demoTrack (A Cloud based Solution) By Yash Jain (1838900) FOR CMA, TCS Bangalore

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demoTrack

1.) Problem Statement:

For a Product company selling various kinds of products in bulk, customer would want an illustration of the product before they purchase it, to get all the details about the product ironed out before making the purchase.

That can be done by a sales representative giving the product illustration to the customer and finalize the deal but this way

- There are no records maintained for the illustrations
- No authorization procedure
- No digital communication to the concerned parties
- No way to analyze the past experiences for improvement

So, is there a better way?

There is!!

2.) demoTrack

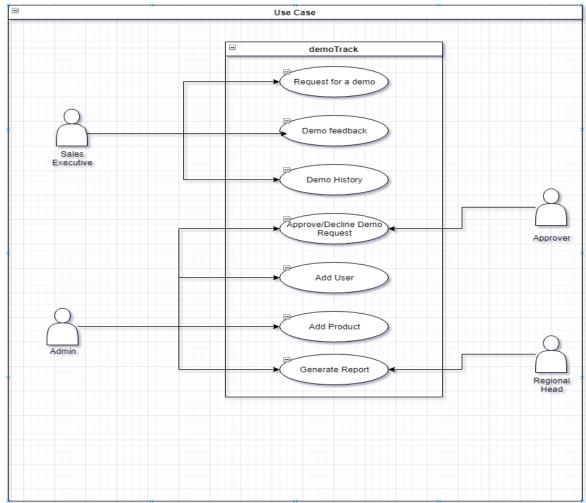
demoTrack is a cloud-based solution (Web Application), which offers a vast variety of features to make this process better and hassle free.

demoTrack offers:

- digital record maintenance for demos
- demo Authorization
- digital communication
- feedback feature to improve future demo's
- the company can keep track of all the demos, sales executive performance and how to improve the executive's performance.

This will also help the company to analyze the customer's response.

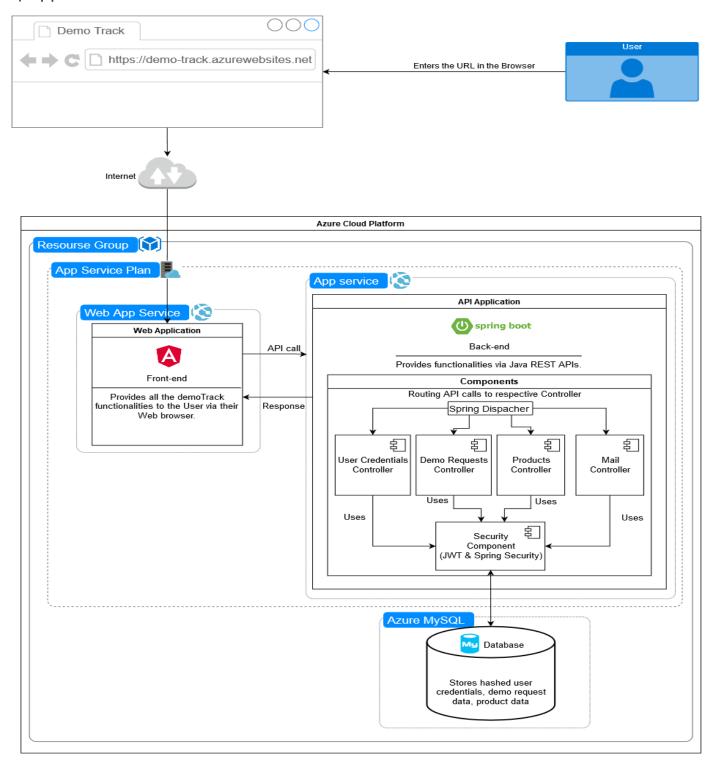
3.) Use Case



4.) An Overview of the application flow

- Using demoTrack, a sales executive can generate a request for an illustration/demo providing all the relevant details pertaining to the demo and he will be provided with a request number for future reference
- Approver/manager will be digitally notified of the request generated and he/she can verify the details and decide whether to approve the demo or not.
- Sales executive will be digitally notified of the approver's decision
- If the demo is approved, the sales executive can proceed with the demo
- After the demo is given, sales executive is bound to fill a feedback for that demo before he/she can request for another demo. This feedback will help him improve.
- Executives, Managers and Admin can generate reports in excel format (records can be filtered based on requirement)
- Administrator can keep track of the demos, add new users and new products using UI.

5.) Application Architecture



6.) Technology Stack Used:

- Angular (v8.3.23)
- Spring Boot
- MySQL
- Azure Cloud

7.) Coding Standards:

Modularity

- Descriptive name conventions (full words – camel casing) (e.g. demoRequest)
- Component/Class names represents its purpose (e.g. DemoRequestController, LoginComponent, AuthenticationService)

> Encapsulation

- Proper Indentation
- Proper response status codes (e.g. 201, 401...)

