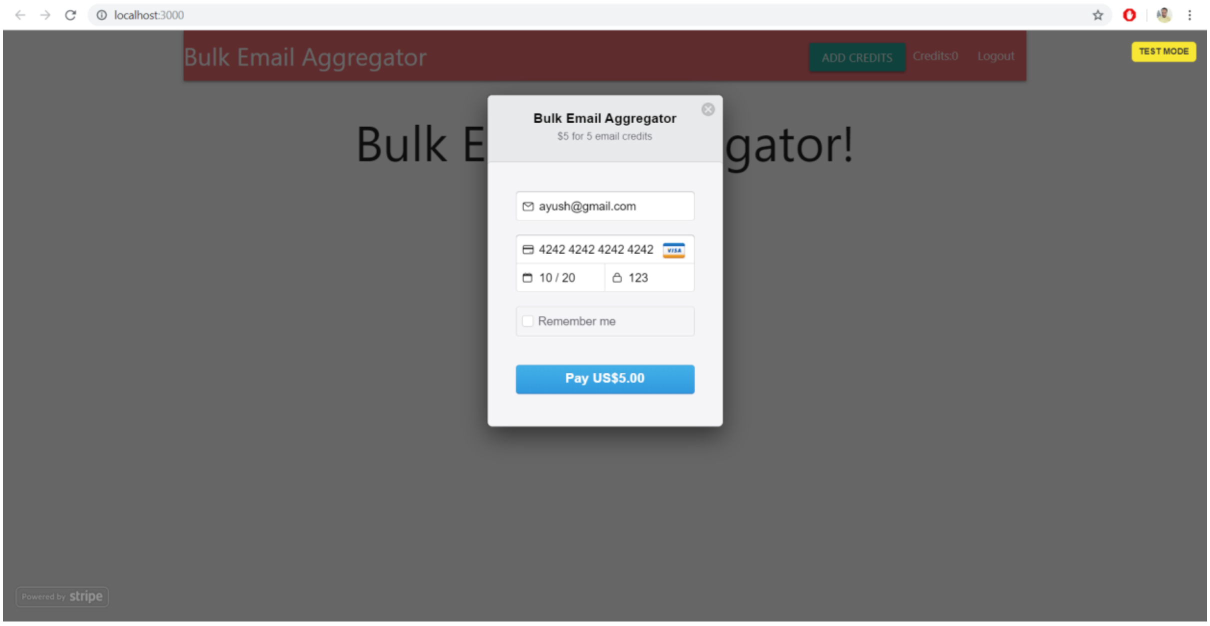
USER RECEIVES CONFIRMATION



localhost:3000/api/surveys/5dceb5817383a030fce9de70/yes

Thanks for Voting!

