ITIS - 6177 SYSTEM INTEGRATION
Team "Smart-Mart"

Team Members:

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Pavani Velichati

Application URL

Download the project files from :

- **Angular Frontend :** **https://github.com/KishanSingh77/Smart-Mart-Angular-Frontend**
- **Node Js Backend :** **https://github.com/KishanSingh77/Smart-Mart-Backend-Node.JS**

Frontend URL :

Home : http://localhost:4200/
Customer Login :http://localhost:4200/app-login
Vendor Login : http://localhost:4200/vendorLogin
Cart : http://localhost:4200/cart   (Future Work)
Orders : http://localhost:4200/orders
Payments : http://localhost:4200/app-payments

Backend URL :

Products : http://localhost:3000/products
Orders : http://localhost:3000/orders

➔ **Angular Frontend**

1. Run npm install
2. Npm start
3. Hit localhost:4200

- ➔ **Node js Backend :**

1. Run npm install
2. Npm start

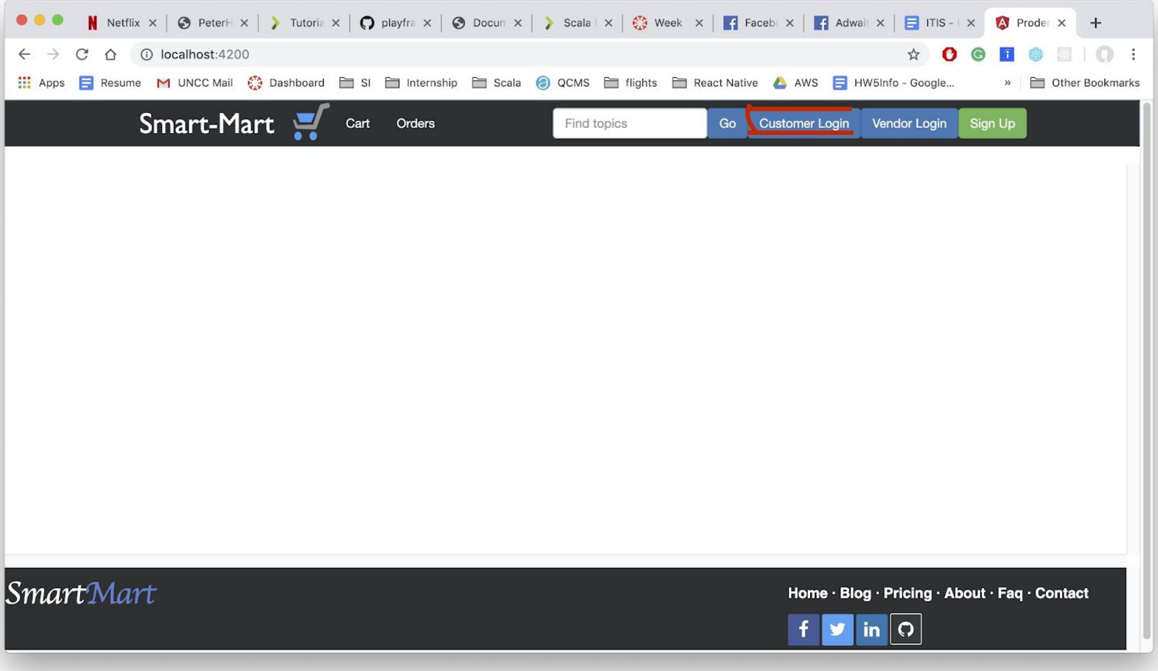
- ➔ **There are three major flows that the application concerns itself with** :

1. Customer Login -> product selection -> order placement -> checking orders from past
2. Vendor Login ->create products -> see refreshed list of products
3. Customer login -> Login with facebook->Enter credentials -> Click Login

The Explanation of three major flows are as follows:

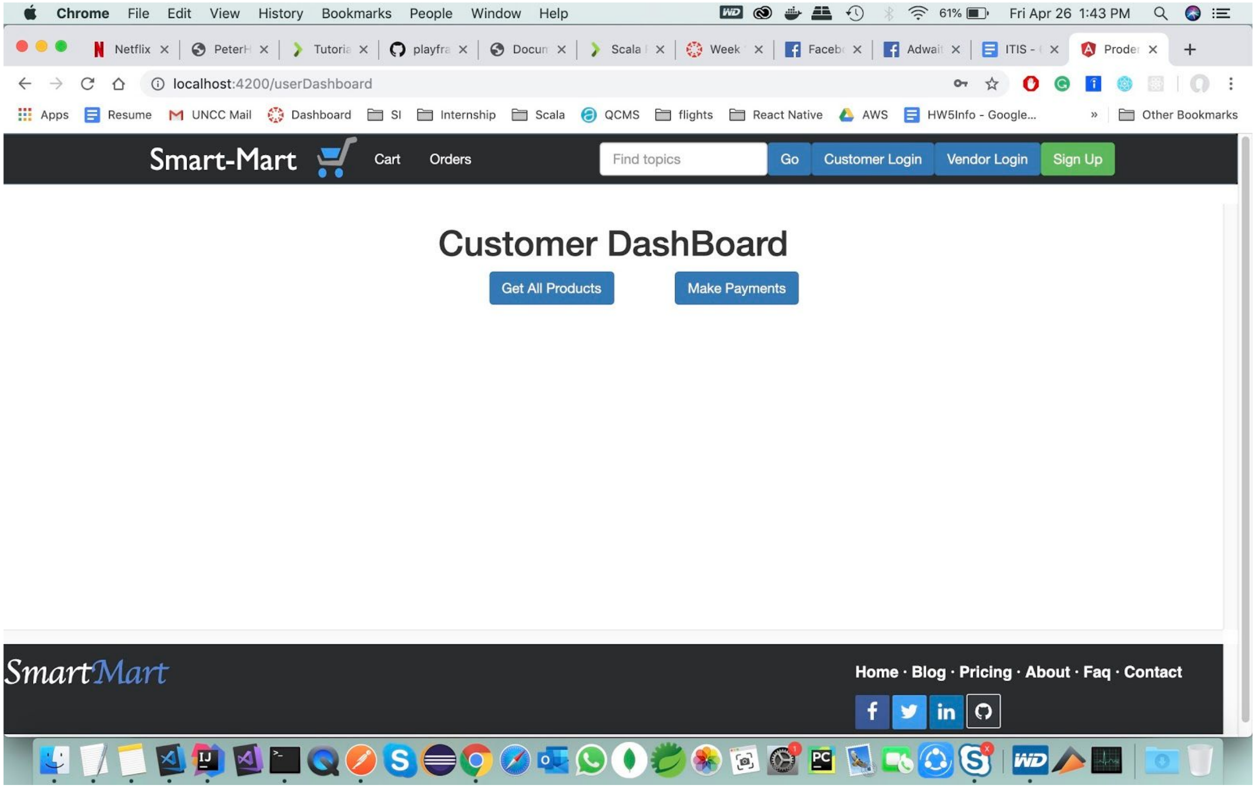
1. Customer Login and order placement flow :

- Click on Customer Login .

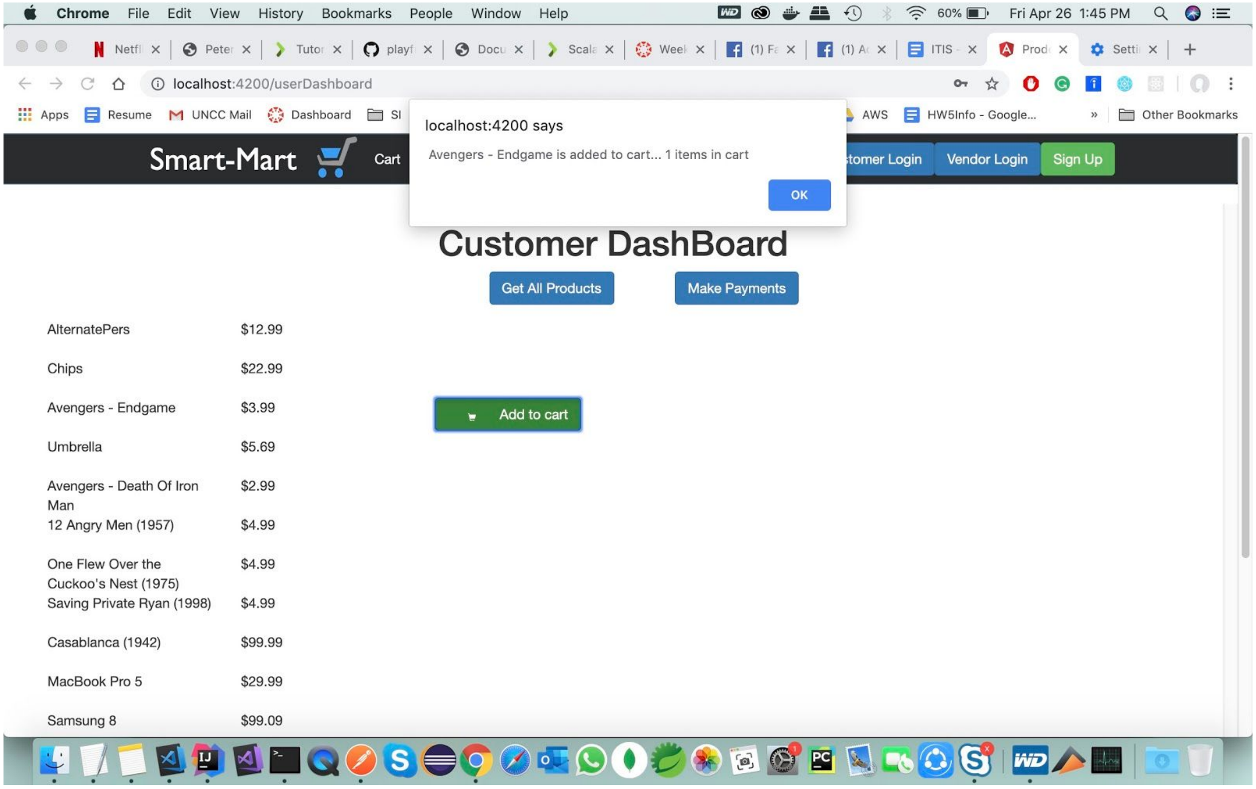


- You can enter the following credentials to get into the system

  Email : eric.asch@uncc.edu
  Password : eric@11



1. Click on the “**Get All products**” Button.
2. Add items to cart from the list by choosing the “**Add to Cart Button**” which is located on the right of each product.

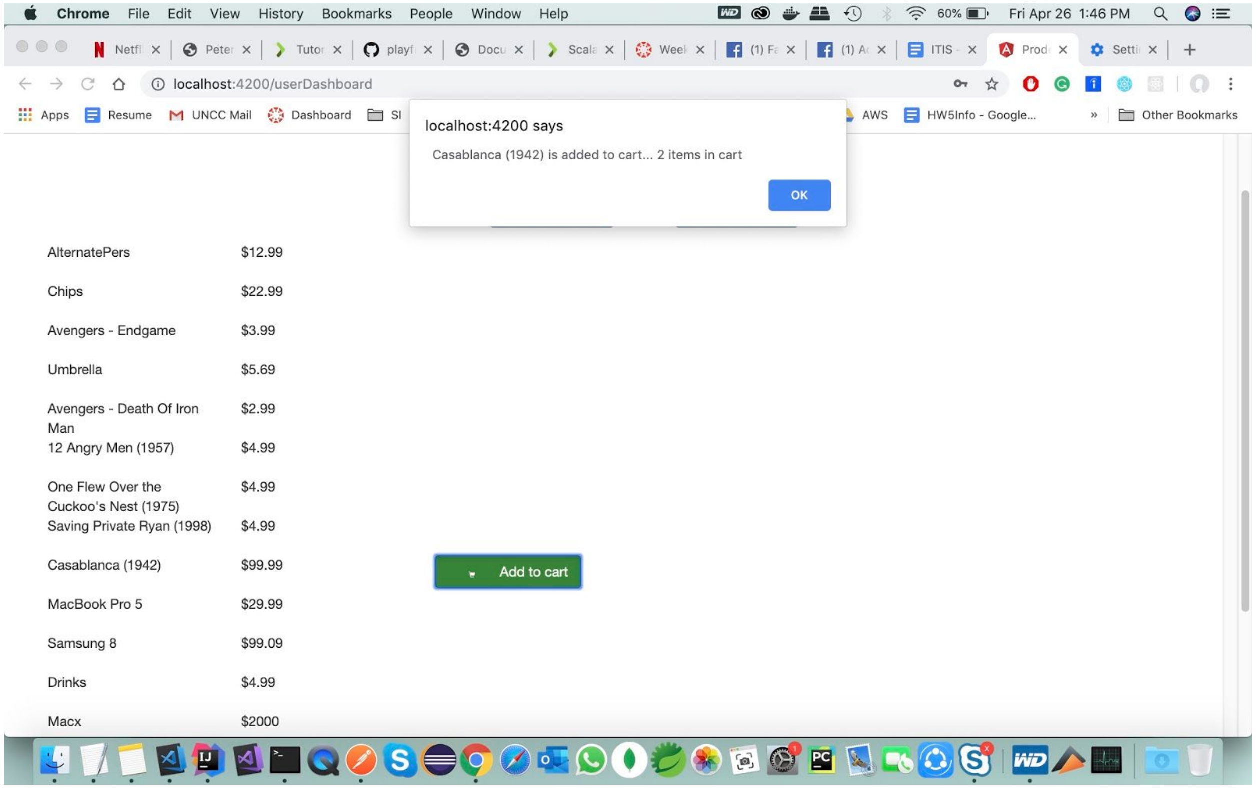

Chrome File Edit View History Bookmarks People Window Help
60% Fri Apr 26 1:45 PM
localhost:4200/userDashboard
Apps Resume UNCC Mail Dashboard AWS HW5Info - Google... Other Bookmarks
Smart-Mart
Cart
stomer Login
Vendor Login
Sign Up
OK
Get All Products
Make Payments
Add to cart