- Server-Side Validations (e.g. Email format, password requirements...)
- Error/Exception Handling (e.g. Null Pointer exception on User Not found)
- Custom Error Message (e.g. User Already Exists, Invalid Credentials...)

- Client-Side Validations (e.g. Mandatory Requirements, email format...)
- Responsive Application
- Display of Validation errors

8.) Security Features:

- Password Hashing for storage in database using (Bcrypt-HashSalt) – (Server Side)
- > JWT Token Authentication
- Spring Security

- Password Encryption using AES-CBC – (Application Layer)
- > JWT Token Interception
- Error Interception

Authorization Guard

8.1) Password stored in database in hashed form:

d	username	password	name	email	role	token
1	adm	\$2a\$10\$x6LYc5s6uGaPPmA/B6RDqOnAm.wI/By2a.Y8Fk0iGUE9kGJBr6yYu	Admin	yashjain0898@gmail.com	Admin	NULL
2	approver	\$2a\$10\$x6LYc5s6uGaPPmA/B6RDqOnAm.wI/By2a.Y8Fk0iGUE9kGJBr6yYu	Approver	yashjain0898@gmail.com	Approver	NULL
3	1838900	\$2a\$10\$x6LYc5s6uGaPPmA/B6RDqOnAm.wI/By2a.Y8Fk0iGUE9kGJBr6yYu	Yash Jain	yashjain0898@gmail.com	Sales	NULL
1	admin	\$2a\$10\$KjPphllkkXS5NM9QAj6CeOy1wOLnl5WWB6rPOzLcHfAfmn2a.HdNK	admin	yashjain0898@gmail.com	Admin	NULL
9	1838903	\$2a\$10\$.FX9f36F8qCgxQYsJA0UJ.FRh.EJYhkL1cSJn8lWOboXHC9qgt1vC	Yash Jain	yashjain0898@gmail.com	Sales	NULL
9	1838904	\$2a\$10\$yXt20loXgkhHgIWzLu8zfu68yObatXF.E1azg2eg5ZFQV3eDpu5KC	Yash Jain	yashjain0898@gmail.com	Sales	NULL

8.2) JWT Token generated on authentication:

```
▼ (id: 3, username: "1838900", password: "", name: "Yash Jain", email: "yashjain0898@gmail.com",...}
id: 3
username: "1838900"
password: ""
name: "Vash Jain"
email: "yashjain0898@gmail.com"
email: "yashjain0898@gmail.com"
role: "Sales"
token: "eylhbGc[0]]UZUXMIJ9.eyJzdWII0IIx0DM40TAwIiwIZXhwIjoxNTgx0DI5MJMILCJpYXQIOJEIODEyMJQ8MZV9.BxMcGhxPIcwAUrxUI8fWTMg3ddXGm84_BGyyqXs1_X3ng8L5xNhxVS1WB5y3dvenMpuF5eFHHAIcIMM6cJJA"
```

9.) Authorization:

Role Authorization For Screens	Login	Request a Demo	Demo Requests	Feedback	Demo History	Add New User	Add New Product
Sales Executive	~	~	~	~	~		
Approver	~		✓		~		
Admin	✓	✓	~	✓	✓	✓	✓

10.) Database

<u>Azure Database for MySQL server</u> resource is used for storage of data.

10.1) Schema:

10.1.1) User Credentials:

```
mysql> describe user_credentials;
 Field
                         | Null | Key | Default | Extra
          Type
 id
            int
                          NO
                                  PRI
                                        NULL
                                                  auto_increment
           varchar(50)
                          NO
                                        NULL
 username
            varchar(100)
                          NO
 password
                                        NULL
            varchar(50)
 name
                          NO
                                        NULL
 email
            varchar(50)
                          NO
                                        NULL
 role
            varchar(50)
                         NO
                                        NULL
 token
          | varchar(100) | YES
                                       NULL
 rows in set (0.09 sec)
```

10.1.2) Demo Requests:

mysql> describe demo_requests;		+	·		+
Field	Туре	Null	Key	Default	Extra
id	int	NO	PRI	NULL	auto_increment
request_number	varchar(20)	NO		NULL	
request_timestamp	varchar(100)	NO		NULL	
requester_user_id	varchar(50)	NO		NULL	
requester_name	varchar(50)	NO		NULL	
customer_name	varchar(50)	NO		NULL	
customer_email	varchar(50)	NO		NULL	
customer_location	varchar(50)	NO		NULL	
customer_business_line	varchar(50)	NO		NULL	
contact_person_name	varchar(50)	NO		NULL	
contact_person_email	varchar(50)	NO		NULL	
product_group	varchar(50)	NO		NULL	ĺ
product line	varchar(50)	NO		NULL	ĺ
product	varchar(50)	NO	İ	NULL	ĺ
demo_site	varchar(50)	NO	İ	NULL	ĺ
demo_date	varchar(50)	NO	İ	NULL	ĺ
demo_slot	varchar(50)	NO	İ	NULL	ĺ
number_of_guests	int	NO	İ	NULL	ĺ
demo expectation	varchar(100)	NO	İ	NULL	ĺ
ase dress code	varchar(10)	YES	İ	NULL	
ase_technical_knowledge_rating	int	YES	İ	NULL	
ase clinical knowledge rating	int	YES	j i	NULL	j
demo_site_prepared	varchar(10)	YES	j i	NULL	j
ase_customer_handling_rating	int	YES	j i	NULL	j
site ambiance rating	int	YES	j i	NULL	j
product_rating	int	YES	į į	NULL	j
customer_convinced	varchar(10)	YES	į į	NULL	j
feedback	varchar(100)	YES	İ	NULL	ĺ
comment	varchar(100)	YES		NULL	
status	varchar(50)	NO		NULL	
authority	varchar(50)	NO		NULL	l
1 rows in set (0.01 sec)		+	+		+

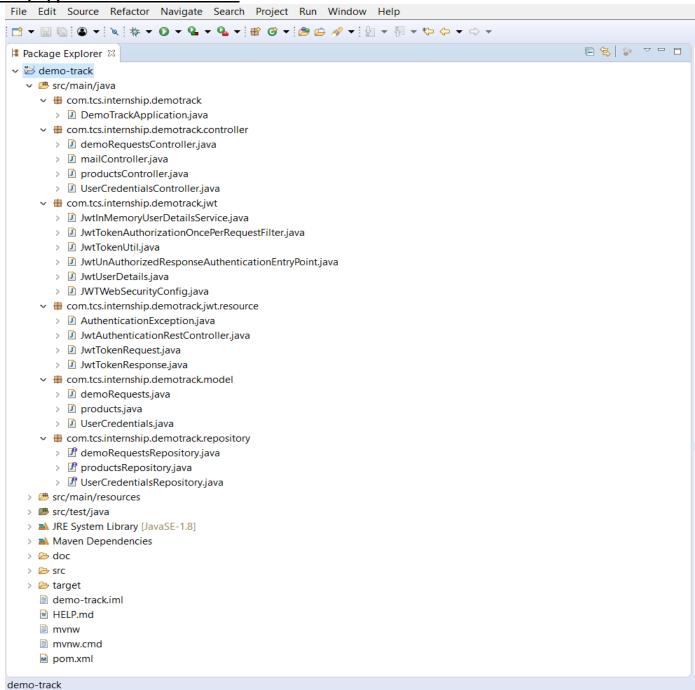
10.1.3) Products:

mysql> describe p		+				
Field	Туре	Null	Key	Default	Extra	
product	int varchar(50) varchar(50) varchar(50)	NO NO	PRI	NULL NULL NULL NULL	auto_increment	
4 rows in set (0.	+ .01 sec)	+		+	++	

11.) Back-end APIs on Spring Boot

Deployed on Cloud using Azure App Service

11.1) Application Folder Structure



- Model package contains all the Entities representing the Database Entities
- Repository package contains implementation of Crud Repository (Interface provided by JPA) for each Entity
- JWT Package provides implementation of JWT Token generation/refresh/validation
- Controllers package contains Rest Controllers for requests (REST APIs)

11.2) JSON Formats – (Request/Response Body)

11.2.1) User Details

```
"id": <Id (Primary Key) - e.g. 2>,
    "username": <Username - e.g. "1838900">,
    "password": <Password removed from response - "">,
    "name": <Name of the User - e.g. "Yash Jain">,
    "email": <Email Address of the User - e.g. "yashjain0898@gmail.com">,
    "role": <Role of the User - Sales/Approver/Admin>,
    "token": <JWT Token - e.g. "eyJhbGciOiJIUzUxMiJ9.eyJzdWIiOiIxODM4OTAwIiwiZXhwIjoxNTgyMj
E1MTYxLCJpYXQiOjE1ODE2MTAzNjF9.x4jTc4IL6G1xCzRf_mPPv-UBXOqCnuWUn1qnd-
Bs6561LZXpTln_M7gq0HQq-SRJaYkon1PdyFAyS7acpgoEag">
}
```

11.2.2) Login Credential

```
{
    "username": <Username for Login - e.g. "1838900">,
    "password": <Encrypted Password - e.g. "EHzocMRbwMEA54vyB9GZPg==">
}
```

11.2.3) Product

```
{
    "id": <Id (Primary Key) - e.g. 16>,
    "productGroup": <Product Group - e.g. "Medical Imaging">,
    "productLine": <Product Line - e.g. "Magnetic Resonance Imaging">,
    "product": <Product - e.g. "3T MAGNETOM Lumina">
}
```