STRIPE



localhost:3000

Bulk Email Aggregator

$5 for 5 email credits

ayush@gmail.com

4242 4242 4242 4242

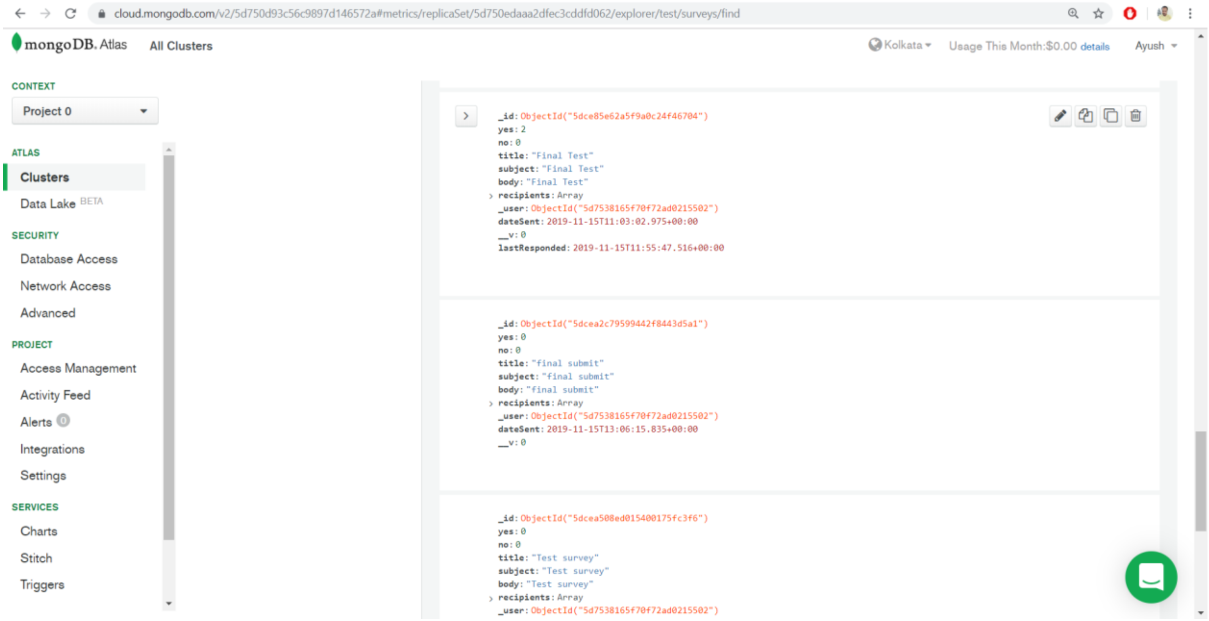
10 / 20

123

□ Remember me

Pay US$5.00

MONGODB STRUCTURE



```
_id: ObjectId("5dce85e62a5f9a0c24f46704")
yes: 2
no: 0
title: "Final Test"
subject: "Final Test"
body: "Final Test"
› recipients: Array
_user: ObjectId("5d7538165f70f72ad0215502")
dateSent: 2019-11-15T11:03:02.975+00:00
__v: 0
lastResponded: 2019-11-15T11:55:47.516+00:00

_id: ObjectId("5dcea2c79599442f8443d5a1")
yes: 0
no: 0
title: "final submit"
subject: "final submit"
body: "final submit"
› recipients: Array
_user: ObjectId("5d7538165f70f72ad0215502")
dateSent: 2019-11-15T13:06:15.835+00:00
__v: 0

_id: ObjectId("5dcea508ed015400175fc3f6")
yes: 0
no: 0
title: "Test survey"
subject: "Test survey"
body: "Test survey"
› recipients: Array
_user: ObjectId("5d7538165f70f72ad0215502")
```

TESTING

Test Case ID	PES_001	**Test Case Description**	Test the Login Functionality in login screen		
Created By		**Reviewed By**	-	**Version**	1
QA Tester's Log					
Tester's Name		**Date Tested**	17-Nov-2019	**Test Case (Pass/Fail/Not Executed)**	Pass

S #	**Prerequisites:**		**S #**	**Test Data**
1	Access to Chrome Browser		1	E-mail = vijaykumarrpai@gmail.com
2	https://sheltered-reef-50053.herokuapp.com/		2	
3			3	
4			4	

Test Scenario	Verify on clicking Login With Google, the user logs into the application using his/her google account			
Step #	**Step Details**	**Expected Results**	**Actual Results**	**Pass / Fail / Not**
1	Navigate to https://sheltered-reef-50053.herokuapp.com/	Logged into application after clicking Login With Google	User is logged in	Pass
2	Page displayed	Page should be redirected to https://sheltered-reef-50053.herokuapp.com/surveys	Home Page is displayed	Pass

Test Case ID	PES_002	**Test Case Description**	Test the functionality of creating new feedback form with 0 credits		
Created By		**Reviewed By**	-	**Version**	1
QA Tester's Log					
Tester's Name		**Date Tested**	17-Nov-2019	**Test Case (Pass/Fail/Not Executed)**	Fail

S #	**Prerequisites:**		**S #**	**Test Data**
1	Access to Chrome Browser		1	Campaign title - Test
2	https://sheltered-reef-50053.herokuapp.com/		2	Subject Line - Test
3			3	Email Body – This is a test data
4			4	Recipient list – vijaykumarrpai@gmail.com,........
			5	
			6	