localhost:4200 says

Avengers - Endgame is added to cart... 1 items in cart

Customer DashBoard

AlternatePers	$12.99
Chips	$22.99
Avengers - Endgame	$3.99
Umbrella	$5.69
Avengers - Death Of Iron Man	$2.99
12 Angry Men (1957)	$4.99
One Flew Over the Cuckoo's Nest (1975)	$4.99
Saving Private Ryan (1998)	$4.99
Casablanca (1942)	$99.99
MacBook Pro 5	$29.99
Samsung 8	$99.09


Chrome File Edit View History Bookmarks People Window Help
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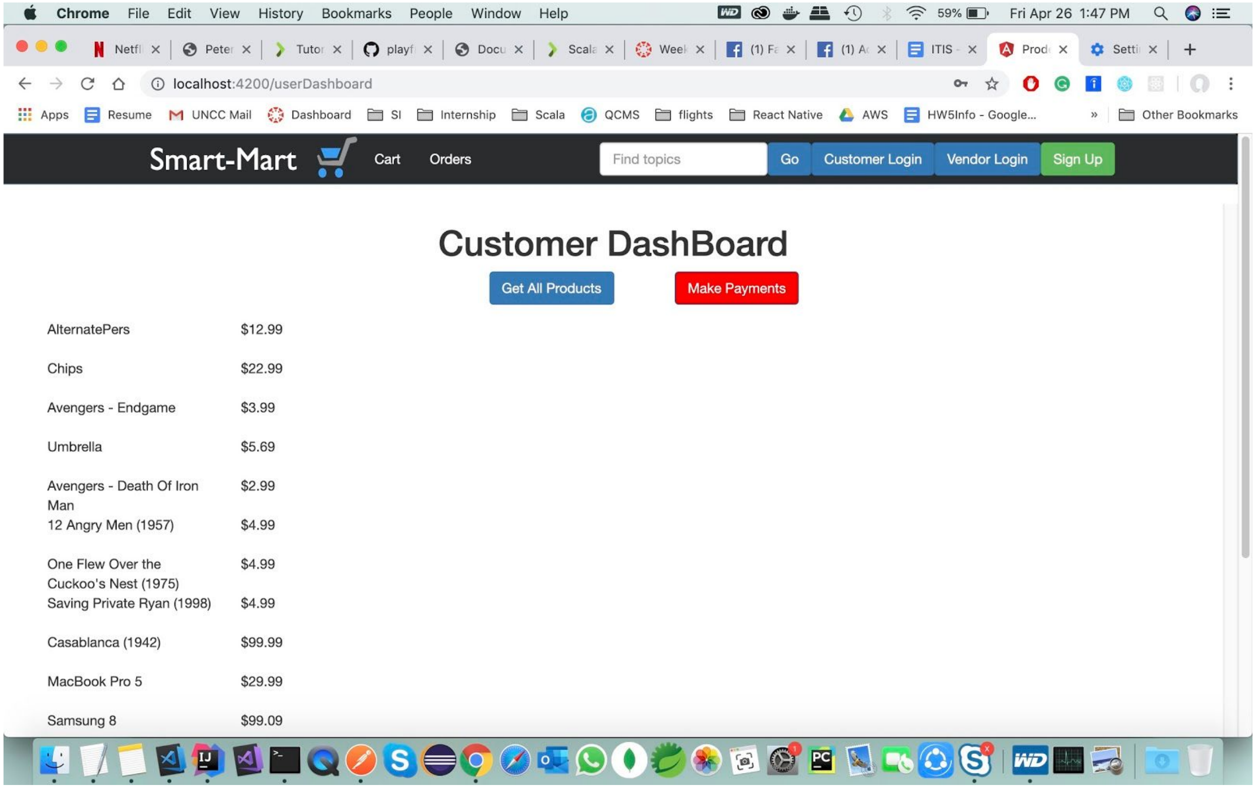
localhost:4200/userDashboard
Apps Resume UNCC Mail Dashboard AWS HW5Info - Google... Other Bookmarks
OK
Add to cart

localhost:4200 says

Casablanca (1942) is added to cart... 2 items in cart

AlternatePers	$12.99
Chips	$22.99
Avengers - Endgame	$3.99
Umbrella	$5.69
Avengers - Death Of Iron Man	$2.99
12 Angry Men (1957)	$4.99
One Flew Over the Cuckoo's Nest (1975)	$4.99
Saving Private Ryan (1998)	$4.99
Casablanca (1942)	$99.99
MacBook Pro 5	$29.99
Samsung 8	$99.09
Drinks	$4.99
Macx	$2000

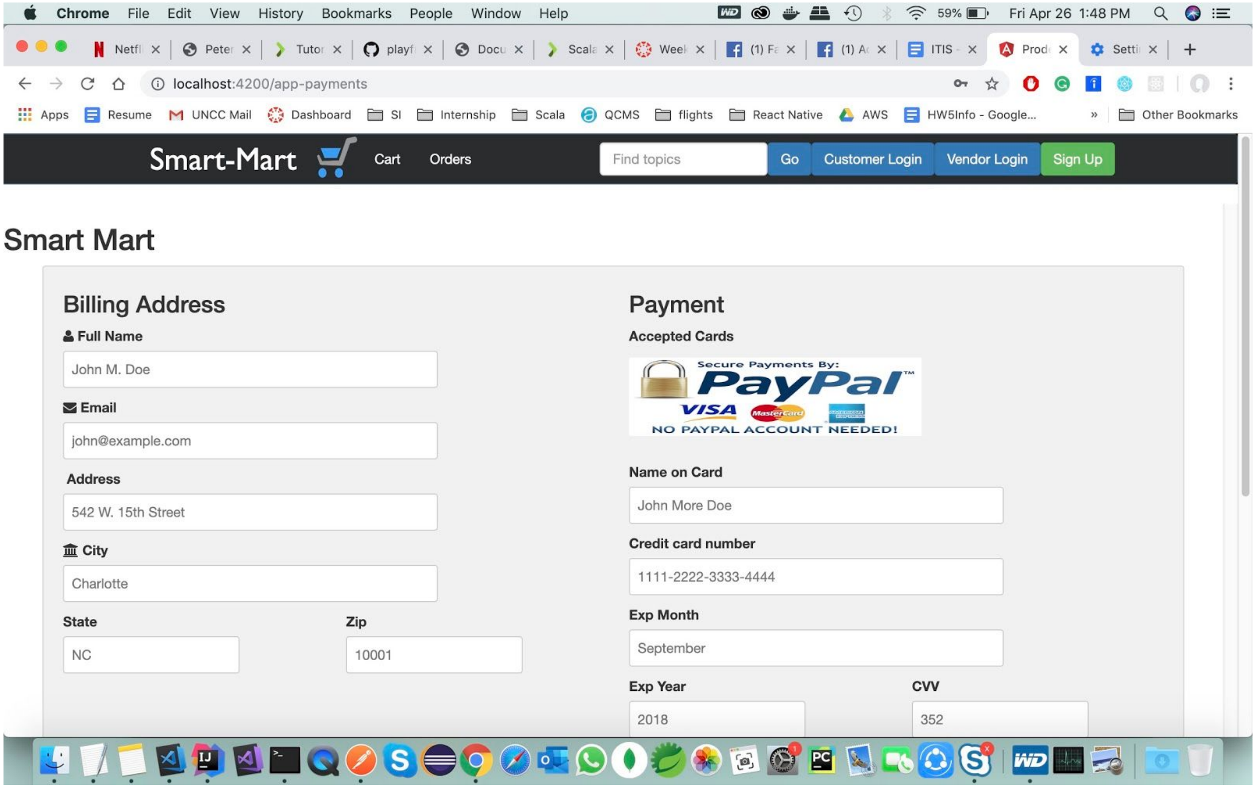
Click on make payments button that takes you to the payment page



Customer DashBoard

AlternatePers	$12.99
Chips	$22.99
Avengers - Endgame	$3.99
Umbrella	$5.69
Avengers - Death Of Iron Man	$2.99
12 Angry Men (1957)	$4.99
One Flew Over the Cuckoo's Nest (1975)	$4.99
Saving Private Ryan (1998)	$4.99
Casablanca (1942)	$99.99
MacBook Pro 5	$29.99
Samsung 8	$99.09

Make Payment View :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59% Fri Apr 26 1:48 PM
localhost:4200/app-payments
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Smart-Mart
Cart
Orders
Find topics
Go
Customer Login
Vendor Login
Sign Up

Smart Mart

Billing Address

Full Name: John M. Doe

Email: john@example.com

Address: 542 W. 15th Street

City: Charlotte

State: NC

Zip: 10001

Payment

Accepted Cards

Secure Payments By: PayPal™
VISA MasterCard
NO PAYPAL ACCOUNT NEEDED!

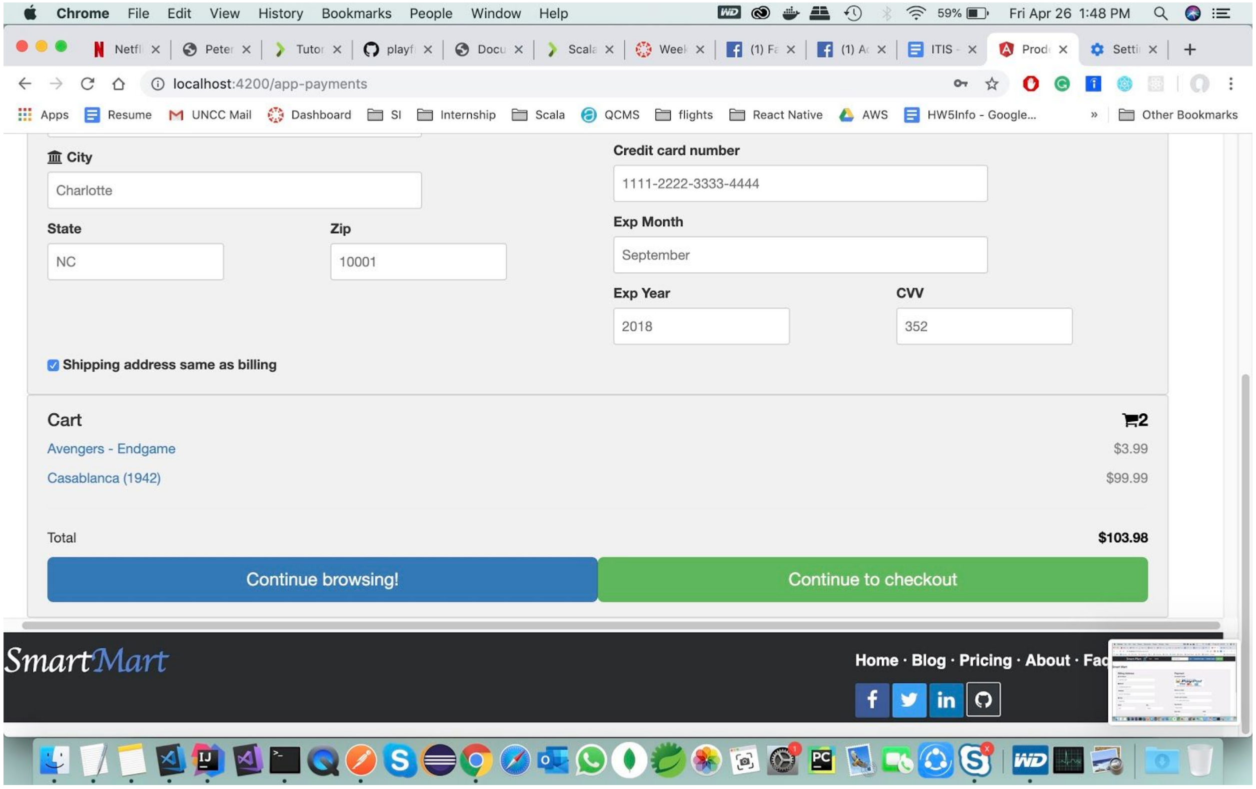
Name on Card: John More Doe

Credit card number: 1111-2222-3333-4444

Exp Month: September

Exp Year: 2018

CVV: 352


Chrome File Edit View History Bookmarks People Window Help
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localhost:4200/app-payments
Apps Resume UNCC Mail Dashboard SI Internship Scala QCMS flights React Native AWS HW5Info - Google... Other Bookmarks