11.2.4) Demo Request

```
"id": <Id (Primary Key) - e.g. 1>,
    "requestNumber": <Request Number (Uniquely Identifies a Request) - e.g. 000001>,
    "requestTimestamp": <Request Generation Timestamp - e.g. "12-02-2020 01:53:17 PM">,
    "requesterUserId": <Username of the Requester - e.g. "1838900">,
    "requesterName": <Name of the User - e.g. "Yash Jain">,
```

```
"customerName": <Name of the Customer - e.g. "Path Labs">,
"customerEmail": <Email Address of the Customer - e.g. "contactus@pathlabs.com">,
"customerLocation": <Location of the Customer - e.g. "Bangalore">,
"customerBusinessLine": <Business Line of the Customer - e.g. "Laboratory/Testing">,
"contactPersonName": <Customer Contact Person Name - e.g. "someone">,
"contactPersonEmail": <Customer Contact Person Email - e.g. "someone@pathlabs.com">,
"productGroup": <Product Group - e.g. "Medical Imaging">,
"productLine": <Product Line - e.g. "Magnetic Resonance Imaging">,
"product": <Product - e.g. "3T MAGNETOM Lumina">,
"demoSite": <Demo Location/Site - e.g. "PSN Bangalore">,
"demoDate": <Date of Demo - e.g. "18-02-2020">,
"demoSlot": <Time Slot for Demo - e.g. "Morning Slot 9:00am to 1:00am">,
"numberOfGuests": <Expected number of Guests in the Demo - e.g. 9>,
"demoExpectation": <Expectation/Goal of the Demo (min 10 char) - e.g. "Product Sale">,
"aseDressCode": <Whether ASE was following Dress Code - Yes/No>,
"aseTechnicalKnowledgeRating": <Technical Knowledge Rating of ASE - 1 to 5>,
"aseClinicalKnowledgeRating": <Clinical Knowledge Rating of ASE - 1 to 5>,
"demoSitePrepared": <whether Demo Site was prepared - Yes/No>,
"aseCustomerHandlingRating": <Customer Handling Capability Rating of ASE - 1 to 5>,
"siteAmbianceRating": <Site Ambiance Rating - 1 to 5>,
"productRating": <Product Rating - 1 to 5>,
"customerConvinced": <Whether Customer was convinced from Demo - Yes/No>,
"feedback": <Overall Feedback of Demo - e.g. "Demo was well detailed">,
"comment": <Special Comments - e.g. "Extraordinary Product">,
"status": <Status of the Demo -Submitted/Approved/Rejected/Completed>,
"authority": <Who Approved/Rejected the Demo Request - e.g. "Approver">
```

11.3) APIs

For Authentication of user ID, Password and generation of JWT token

POST-/authenticate

For Refreshing JWT token

POST-/refresh

For Fetching a User Details by his Username

GET- /userDetails/{username}

For Creating a New User

POST- /userDetails

For Fetching All Products

GET-/products

For Creating a New Product

POST-/products

For Getting All the Demo requests

GET-/demoRequests

For Getting Demo requests of a User

GET- /demoRequests/user/{username}

For Getting a Demo request by request number

GET-/demoRequests/{requestNumber}

For Creating a new Demo request

POST-/demoRequests

For Updating a Demo Request

PUT-/demoRequests

For Sending mail notifications for new request generation

POST-/mail/newRequest

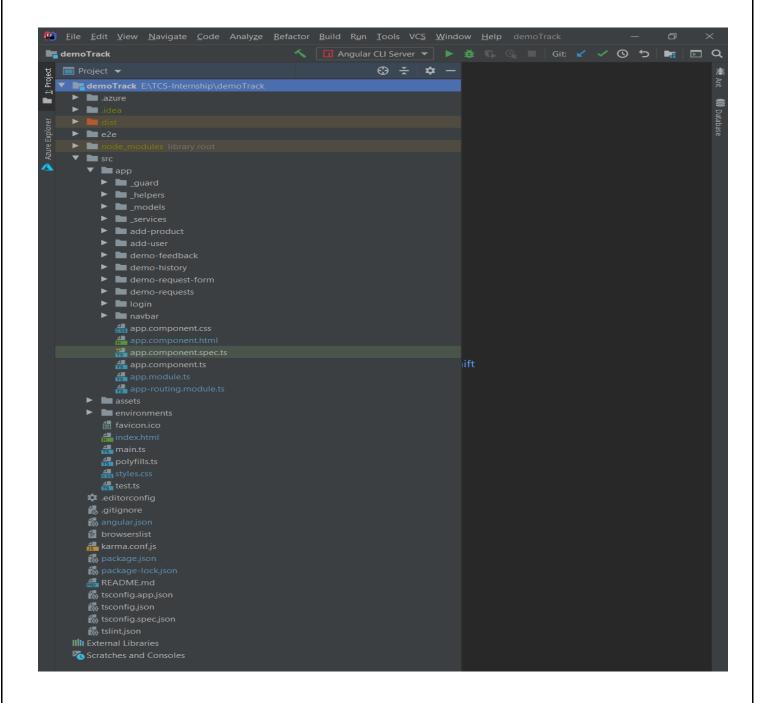
For Sending mail notifications for approval/rejection of a request