Test Scenario	Creating new feedback form on clicking + button followed by entering the required details

Step #	**Step Details**	**Expected Results**	**Actual Results**	**Pass / Fail / Not**
1	Navigate to https://sheltered-reef-50053.herokuapp.com/surveys/new	Redirected to the feedback form creation page	Successfully redirected	Pass
2	Enter Campaign Title, Subject Line, Email Body, Recipient List	Should redirect to next page on clicking next button	Successfully redirected	Pass
3	Confirm the details and click on Send Feedback	Should successfully create new feedback form	Failed to create because there are no credits in the account	Fail

Test Case ID	PES_003	**Test Case Description**	Test the functionality of creating new feedback form.		
Created By		**Reviewed By**	-	**Version**	1
QA Tester's Log					
Tester's Name		**Date Tested**	17-Nov-2019	**Test Case (Pass/Fail/Not Executed)**	Pass

S #	**Prerequisites:**		**S #**	**Test Data**
1	Access to Chrome Browser		1	Campaign title - Test
2	https://sheltered-reef-50053.herokuapp.com/		2	Subject Line - Test
3			3	Email Body – This is a test data
			4	Recipient list – vijaykumarrpai@gmail.com,……..
Test Scenario	Creating new feedback form on clicking + button followed by entering the required details			

Step #	**Step Details**	**Expected Results**	**Actual Results**	**Pass / Fail / Not**
1	Navigate to https://sheltered-reef-50053.herokuapp.com/surveys/new	Redirected to the feedback form creation page	Successfully redirected	Pass
2	Enter Campaign Title, Subject Line, Email Body, Recipient List	Should redirect to next page on clicking next button	Successfully redirected	Pass
3	Confirm the details and click on Send Feedback	Should successfully create new feedback form	Successfully created new feedback and sent to the entered email id	Pass

Test Case ID	PES_004	**Test Case Description**	Test the functionality of creating new feedback form.		
Created By		**Reviewed By**	-	**Version**	1
QA Tester's Log					
Tester's Name		**Date Tested**	17-Nov-2019	**Test Case (Pass/Fail/Not Executed)**	Pass

S #	**Prerequisites:**		**S #**	**Test Data**
1	Access to Chrome Browser		1	Campaign title -
2	https://sheltered-reef-50053.herokuapp.com/		2	Subject Line -
3			3	Email Body –
			4	Recipient list –

Test Scenario	Creating new feedback form on clicking + button followed by entering the required details			
Step #	**Step Details**	**Expected Results**	**Actual Results**	**Pass / Fail / Not**
1	Navigate to https://sheltered-reef-50053.herokuapp.com/surveys/new	Redirected to the feedback form creation page	Successfully redirected	Pass
2	Did not fill any field	Should say 'You must provide a value'	Says 'You must provide a value'	Pass
3	Click Next	Should not go to review page	Did not redirect to review page	Pass

Test Case ID	PES_005	**Test Case Description**	Adding Credits through Stripe Gateway		
Created By		**Reviewed By**	-	**Version**	1
QA Tester's Log					
Tester's Name		**Date Tested**	17-Nov-2019	**Test Case (Pass/Fail/Not Executed)**	Pass

S #	Prerequisites:		S #	Test Data
1	Access to Chrome Browser		1	Email – wdawda@awdawd.com
2	https://sheltered-reef-50053.herokuapp.com/		2	Card number – **** **** **** ****
3			3	Expiry date – 09/20
			4	CVC - 123