City: Charlotte

State: NC

Zip: 10001

Credit card number: 1111-2222-3333-4444

Exp Month: September

Exp Year: 2018

CVV: 352

☑ Shipping address same as billing

Cart	2
Avengers - Endgame	$3.99
Casablanca (1942)	$99.99
Total	$103.98

Continue browsing!
Continue to checkout
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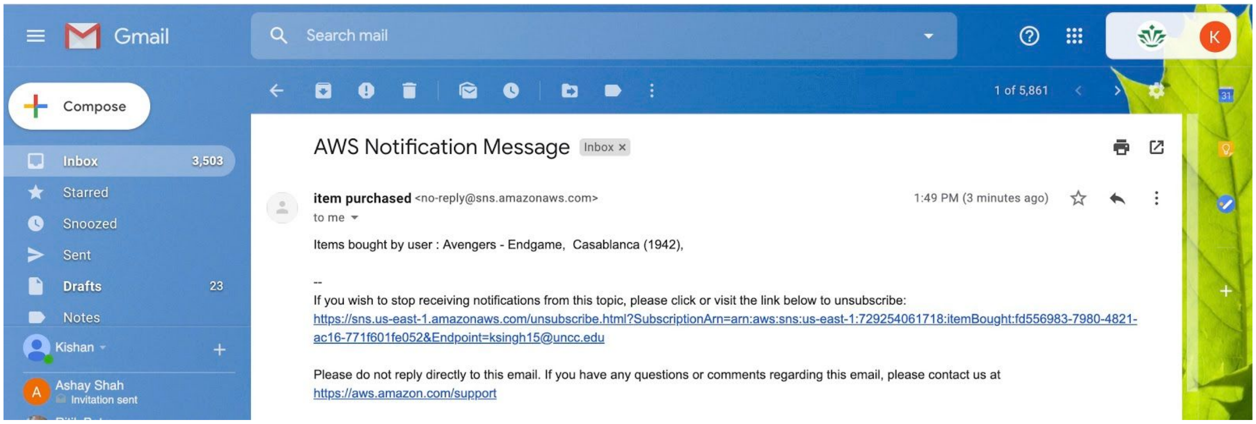
Dummy details have been prefilled in the form, so we just need to add the details of the final final product or deciding to continue browsing other products.

Click Continue to Checkout :

The order is finalised and a mail is triggered to the vendor and the customer stating the product bought :



AWS Notification Message

item purchased <no-reply@sns.amazonaws.com>
to me

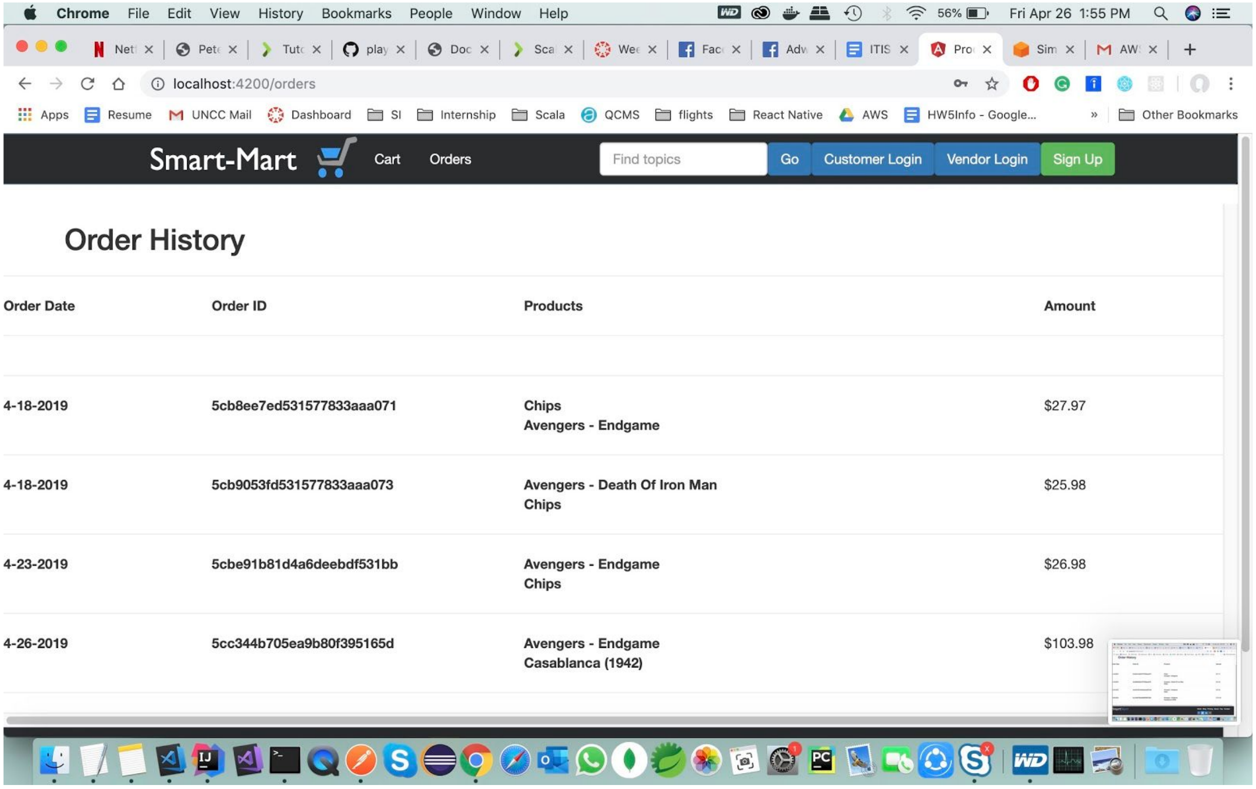
1:49 PM (3 minutes ago)

Items bought by user : Avengers - Endgame, Casablanca (1942),

--
If you wish to stop receiving notifications from this topic, please click or visit the link below to unsubscribe:
https://sns.us-east-1.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:us-east-1:729254061718:itemBought:fd556983-7980-4821-ac16-771f601fe052&Endpoint=ksingh15@uncc.edu

Please do not reply directly to this email. If you have any questions or comments regarding this email, please contact us at https://aws.amazon.com/support

Click on the checkout button takes you to the orders page where in the list of past orders are displayed.



Order History

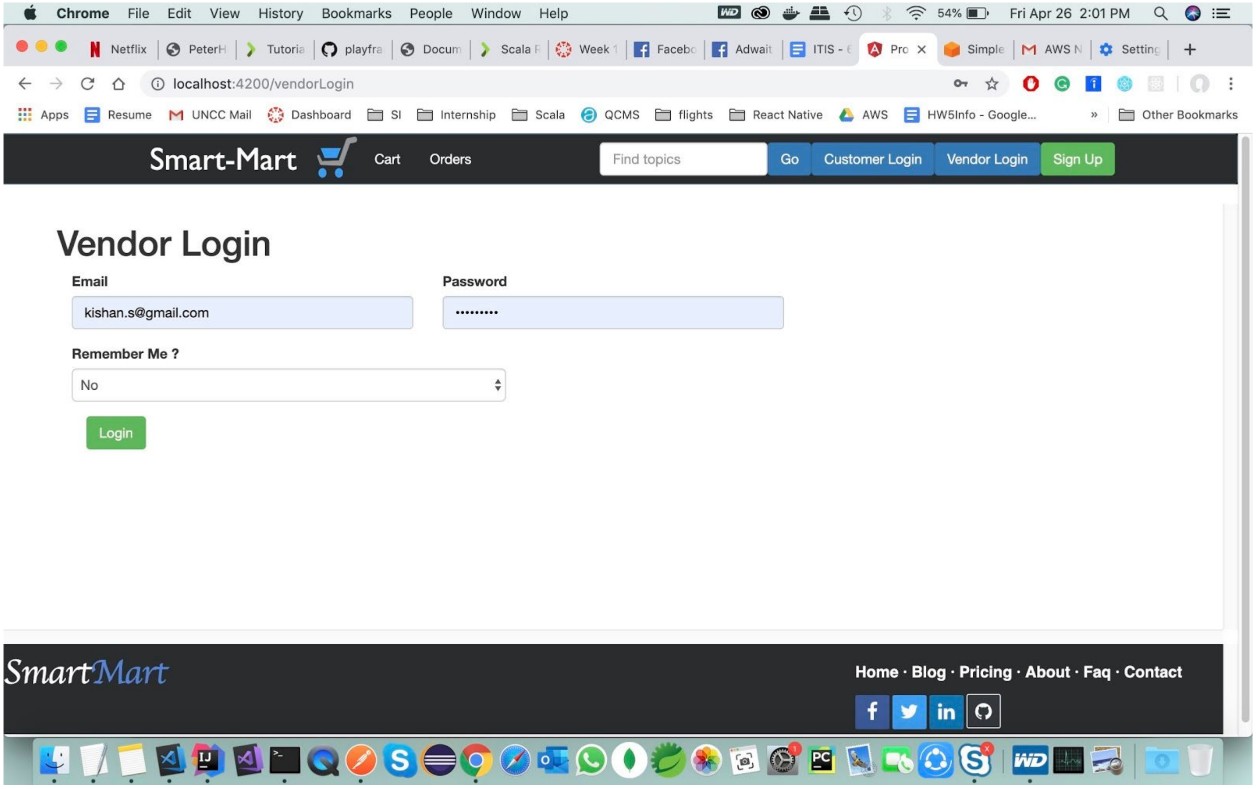
Order Date	Order ID	Products	Amount
4-18-2019	5cb8ee7ed531577833aaa071	Chips Avengers - Endgame	$27.97
4-18-2019	5cb9053fd531577833aaa073	Avengers - Death Of Iron Man Chips	$25.98
4-23-2019	5cbe91b81d4a6deebdf531bb	Avengers - Endgame Chips	$26.98
4-26-2019	5cc344b705ea9b80f395165d	Avengers - Endgame Casablanca (1942)	$103.98

The order page has details of every past product that was ordered along with the unique ID that was generated by mongoose and the date the order was placed.

