Smart Support

Final Project Report

Submitted by :

NAVIN KUMAR SINGH (21f1003002)

UDAY RAVI PATIL (21f1003481)

KRISHU GUPTA (21f1003442)

User Requirements
&
User Stories

User Requirements

Our team identified the following users for the Support Ticket App:

- **Primary Users:** Students
- **Secondary Users:** Support team members
- **Tertiary Users:** Administration members

User Stories (Primary Users)

Student

- *As a* student, *I want to be able to* create a new support ticket *so that* I can get help with my queries and concerns.
- *As a* student, *I want to be able to* search for similar tickets before creating a new one *so that* I don't have to create a duplicate ticket.
- *As a* student, *I want to be able to* upvote an existing ticket if it's similar to my concern or query *so that* the support team can prioritize the most popular concerns.
- *As a* student, *I want to be able to* see the status of my ticket and updates made by the support team *so that* I can stay updated on the progress of my concern or query.
- *As a* student, *I want to be able to* see a history of all my tickets and their status *so that* I can keep track of my past concerns and queries.
- *As a* student, I want to be notified when the support team updates my ticket or when the status of my ticket changes *so that* I can stay updated on the progress of my concern or query.

User Stories (Secondary Users)

Support team

- *As a* support team member, *I want to be able to* see a list of all the support tickets sorted by upvotes and date *so that* I can and respond to them in a timely manner.
- *As a* support team member, *I want to be able to* update the status (open, resolved) of a support ticket *so that* the student knows the progress of their concern or query.
- *As a* support team member, *I want to be able to* see the history of a support ticket *so that* I can understand the student's previous concerns and queries.

User Stories (Tertiary Users)

Administration

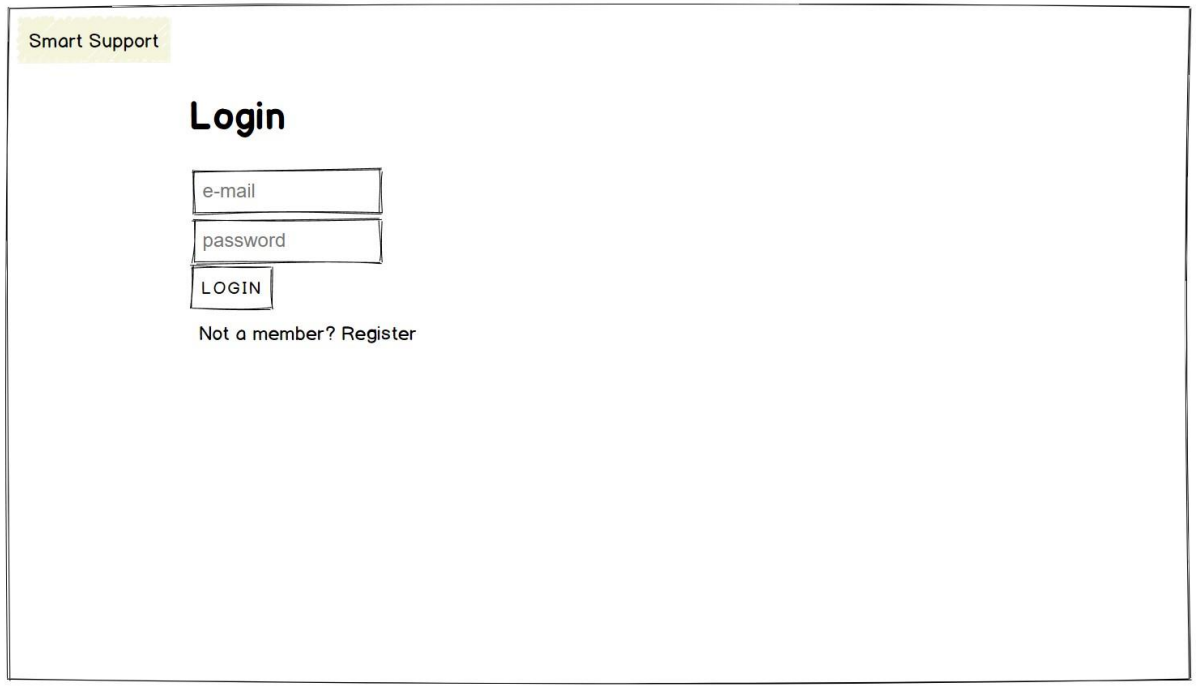
- *As an* administrator, *I want to be able to* see a list of all the support tickets and their status *so that* I can monitor the support activities of the program.
- *As an* administrator, *I want to be able to* see the history of support tickets sorted by upvotes and date *so that* I can understand the concerns and queries of the students.
- *As an* administrator, *I want to be able to* add new tags *so that* I can control the allowed types of tickets.
- *As an* administrator, *I want to be able to* assign different tags to different support team members *so that* they will be able to see only the tickets with relevant tags assigned to them.