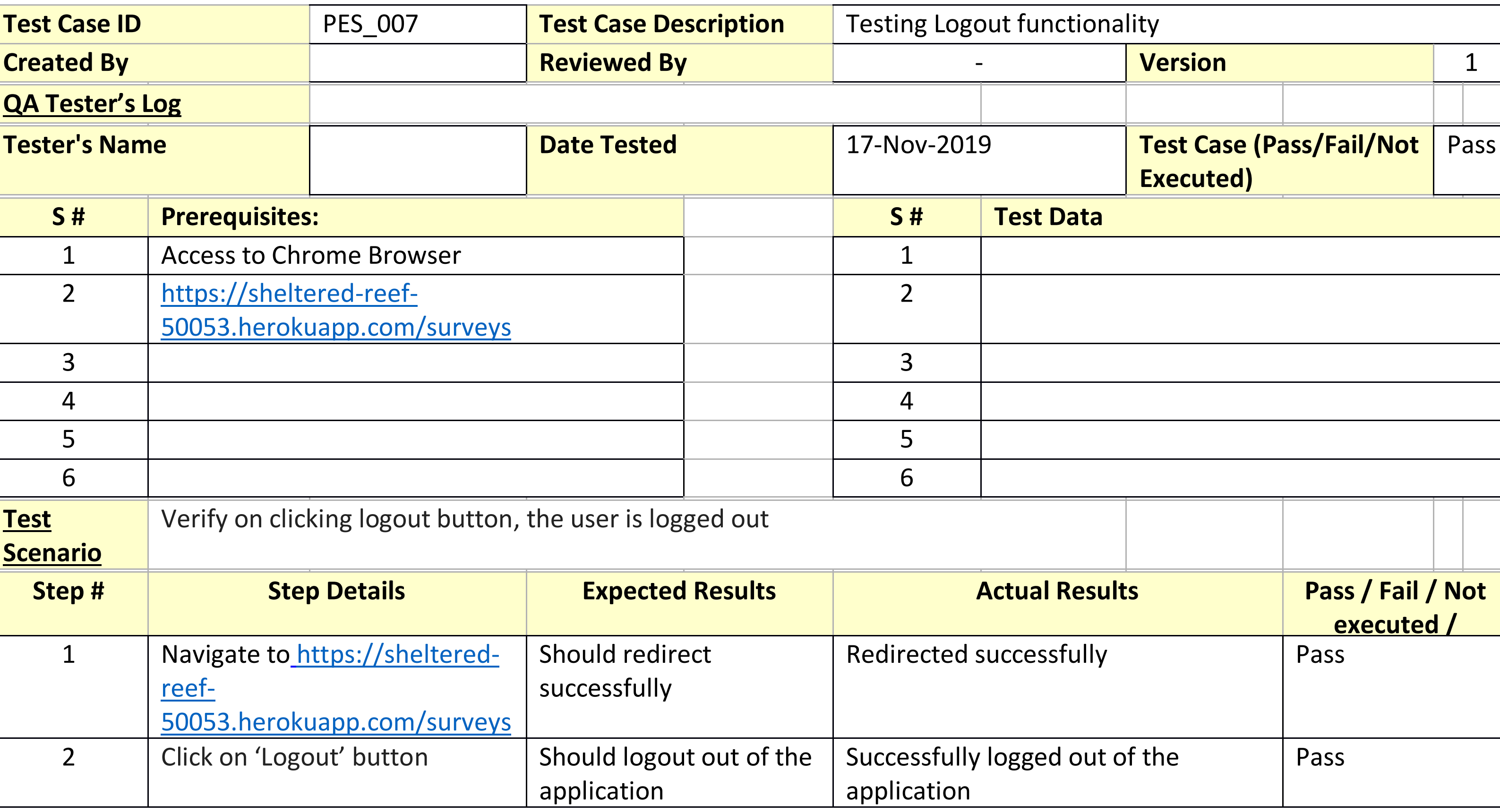
Test Scenario	Adding credits by clicking on Add Credits			
Step #	**Step Details**	**Expected Results**	**Actual Results**	**Pass / Fail / Not**
1	Navigate to https://sheltered-reef-50053.herokuapp.com/surveys	Should redirect successfully	Redirected successfully	Pass
2	Click on 'Add Credits'	Should ask to enter card details	Opened card details page	Pass
3	Enter email, card no, expiry month and year and CVC	Enter details	Entered details	Pass
4	Click on Pay	Should increment credits	Credits incremented	Pass