2. Vendor Login :

Vendor can be logged into the system using following credentials :

Email : kishan.s@gmail.com
Password : Magna1234



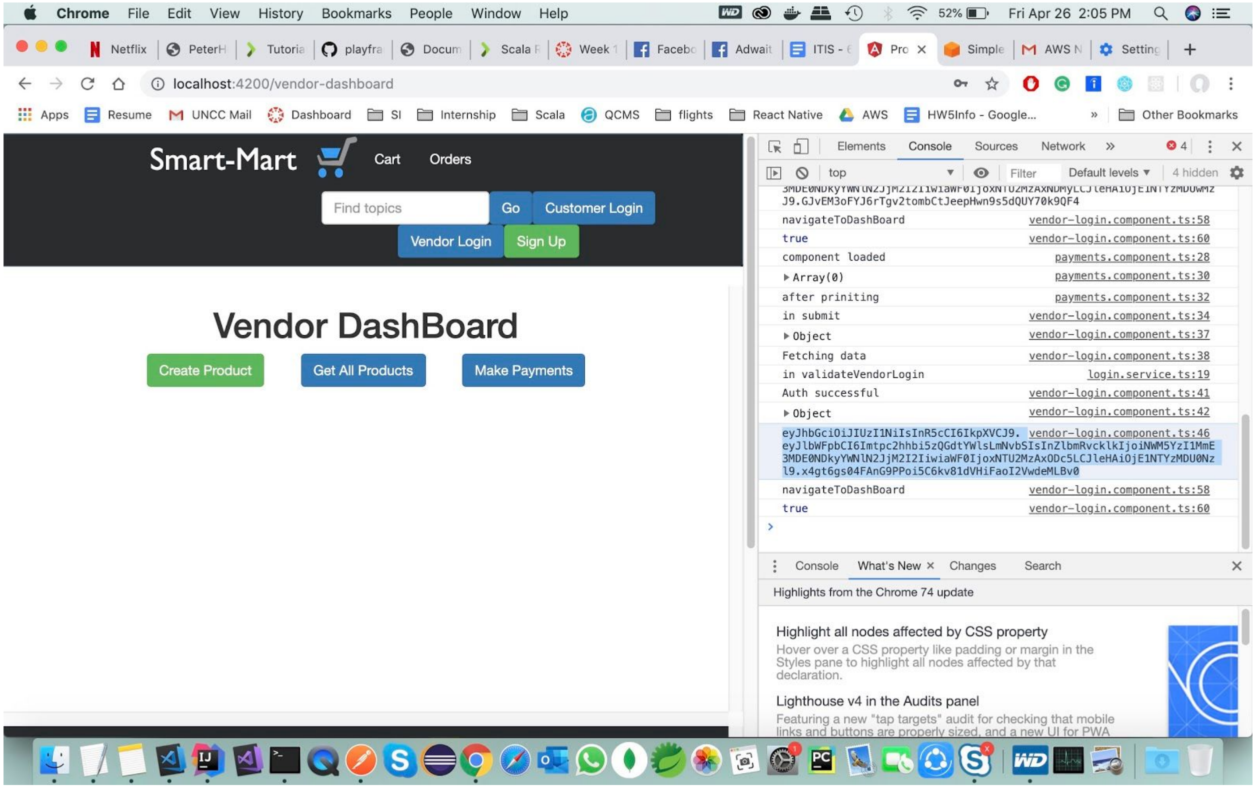
Vendor Login

Email: kishan.s@gmail.com

Password: •••••••••

Remember Me ? No

Click the login button that takes you through a successful validation via JWT token authentication.



```
3MDE0NDkyYWNlN2JjM2I2IiwiaWF0IjoxNTU2MzAxNDMyLCJleHAiOjE1NTYzMDUwMz
J9.GJvEM3oFYJ6rTgv2tombCtJeepHwn9s5dQUY70k9QF4
navigateToDashBoard                        vendor-login.component.ts:58
true                                       vendor-login.component.ts:60
component loaded                               payments.component.ts:28
▶ Array(0)                                     payments.component.ts:30
after priniting                                payments.component.ts:32
in submit                                  vendor-login.component.ts:34
▶ Object                                   vendor-login.component.ts:37
Fetching data                              vendor-login.component.ts:38
in validateVendorLogin                             login.service.ts:19
Auth successful                            vendor-login.component.ts:41
▶ Object                                   vendor-login.component.ts:42
eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.      vendor-login.component.ts:46
eyJlbWFpbCI6Imtpc2hhbi5zQGdtYWlsLmNvbSIsInZlbmRvcklkIjoiNWM5YzI1MmE
3MDE0NDkyYWNlN2JjM2I2IiwiaWF0IjoxNTU2MzAxODc5LCJleHAiOjE1NTYzMDU0Nz
l9.x4gt6gs04FAnG9PPoi5C6kv81dVHiFaoI2VwdeMLBv0
navigateToDashBoard                        vendor-login.component.ts:58
true                                       vendor-login.component.ts:60
>
```

Highlights from the Chrome 74 update

Highlight all nodes affected by CSS property

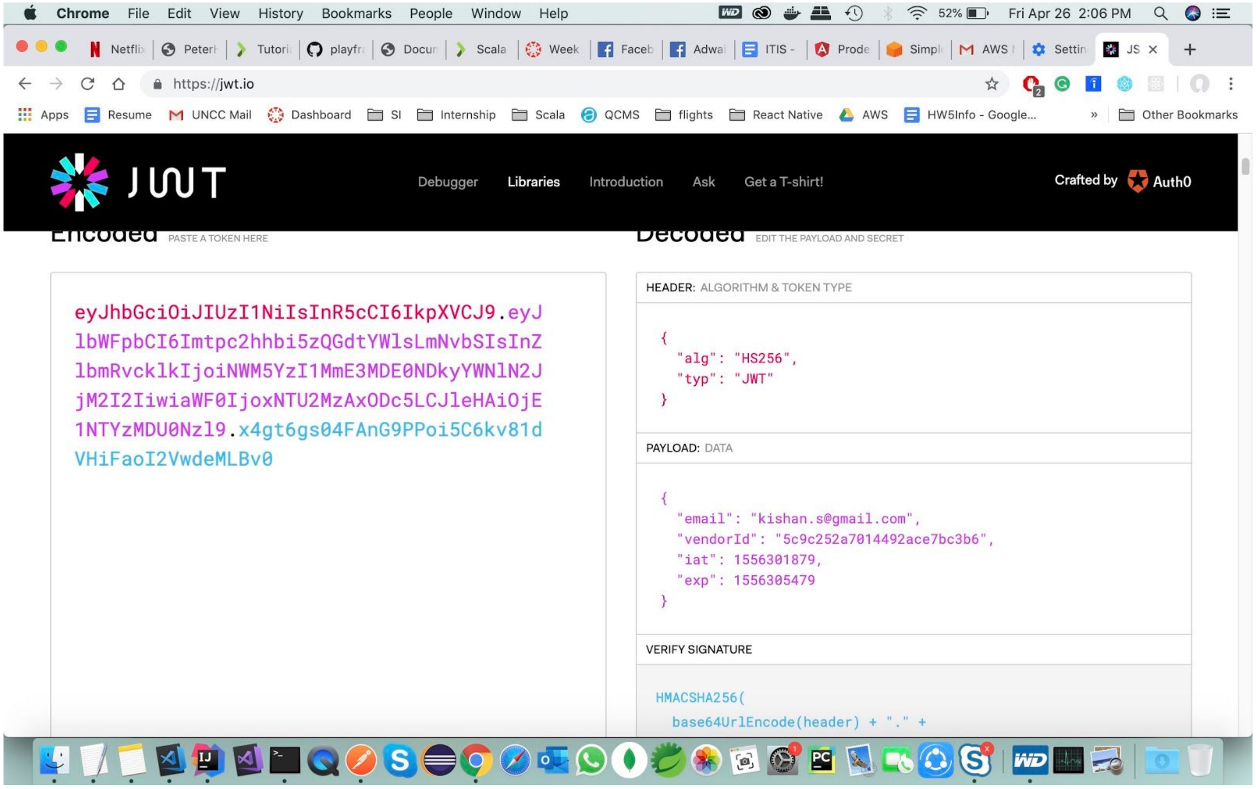
Hover over a CSS property like padding or margin in the Styles pane to highlight all nodes affected by that declaration.

Lighthouse v4 in the Audits panel

Featuring a new "tap targets" audit for checking that mobile links and buttons are properly sized, and a new UI for PWA

To further enquire what really happened behind the scenes, lets hit up https://jwt.io/.

Now paste the hash generated from console into the encoded textbox :



Encoded PASTE A TOKEN HERE

```
eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ
lbWFpbCI6Imtpc2hhbi5zQGdtYWlsLmNvbSIsInZ
lbmRvcklkIjoiNWM5YzI1MmE3MDE0NDkyYWNlN2J
jM2I2IiwiaWF0IjoxNTU2MzAxODc5LCJleHAiOjE
1NTYzMDU0Nzl9.x4gt6gs04FAnG9PPoi5C6kv81d
VHiFaoI2VwdeMLBv0
```

Decoded EDIT THE PAYLOAD AND SECRET

HEADER: ALGORITHM & TOKEN TYPE

```
{
  "alg": "HS256",
  "typ": "JWT"
}
```

PAYLOAD: DATA

```
{
  "email": "kishan.s@gmail.com",
  "vendorId": "5c9c252a7014492ace7bc3b6",
  "iat": 1556301879,
  "exp": 1556305479
}
```

VERIFY SIGNATURE

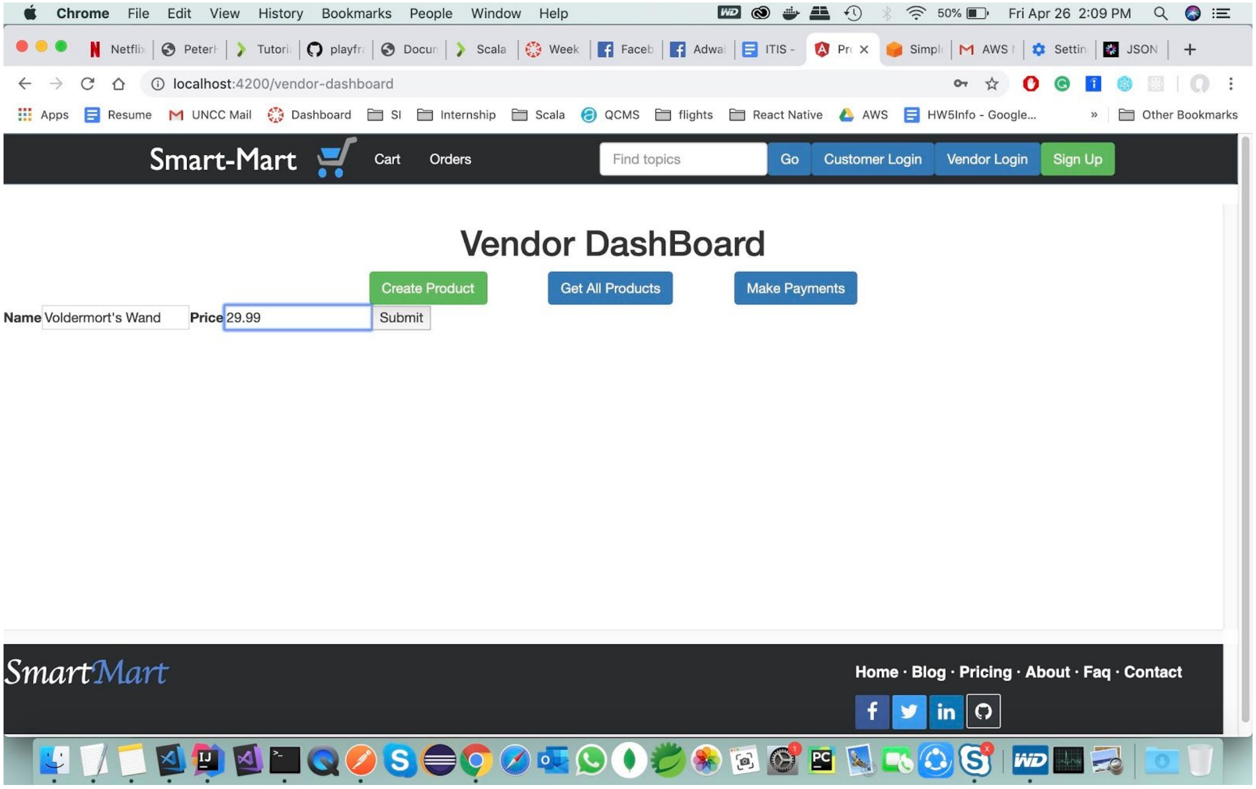
```
HMACSHA256(
  base64UrlEncode(header) + "." +
```

The payload data now shows you, the used credentials of kishan.s@gmail.com with the expiry details and other vendor details.

Similar authentication is also in place for the customer login but has been omitted for the purpose of this submission for simplicity.