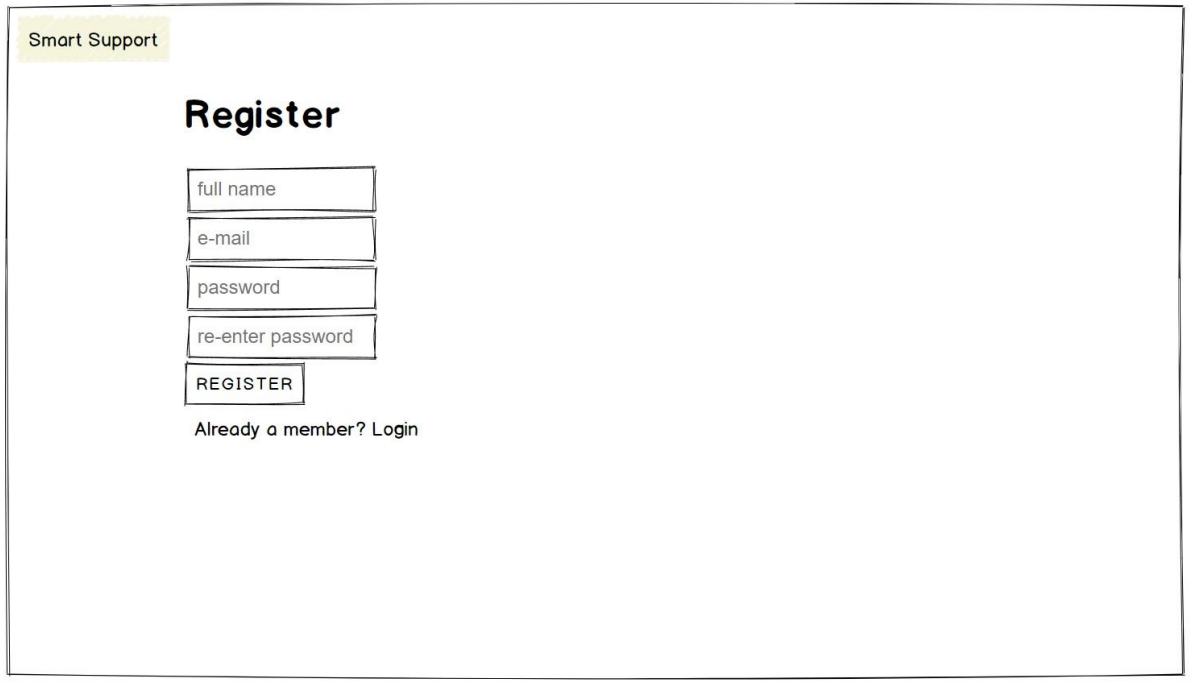
User Stories (Tertiary Users continued…)

- *As a*n administrator, *I want to be able to* see the support tickets categorized by tags *so that* I can monitor the types of concerns and queries the students are facing.
- *As an* administrator, *I want to be able to* send a notification when a support ticket has been resolved, *so that* I am make aware the concerned users
- *As an* administrator, *I want to be able to* add the support query and response to the FAQ section categorised by tags *so that* an updated FAQ will be readily available to students.
- *As an* administrator, *I want to be able to* allow users to enrol as students, support staff and admin, *so that* new users can access the platform