Test Case ID	PES_006	**Test Case Description**	Adding Credits through Stripe gateway without entering card details		
Created By		**Reviewed By**	-	**Version**	1
QA Tester's Log					
Tester's Name		**Date Tested**	17-Nov-2019	**Test Case (Pass/Fail/Not Executed)**	Pass

S #	**Prerequisites:**	**S #**	**Test Data**
1	Access to Chrome Browser	1	Email – wdawda@awdawd.com
2	https://sheltered-reef-50053.herokuapp.com/	2	Card number – **** **** **** ****
3		3	Expiry date – 09/20
4		4	CVC - 123

Test Scenario	Adding credits by clicking on Add Credits

Step #	**Step Details**	**Expected Results**	**Actual Results**	**Pass / Fail / Not executed /**
1	Navigate to https://sheltered-reef-50053.herokuapp.com/surveys	Should redirect successfully	Redirected successfully	Pass
2	Click on 'Add Credits'	Should ask to enter card details	Opened card details page	Pass
3	Did not enter email, card no, expiry month and year and CVC	Details not entered	Details not entered	Pass
4	Click on Pay	Should not do any transaction and credit will not be incremented	Did not do any transaction and credit not incremented	Pass



Test Case ID	PES_007	**Test Case Description**	Testing Logout functionality		
Created By		**Reviewed By**	-	**Version**	1
QA Tester's Log					
Tester's Name		**Date Tested**	17-Nov-2019	**Test Case (Pass/Fail/Not Executed)**	Pass

S #	**Prerequisites:**	**S #**	**Test Data**
1	Access to Chrome Browser	1	
2	https://sheltered-reef-50053.herokuapp.com/surveys	2	
3		3	
4		4	
5		5	
6		6	

Test Scenario	Verify on clicking logout button, the user is logged out

Step #	**Step Details**	**Expected Results**	**Actual Results**	**Pass / Fail / Not executed /**
1	Navigate to https://sheltered-reef-50053.herokuapp.com/surveys	Should redirect successfully	Redirected successfully	Pass
2	Click on 'Logout' button	Should logout out of the application	Successfully logged out of the application	Pass

Test Case ID	PES_008	**Test Case Description**	Testing by responding to feedback form received		
Created By		**Reviewed By**	-	**Version**	1
QA Tester’s Log					
Tester's Name		**Date Tested**	17-Nov-2019	**Test Case (Pass/Fail/Not Executed)**	Pass

S #	**Prerequisites:**	**S #**	**Test Data**
1	Access to Chrome Browser	1	E-mail id = vijay@gmail.com
2	Log into your registered email account	2	Pass = dawdawd
3		3	
4		4	

Test Scenario	Verify while responding to the feedback, the response is recorded

Step #	**Step Details**	**Expected Results**	**Actual Results**	**Pass / Fail / Not executed /**
1	Navigate to Gmail account	Logged into account	Logged into account	Pass
2	Respond to received feedback form	Should able to click yes or no	Response recorded	Pass
3	Redirected to page saying ‘thank you for voting’	Redirect to the message page	Redirected to the message page successfully	Pass

CONCLUSION

1. The objective of the project was to solve the difficulties faced by the CRM's who have to send individual emails to each customer.
2. This has been solved with our application as it provides a paid service to end users which will enable them to send bulk emails for collecting feedback of their own electronic products.
3. In addition, the whole application has been deployed on Heroku platform. So in the future, if the user requests for any changes, it can be easily done through git version control.

FUTURE ENHANCEMENT

1. Lot of features and functionalities can be integrated in our project. Firstly, we can group certain customers into one batch so that we can send bulk emails in one shot.
2. Secondly, we can build a customized Mobile app which will make user more convenient to use.

BIBLIOGRAPHY

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2. https://www.edx.org/
3. https://www.npmjs.com/
4. https://developers.google.com/identity/protocols/OAuth2
5. https://stripe.com/docs/api
6. https://devcenter.heroku.com/categories/nodejs-support
7. https://sendgrid.com/docs/for-developers/
8. https://docs.mongodb.com/cloud/