We can now browse lot of functionalities on the vendor site, since they're our virtual admin.
Create products :

Click on create product on the vendor dashboard, fill out the form to your heart's wish and The product is ready!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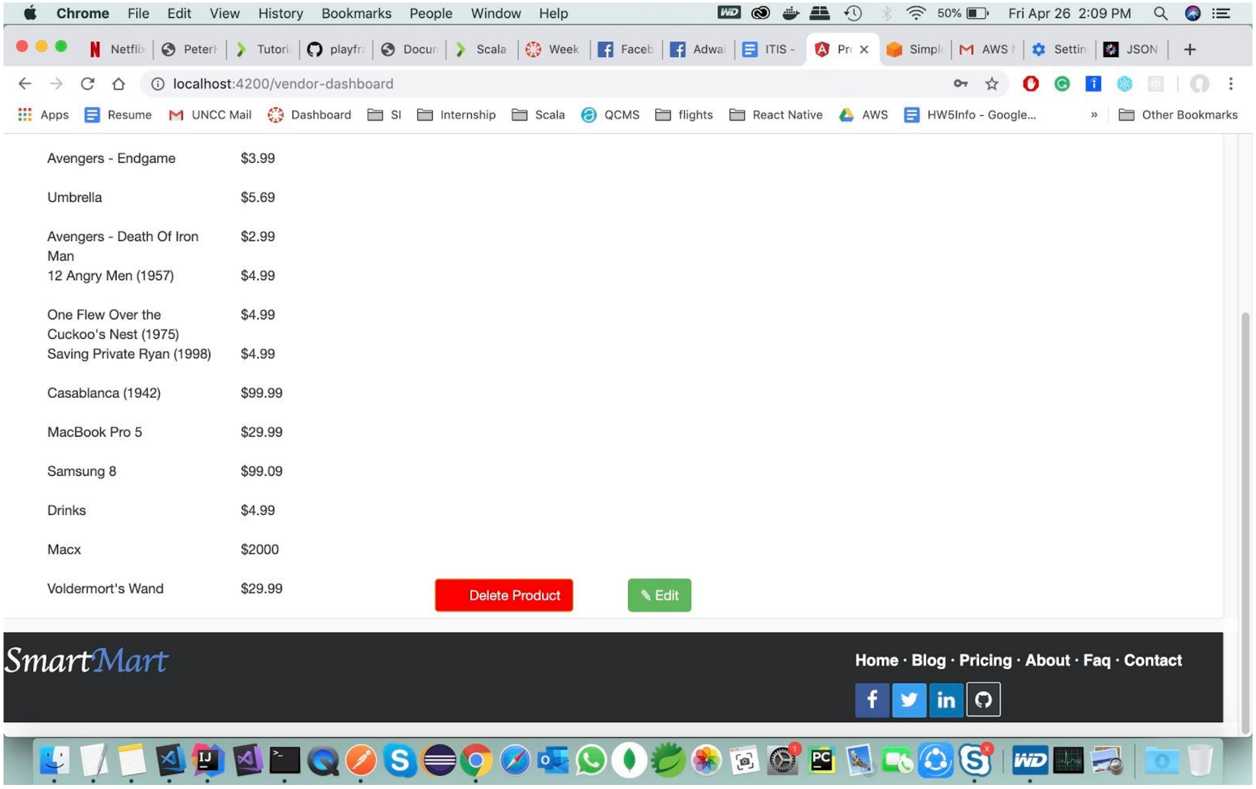
Vendor DashBoard

Create Product | Get All Products | Make Payments

Name Voldermort's Wand **Price** 29.99 Submit


Chrome File Edit View History Bookmarks People Window Help
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localhost:4200/vendor-dashboard
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Avengers - Endgame	$3.99		
Umbrella	$5.69		
Avengers - Death Of Iron Man	$2.99		
12 Angry Men (1957)	$4.99		
One Flew Over the Cuckoo's Nest (1975)	$4.99		
Saving Private Ryan (1998)	$4.99		
Casablanca (1942)	$99.99		
MacBook Pro 5	$29.99		
Samsung 8	$99.09		
Drinks	$4.99		
Macx	$2000		
Voldermort's Wand	$29.99	Delete Product	✎ Edit

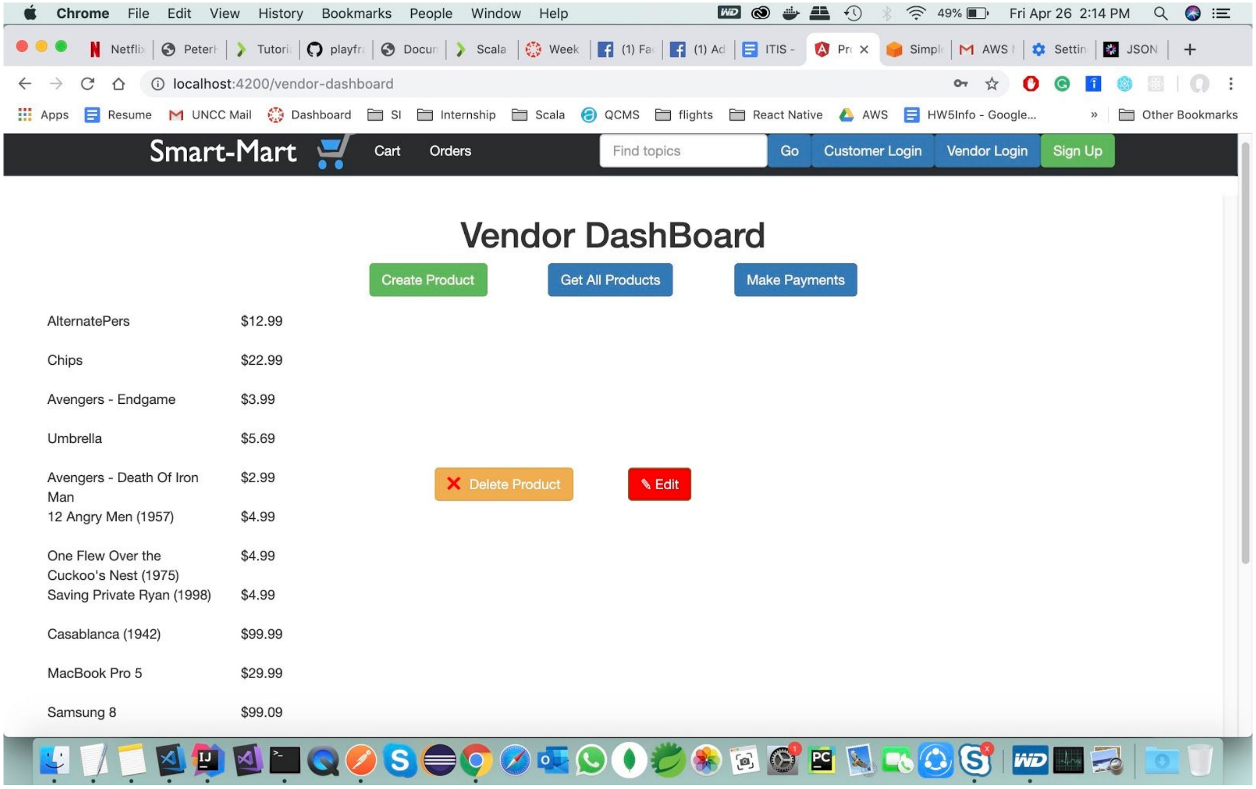
Edit products :

Lets try editing one of our products from the vendor's list .

Click on "get All products" on the vendor dashboard and give the edit button to it's right a push.

Lets take for example : **Avengers - Death Of Iron Man**

Click on the edit button to the right of the item.



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localhost:4200/vendor-dashboard
Apps Resume UNCC Mail Dashboard SI Internship Scala QCMS flights React Native AWS HW5Info - Google... Other Bookmarks
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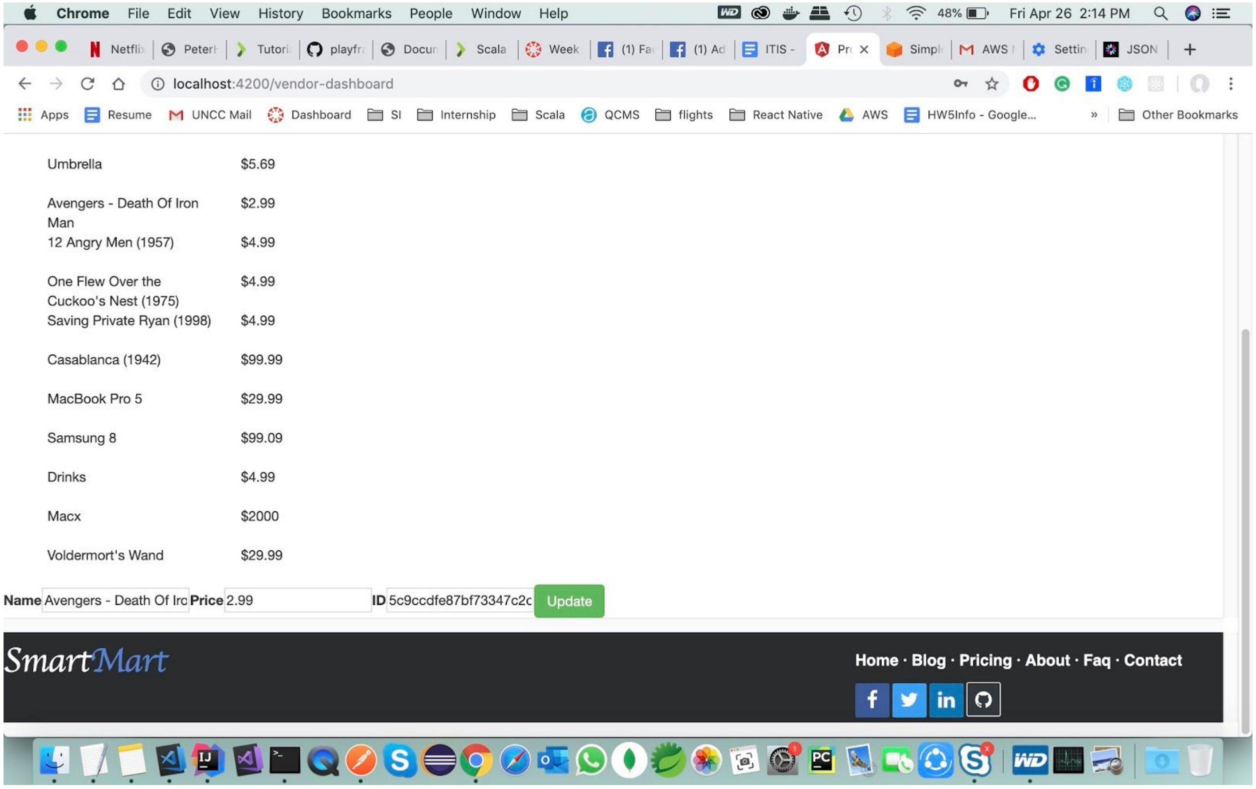
Vendor Login
Sign Up
Create Product
Get All Products
Make Payments
Delete Product
Edit

Vendor DashBoard

AlternatePers	$12.99
Chips	$22.99
Avengers - Endgame	$3.99
Umbrella	$5.69
Avengers - Death Of Iron Man	$2.99
12 Angry Men (1957)	$4.99
One Flew Over the Cuckoo's Nest (1975)	$4.99
Saving Private Ryan (1998)	$4.99
Casablanca (1942)	$99.99
MacBook Pro 5	$29.99
Samsung 8	$99.09

Traverse to the bottom of the page and try updating the contents of the item.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Umbrella	$5.69
Avengers - Death Of Iron Man	$2.99
12 Angry Men (1957)	$4.99
One Flew Over the Cuckoo's Nest (1975)	$4.99
Saving Private Ryan (1998)	$4.99
Casablanca (1942)	$99.99
MacBook Pro 5	$29.99
Samsung 8	$99.09
Drinks	$4.99
Macx	$2000
Voldermort's Wand	$29.99

Name Avengers - Death Of Irc **Price** 2.99 **ID** 5c9ccdfe87bf73347c2c Update

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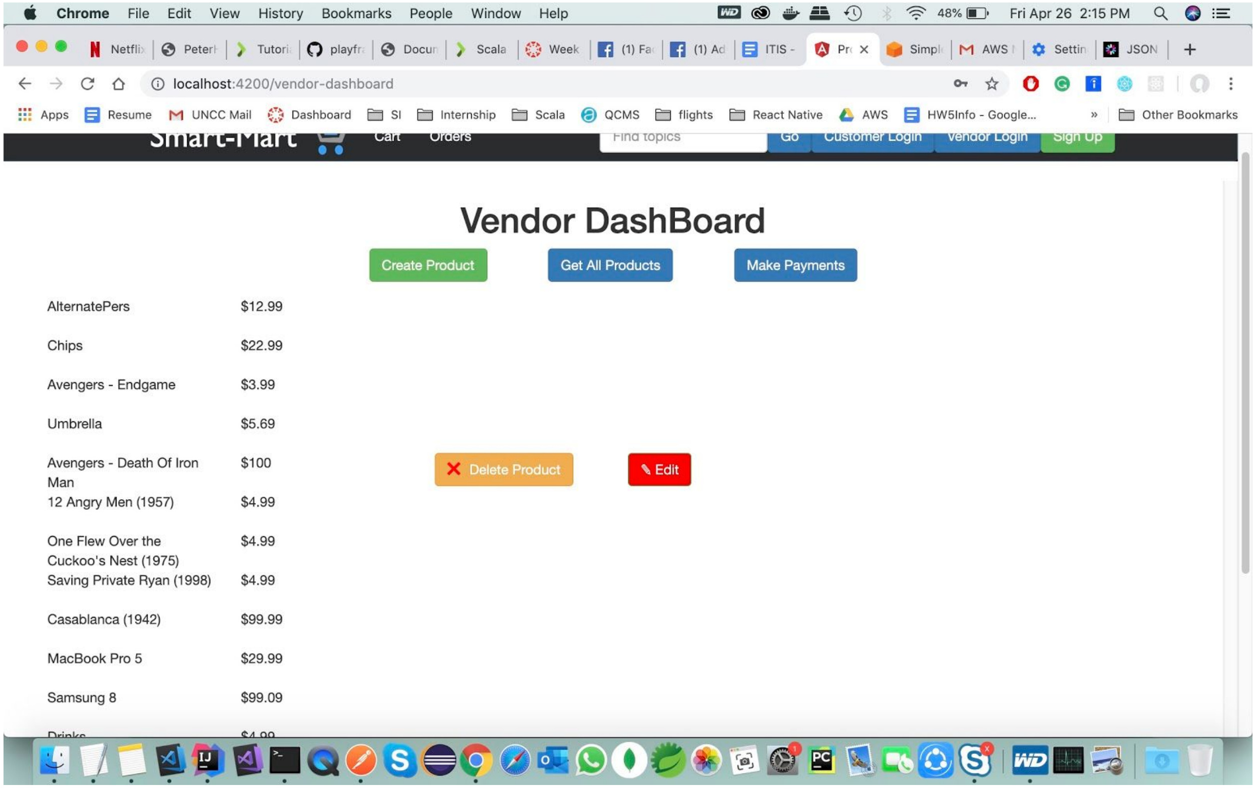
Now click update and you can see a refreshed list of products with the new item price as 100.00 $.