POST-/mail/approval

12.) Front-end (using Angular)

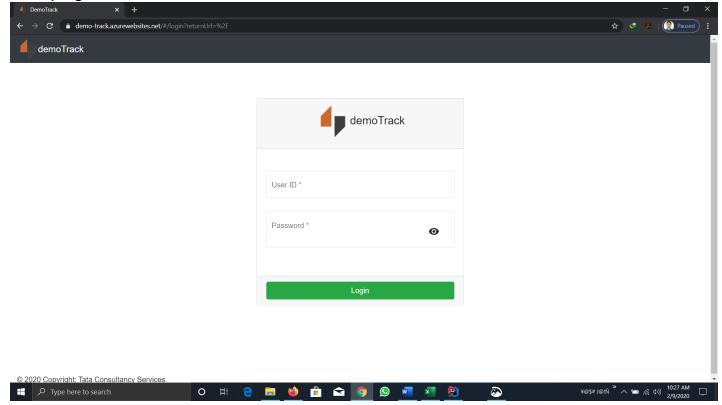
<u>Deployed on Cloud using Azure Web APPs</u>

12.1) Application Folder Structure

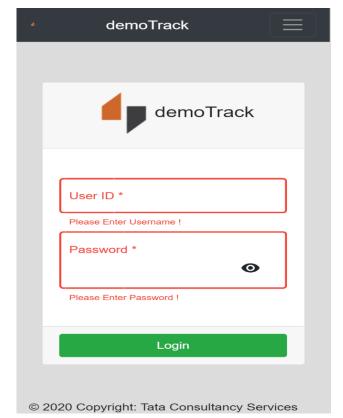


12.2) Features/Screens

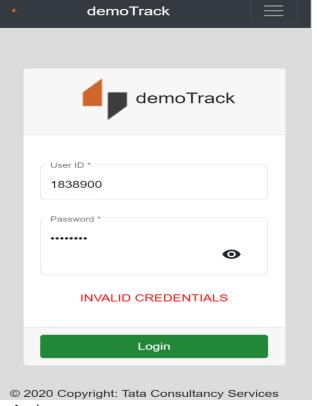
12.2.1) Login Screens



12.2.2) Client-Side Validations



12.2.3) Error response handling



(Responsive Design)

12.2.4) Encrypted Password (in Authentication Request Body)

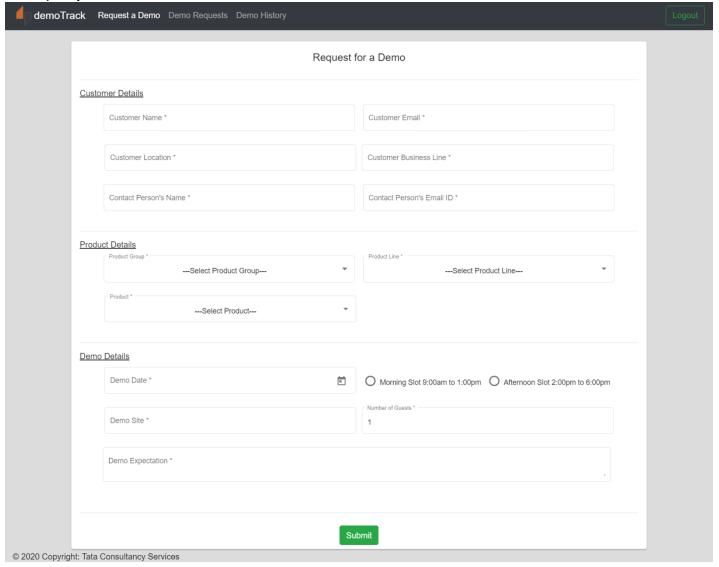
```
▼ Request Payload view source

▼ {username: "1838900", password: "EHzocMRbwMEA54vyB9GZPg=="}

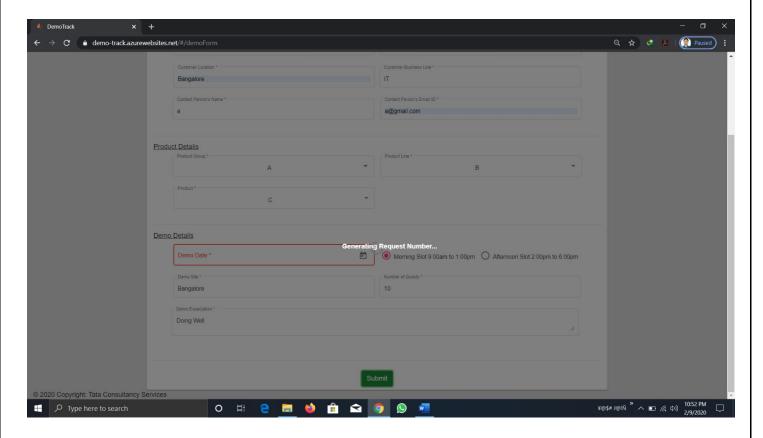
username: "1838900"

password: "EHzocMRbwMEA54vyB9GZPg=="
```