Chrome File Edit View History Bookmarks People Window Help
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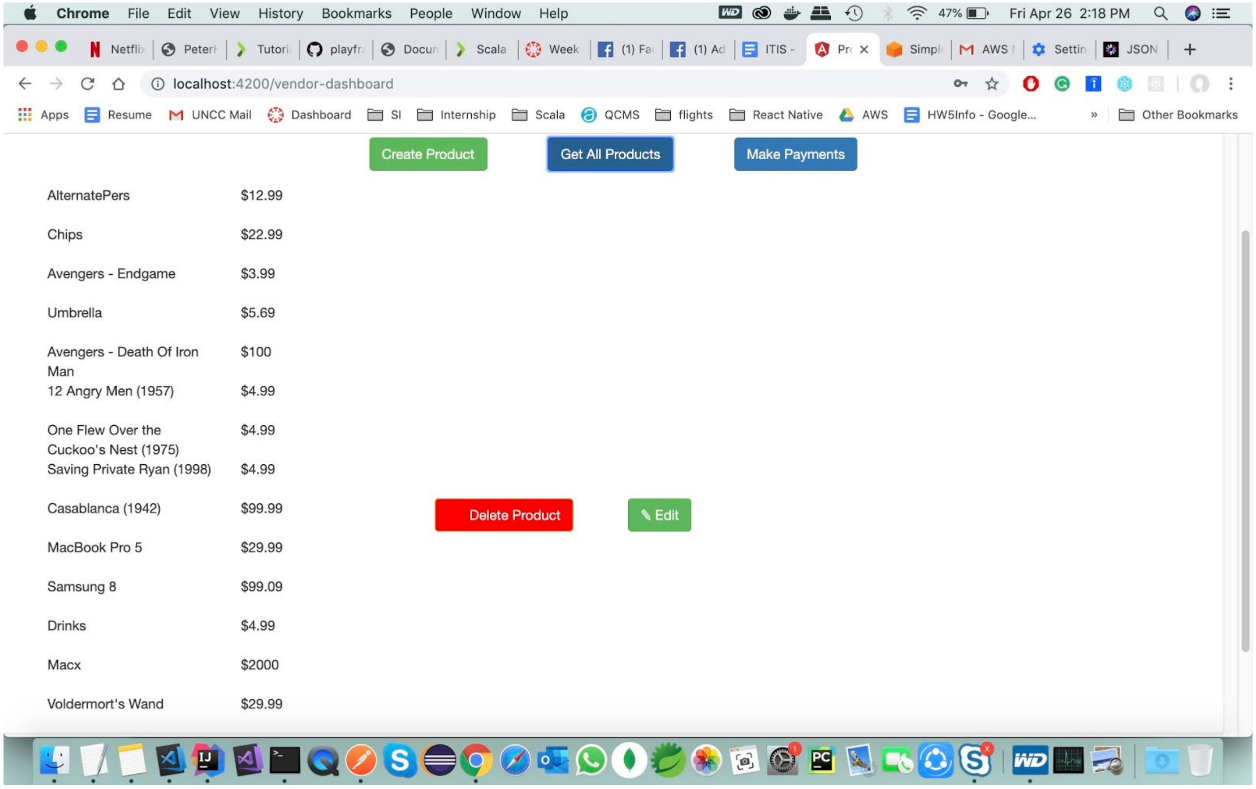
localhost:4200/vendor-dashboard
Apps Resume UNCC Mail Dashboard SI Internship Scala QCMS flights React Native AWS HW5Info - Google... Other Bookmarks
Smart-Mart
Cart
Orders
Find topics
Go
Customer Login
Vendor Login
Sign Up

Vendor DashBoard

Create Product Get All Products Make Payments

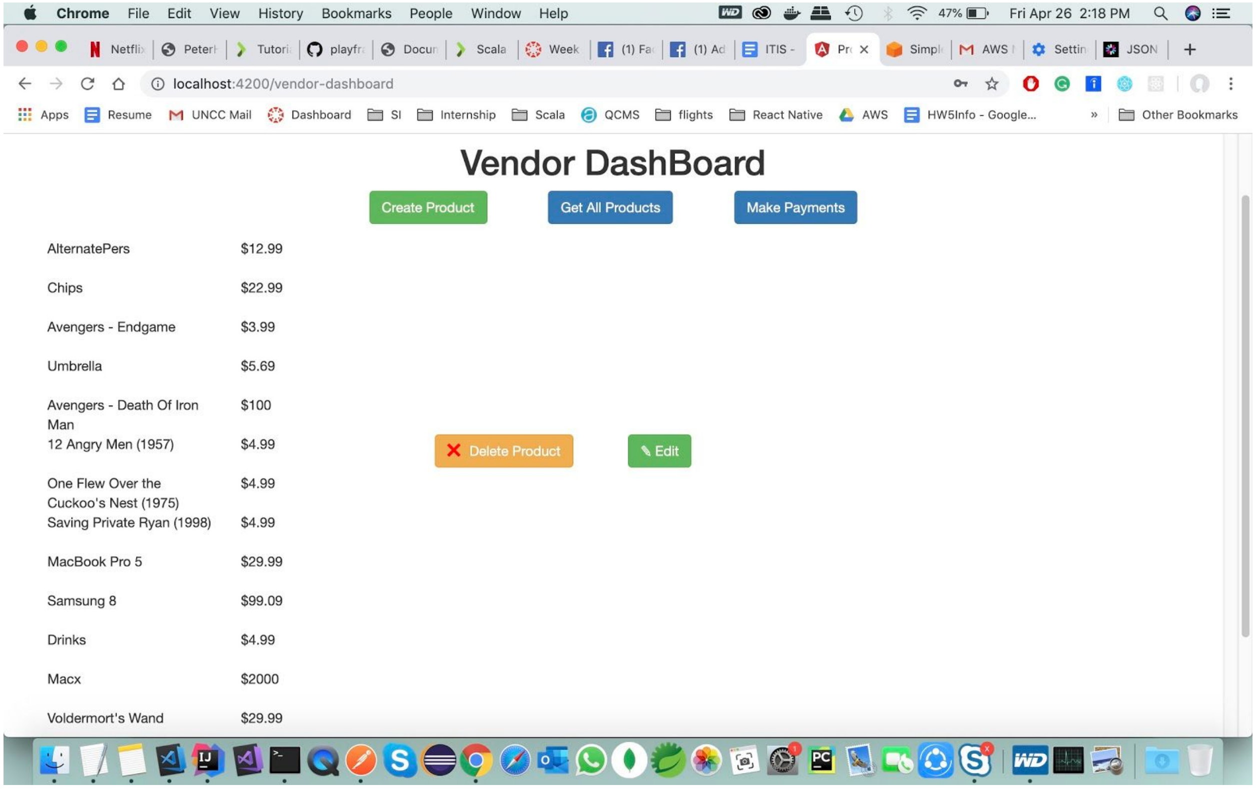
AlternatePers	$12.99
Chips	$22.99
Avengers - Endgame	$3.99
Umbrella	$5.69
Avengers - Death Of Iron Man	$100
12 Angry Men (1957)	$4.99
One Flew Over the Cuckoo's Nest (1975)	$4.99
Saving Private Ryan (1998)	$4.99
Casablanca (1942)	$99.99
MacBook Pro 5	$29.99
Samsung 8	$99.09
Drinks	$4.99

Let’s try deleting some of the items in our list :
Hover over an item : say Casablanca (1942)


Chrome File Edit View History Bookmarks People Window Help
Fri Apr 26 2:18 PM
localhost:4200/vendor-dashboard
Apps Resume UNCC Mail Dashboard SI Internship Scala QCMS flights React Native AWS HW5Info - Google... Other Bookmarks
Create Product
Get All Products
Make Payments
Delete Product
✎ Edit

AlternatePers	$12.99
Chips	$22.99
Avengers - Endgame	$3.99
Umbrella	$5.69
Avengers - Death Of Iron Man	$100
12 Angry Men (1957)	$4.99
One Flew Over the Cuckoo's Nest (1975)	$4.99
Saving Private Ryan (1998)	$4.99
Casablanca (1942)	$99.99
MacBook Pro 5	$29.99
Samsung 8	$99.09
Drinks	$4.99
Macx	$2000
Voldermort's Wand	$29.99

Click delete and the item disappears :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Apps Resume UNCC Mail Dashboard SI Internship Scala QCMS flights React Native AWS HW5Info - Google... Other Bookmarks
Create Product
Get All Products
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Delete Product
✎ Edit

Vendor DashBoard

AlternatePers	$12.99
Chips	$22.99
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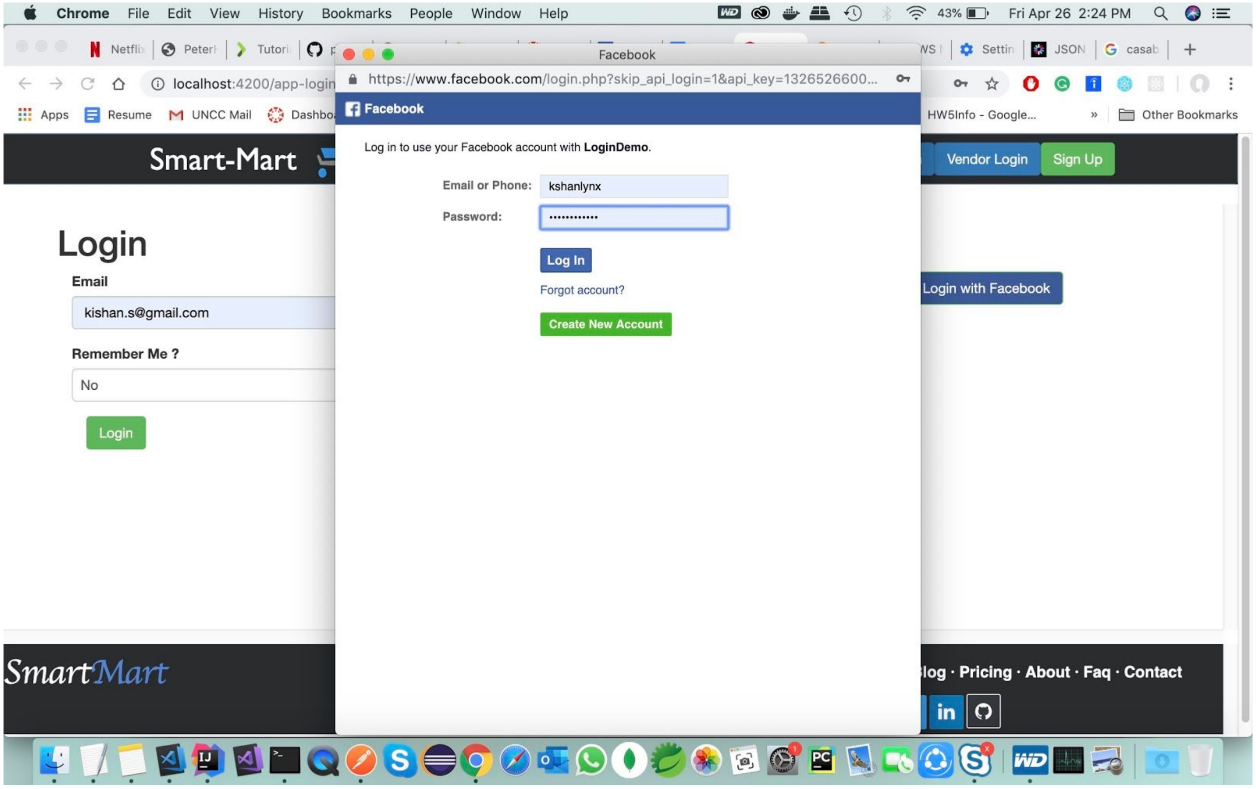
One Flew Over the Cuckoo's Nest (1975)	$4.99
Saving Private Ryan (1998)	$4.99
MacBook Pro 5	$29.99
Samsung 8	$99.09
Drinks	$4.99
Macx	$2000
Voldermort's Wand	$29.99

3. Login with Facebook

Navigate to the Customer Login and click on the login with facebook button.
Make sure your all the facebook accounts are closed in your system, otherwise the facebook account's credentials whichever is open will be helping us logging in ,

The following screen pops out :



https://www.facebook.com/login.php?skip_api_login=1&api_key=1326526600...

Log in to use your Facebook account with **LoginDemo**.

Email or Phone: kshanlynx

Password: ••••••••••••

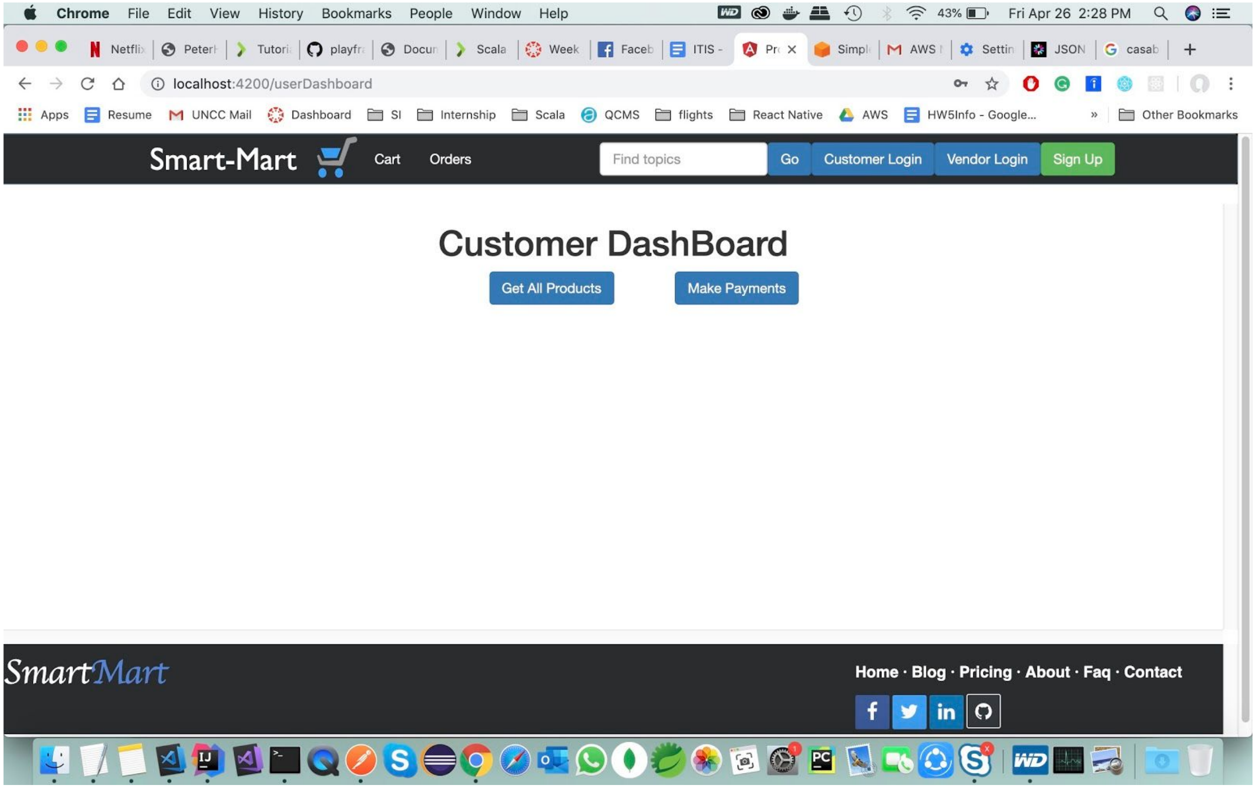
Email: kishan.s@gmail.com

Remember Me ? No

The same process can also be achieved through Cognito which is an alternate cloud service.

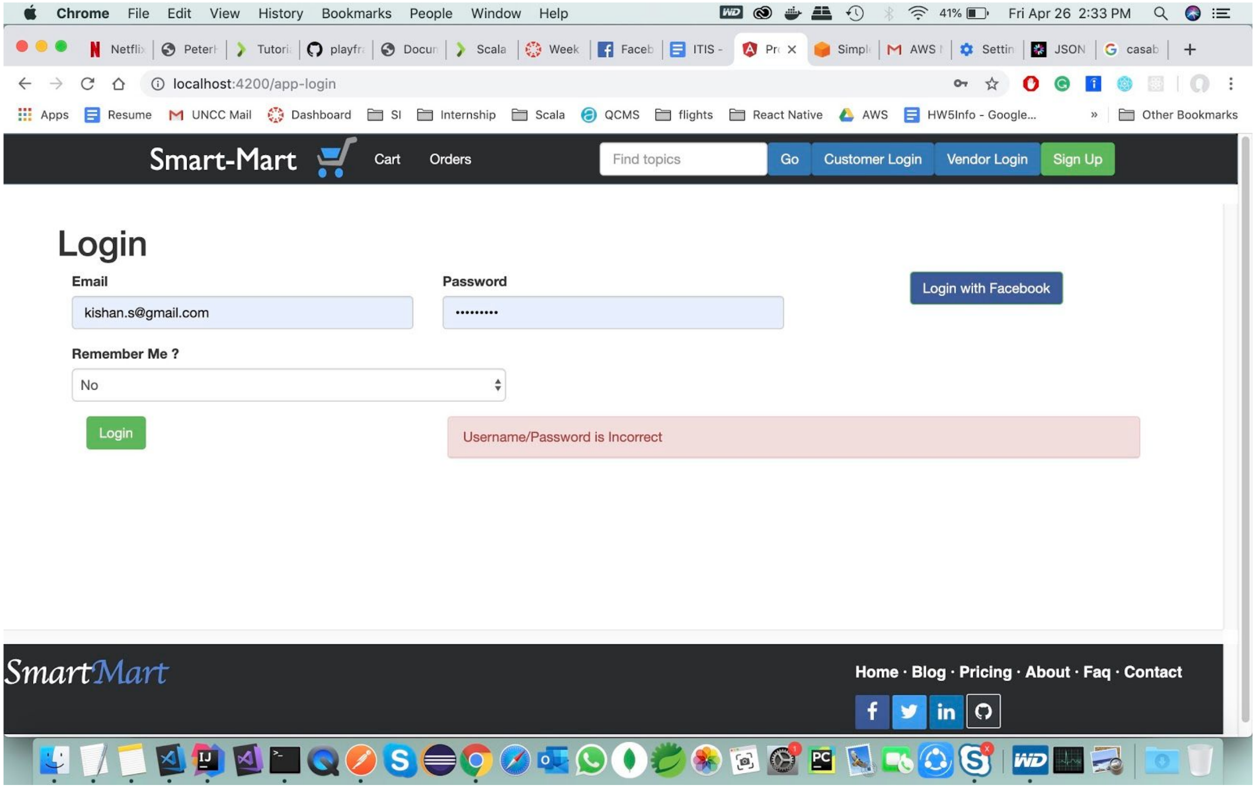
Here, Facebook SDK is used along with the Angular lifecycle to make the login work via the Angular frontend itself.

Click “Log In” on the dialog box newly opened and we reach the customer dashboard.



<u>Security</u>

1. JWT Authentication has already been discussed in the above flows.
2. Frontend validation via angular reactive forms that were created programmatically with the help of two way binding. See the error msg below when wrong credentials are entered.


Chrome File Edit View History Bookmarks People Window Help
Fri Apr 26 2:33 PM
localhost:4200/app-login
Apps Resume UNCC Mail Dashboard SI Internship Scala QCMS flights React Native AWS HW5Info - Google... Other Bookmarks
Smart-Mart
Cart
Orders
Find topics
Go
Customer Login
Vendor Login
Sign Up
Login with Facebook
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Login

Email: kishan.s@gmail.com

Password: ••••••••••

Remember Me ?: No

Login

Username/Password is Incorrect

3. Strict type checks have been placed on the backend code .

```
password: { type: String, required: true }
```

The required and type fields make sure they throw an error when encountering the invalid types.

Another strict check would be the production level email regEx that has been used :

```
match:
/[a-z0-9!#$%&'*+/=?^_`{|}~-]+(?:\.[a-z0-9!#$%&'*+/=?^_`{|}~-]+)*@(?:[a-z0-9](?:[a-z0-9-]*[a-z0-9])?\.)+[a-z0-9](?:[a-z0-9-]*[a-z0-9])?/
```

4.Bcrypt module from npm has been used to generate and salt the hashes.

```
const bcrypt = require("bcryptjs");
const jwt = require("jsonwebtoken");
```

DB Creation

Mongoose package has been used for backend mongoDB Atlas integration .

The best part about using mongoose models is that db creation was not required, merely the connection creates the instance of the collection in the cloud atlas.

***Actual data models have been provided in the presentation slides.**

```
const mongoose = require("mongoose");

//starts connection
mongoose.connect(
 "mongodb://admin:" +
  process.env.MONGO_ATLAS_PW +

"@cluster0-shard-00-00-nk8pq.mongodb.net:27017,cluster0-shard-00-01-nk8pq.mongodb.net:27017,cluster0-shard-00-02-nk8pq.mongodb.net:27017/test?ssl=true&replicaSet=Cluster0-shard-0&authSource=admin&retryWrites=true",
 { useNewUrlParser: true }
);
const db = mongoose.connection;

//event listeners used to print to console on db connection
db.on("error", console.error.bind(console, "connection error:"));
db.once("open", function() {
 console.log("connected to db");
});
```

<u>Nodemon.json credentials</u>

```
{
 "env": {
   "MONGO_ATLAS_PW": "admin99",
   "JWT_KEY": "secret"
 }
}
```

Access Details

As an Online shopping App, we have made an facility to get a mail triggered from the system once the order is placed by the customer. This is achieved using the one of the Amazon web services known as Amazon Simple Notification Services. This helps us in notifying the user wither thorugh the email or with the push notification.

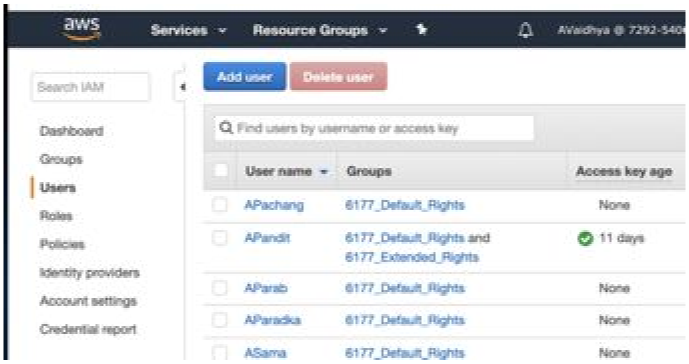
This set up can be done with the following steps which are as follows:

Step 1: Signing in using Amazon web service Console log In by having the credentials ready for IAM user.