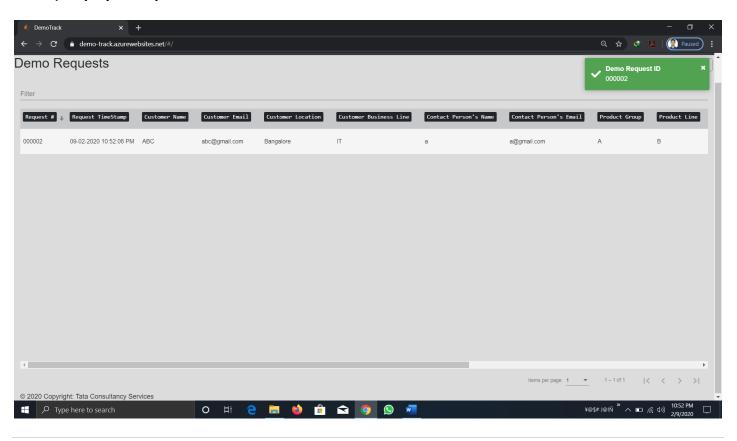
12.2.5) Request a Demo Screen



12.2.6) Waiting for API request to return the generated Request Number



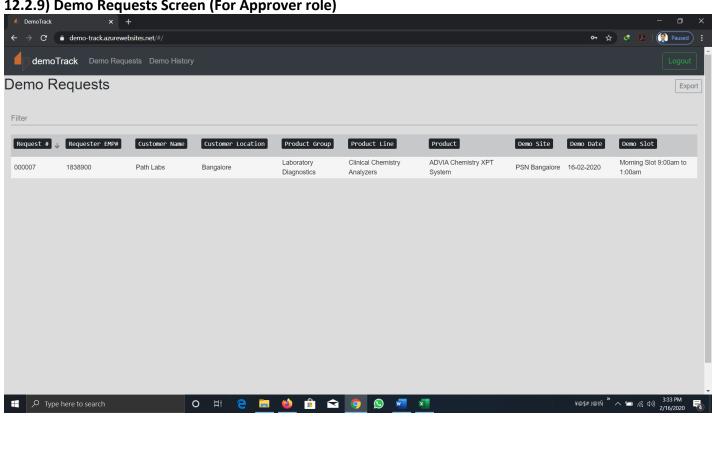
12.2.7) Display of Request Number

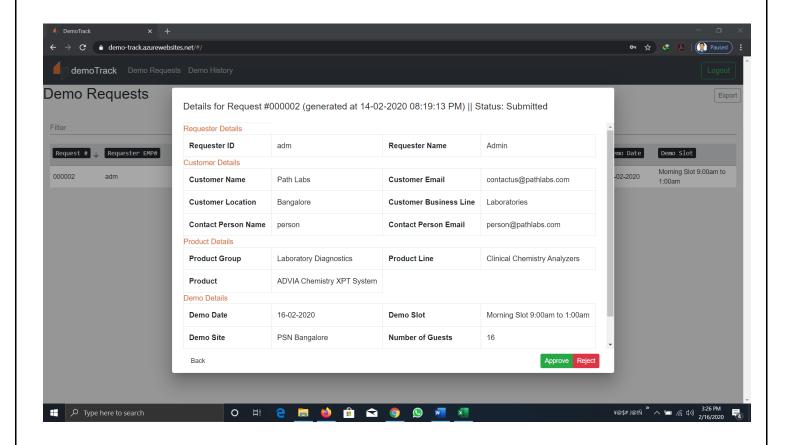


12.2.8) Automated Mail generated on creation of new request

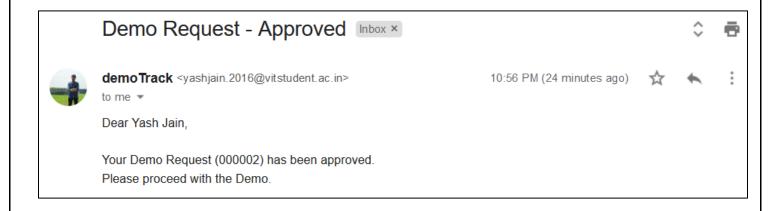


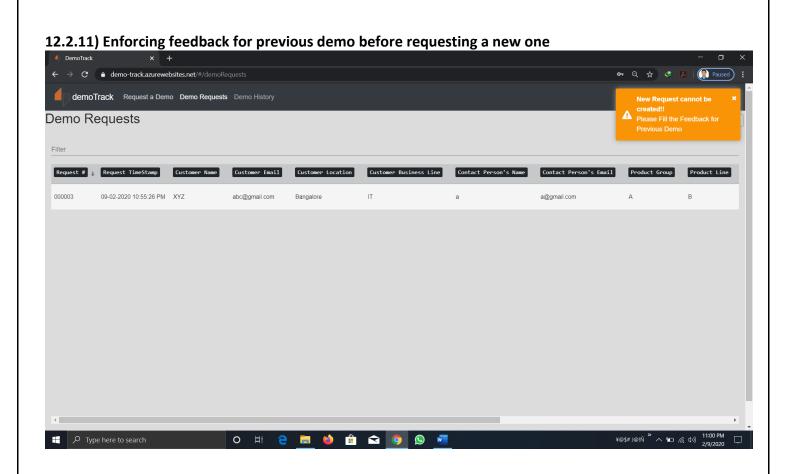
12.2.9) Demo Requests Screen (For Approver role)