Step 2: Click on the services

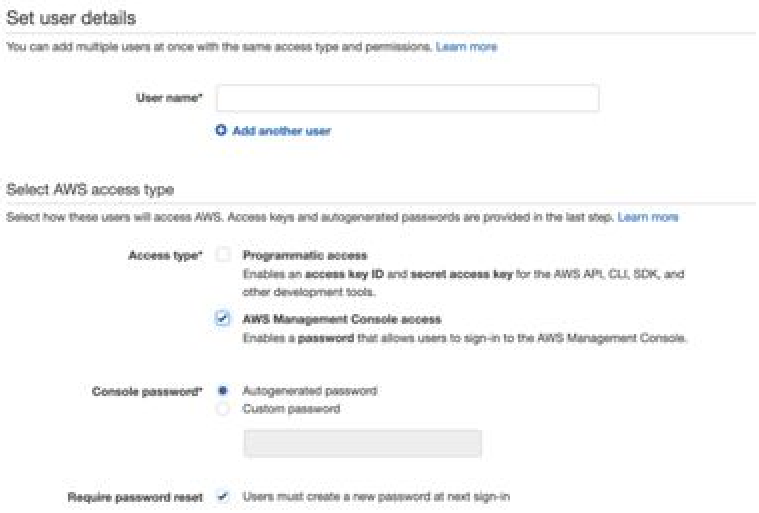
Step 3: click on the IAM from security , Identity and Compliance

Step 4: Click on the “Add User” button which is on the right corner.



□	User name	Groups	Access key age
□	APachang	6177_Default_Rights	None
□	APandit	6177_Default_Rights and 6177_Extended_Rights	✓ 11 days
□	AParab	6177_Default_Rights	None
□	AParadka	6177_Default_Rights	None
□	ASama	6177_Default_Rights	None

Step 5: Add the username and choose the password of your choice by clicking on the provision given to us in the below



Set user details

You can add multiple users at once with the same access type and permissions. Learn more

User name*

Select AWS access type

Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. Learn more

Access type* □ **Programmatic access**
Enables an **access key ID** and **secret access key** for the AWS API, CLI, SDK, and other development tools.

☑ **AWS Management Console access**
Enables a **password** that allows users to sign-in to the AWS Management Console.

Console password* ● Autogenerated password
○ Custom password

Require password reset ✓ Users must create a new password at next sign-in

Step 6: on the next screen, Choose the security group which are given with the Accesss of creating AWS SNS part.

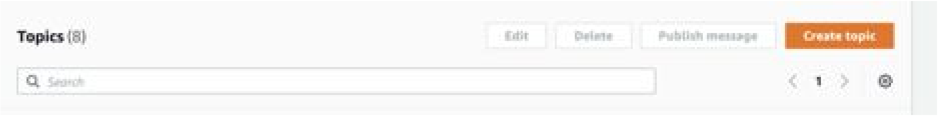
Step 7: Add Tags as an optional field to your user and by clicking on the next screen, we are done with the user creation.

Step 8: Once the user is created successfully, our next steps are to download the access keys and secret keys that are generated from the before steps.

These keys are useful to connect to you a particular user from the third party system.
Below are the steps that will help us in creating the services using AWS SNS.

Step 1: click on the services from the user navigation bar at the top. Scroll down through the services that are provided by the Amazon and choose the Simple Notification Service from the Application Integration.

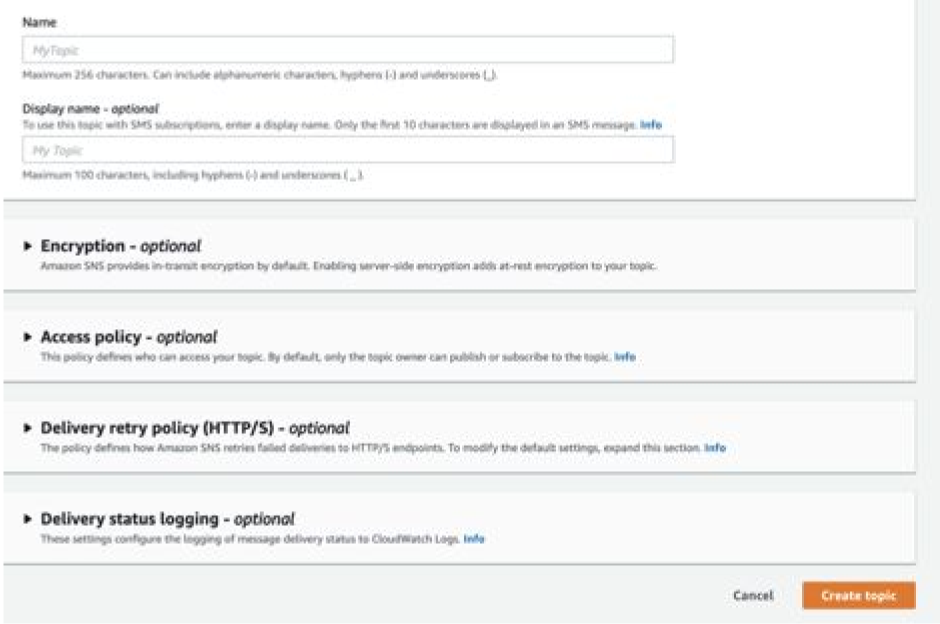
Step 2: click on the Topics to create one new.



Topics (8)

Step 3: click on the create Topic to proceed to the next steps.

Step 4: Add the required details to complete the topic folder.



Name

MyTopic

Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (_).

Display name - *optional*

To use this topic with SMS subscriptions, enter a display name. Only the first 10 characters are displayed in an SMS message. Info

My Topic

Maximum 100 characters, including hyphens (-) and underscores (_).

▸ **Encryption** - *optional*

Amazon SNS provides in-transit encryption by default. Enabling server-side encryption adds at-rest encryption to your topic.

▸ **Access policy** - *optional*

This policy defines who can access your topic. By default, only the topic owner can publish or subscribe to the topic. Info

▸ **Delivery retry policy (HTTP/S)** - *optional*

The policy defines how Amazon SNS retries failed deliveries to HTTP/S endpoints. To modify the default settings, expand this section. Info

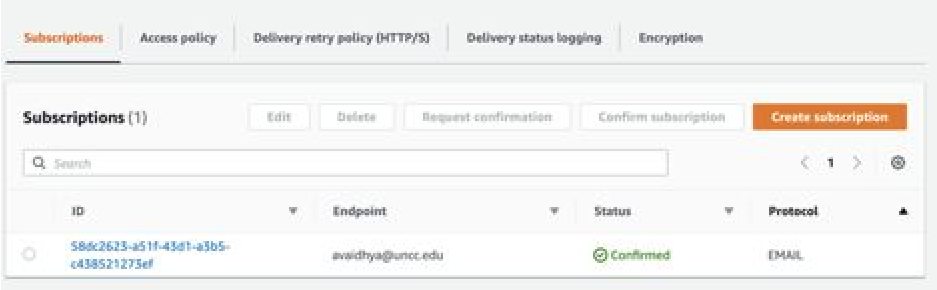
▸ **Delivery status logging** - *optional*

These settings configure the logging of message delivery status to CloudWatch Logs. Info

Step 5: once the details are filled out, hit on the create topic to complete the steps.

Step 6: An Arn url is created for you to get connected to particular group later from the email triggering system.

Step 7: Once the topic is created, next step is to create the Subscription.

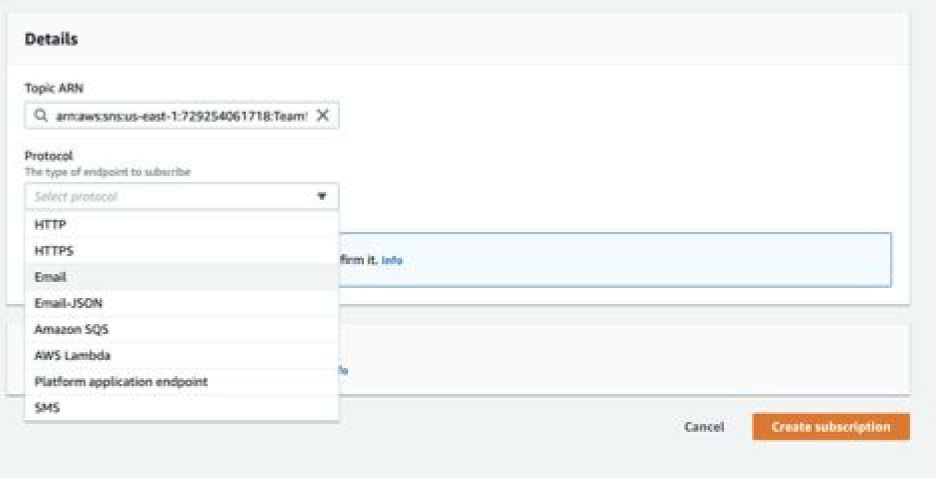


Subscriptions (1)

	ID	Endpoint	Status	Protocol
○	58dc2623-a51f-43d1-a3b5-c438521273ef	avaidhya@uncc.edu	✓ Confirmed	EMAIL

Step 8: Hit the create subscription button to proceed with the subscriber account.

Step 9: The created ARN is added will be copied automatically and The protocol has to be selected as “Email” from the list.



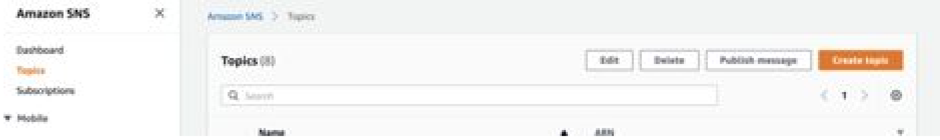
Topic ARN: arn:aws:sns:us-east-1:729254061718:Team!

Step 10: Once the other details are filled, we need to fill out and add the endpoint to where the email has to be sent.

Step 11: After the steps of creating the subscription, email has been posted for the subscription of services.

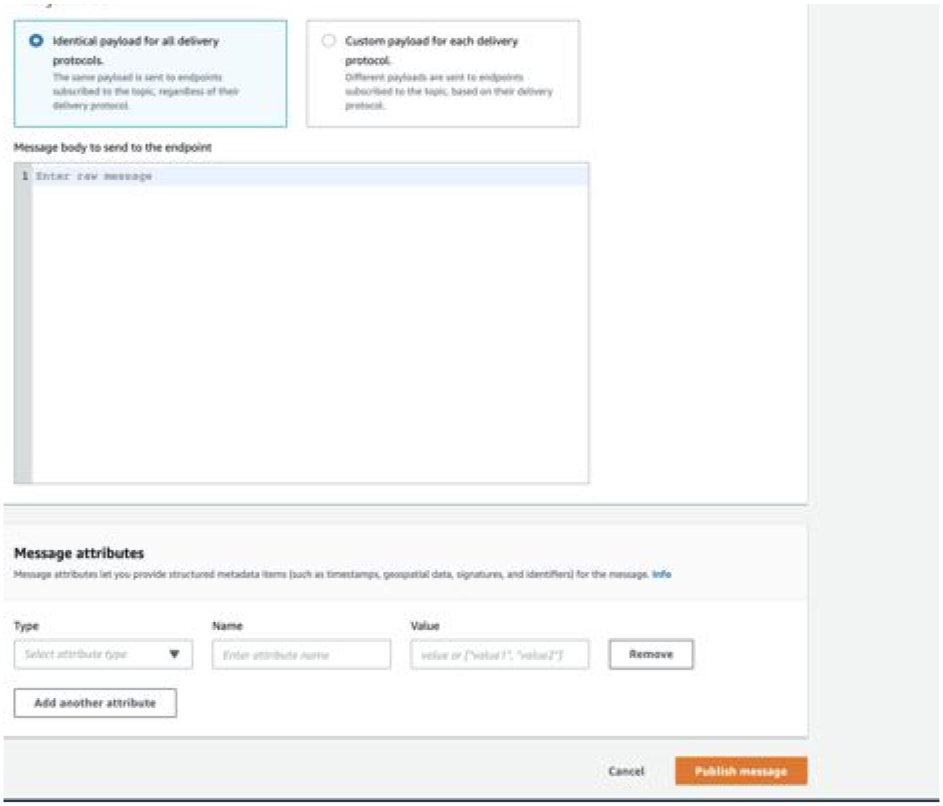
Step 12: The user has to confirm the subscription.

Step 13: upon confirming the subscription, we can publish message by choosing the topics that was created before.



Step 14: Hit the publish message

Step 15: Fill out the form with the required messages and click on the publish message button at the bottom.



● Identical payload for all delivery protocols.
The same payload is sent to endpoints subscribed to the topic, regardless of their delivery protocol.

○ Custom payload for each delivery protocol.
Different payloads are sent to endpoints subscribed to the topic, based on their delivery protocol.

Message body to send to the endpoint

```
Enter raw message
```

Message attributes

Message attributes let you provide structured metadata items (such as timestamps, geospatial data, signatures, and identifiers) for the message. Info

Type	Name	Value	
Select attribute type ▼	Enter attribute name	value or ["value1", "value2"]	Remove