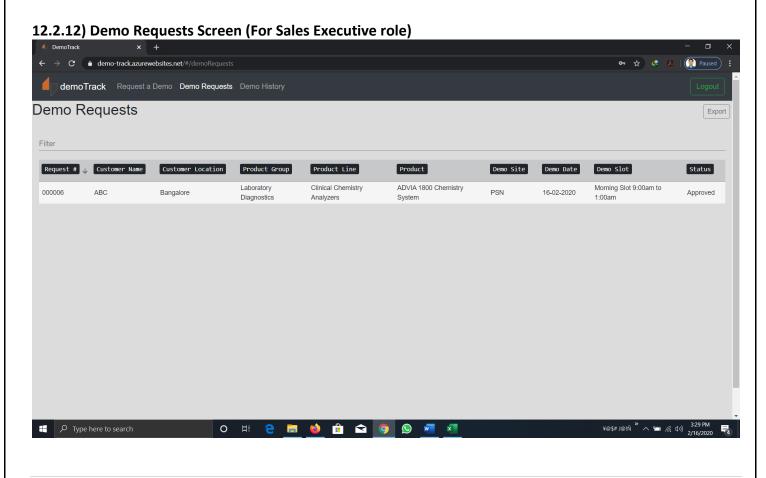


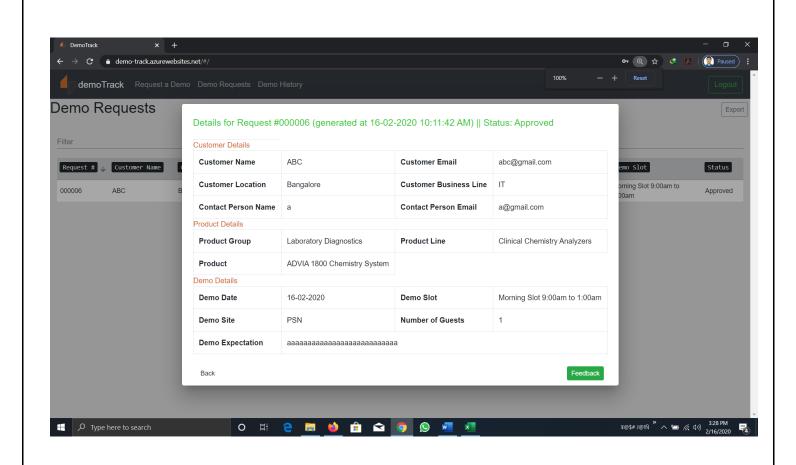


12.2.10) Automated Mail generated on Approval/Rejection of request

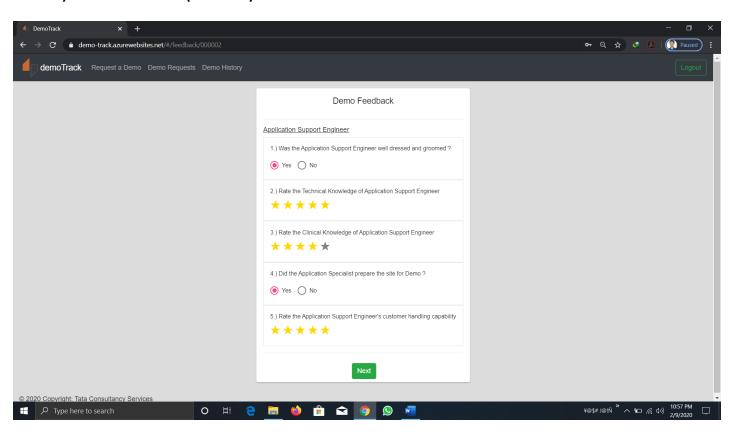








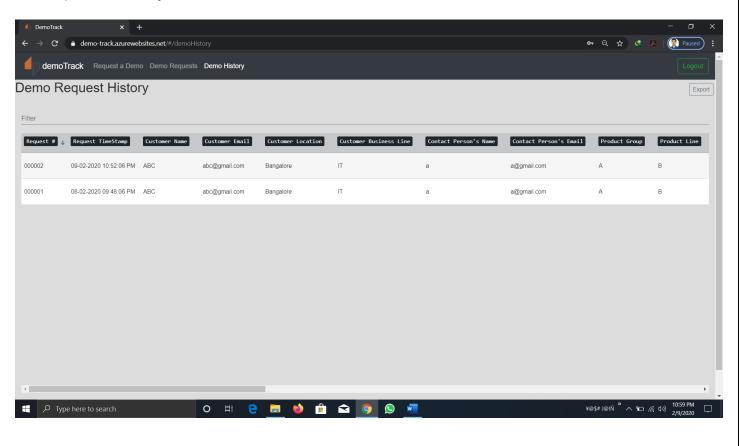
12.2.13) Feedback Screen (Section-I)

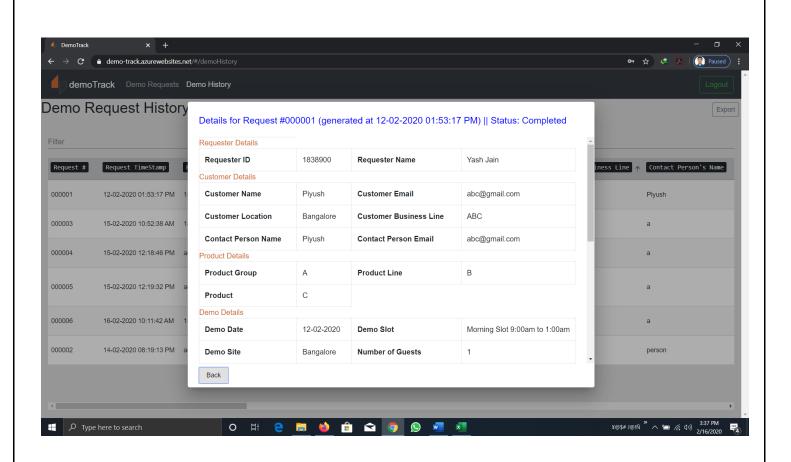


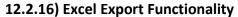
12.2.14) Feedback Screen (Section-II) \leftrightarrow \sim demo-track.azurewebsites.net/#/feedback/000002 demoTrack Request a Demo Demo Requests Demo History Demo Feedback 1.) Rate the Ambiance of the Reference Site **** 2.) Rate the Product (based on How well did the customer liked/preferred the product) 3.) Was the Customer convinced from Demo ? Yes
 No Good Presentation

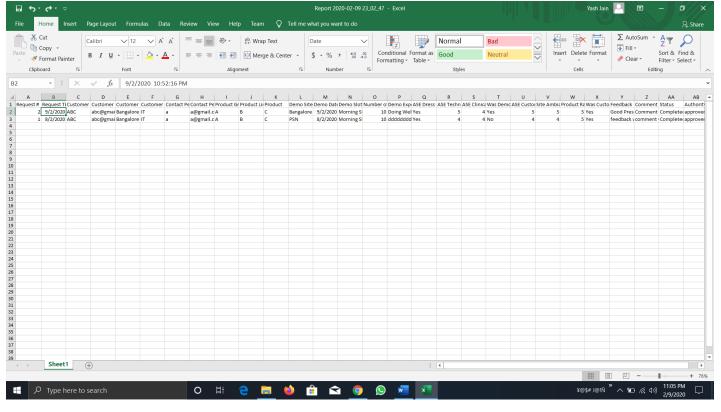
O H 🤚 🤚 👏 💼 <

12.2.15) Demo History Screen

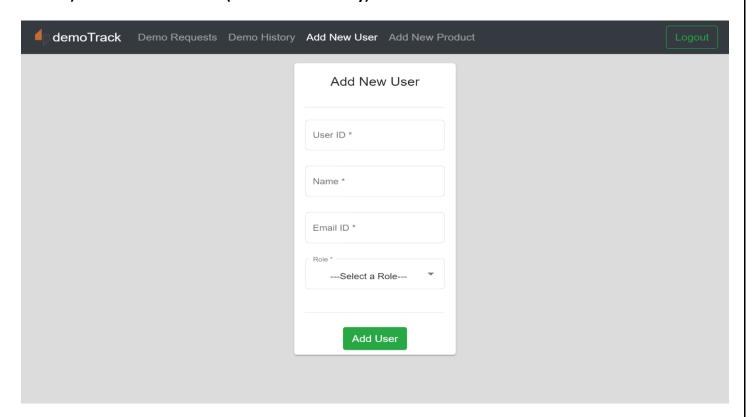








12.2.17) Add New User Screen (Admin Functionality)



12.2.18) Add New Product Screen (Admin Functionality)