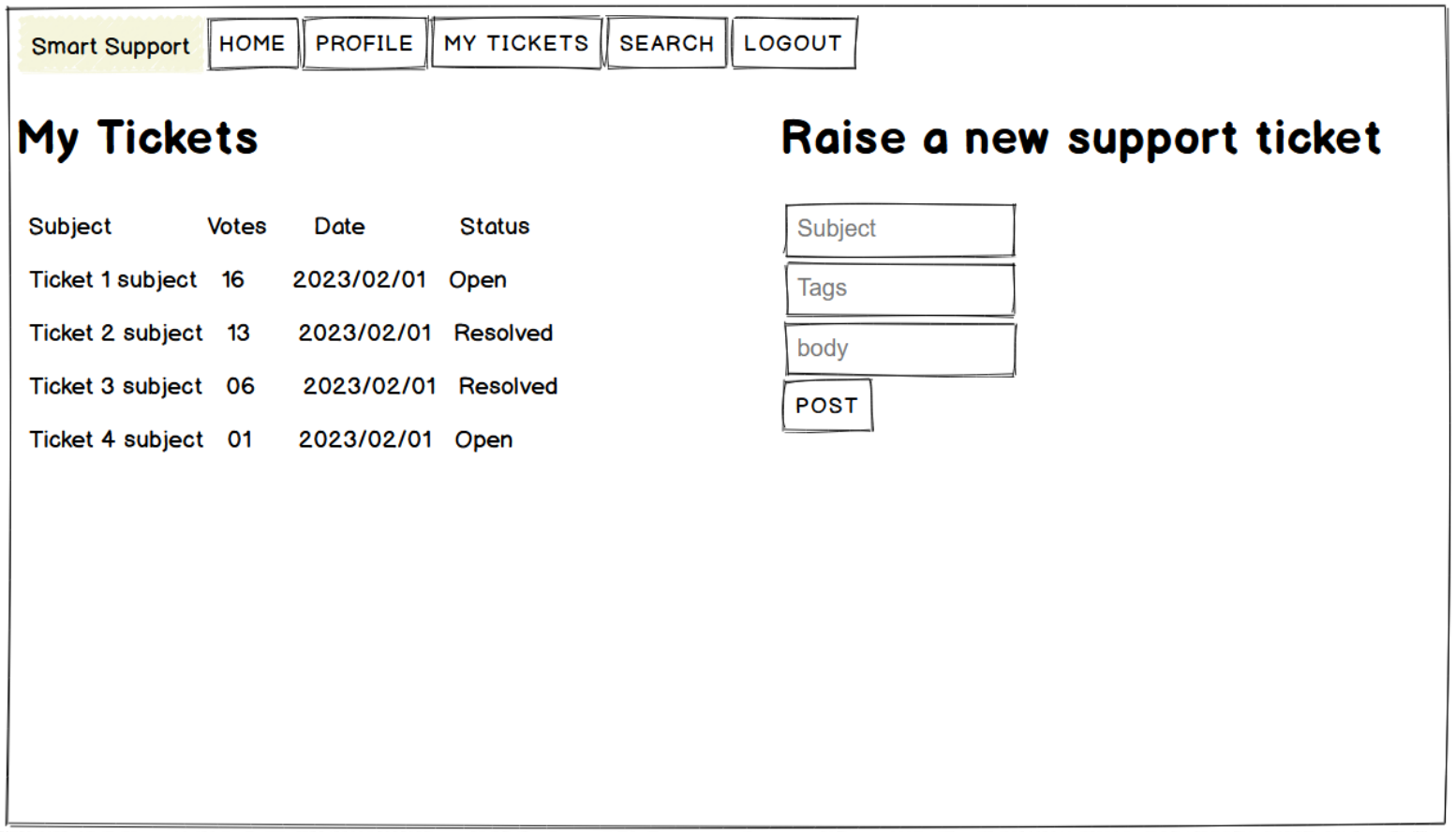
Storyboard

A student is facing a problem with her course and wants to contact the support team. She accesses the support ticketing system through the university website.

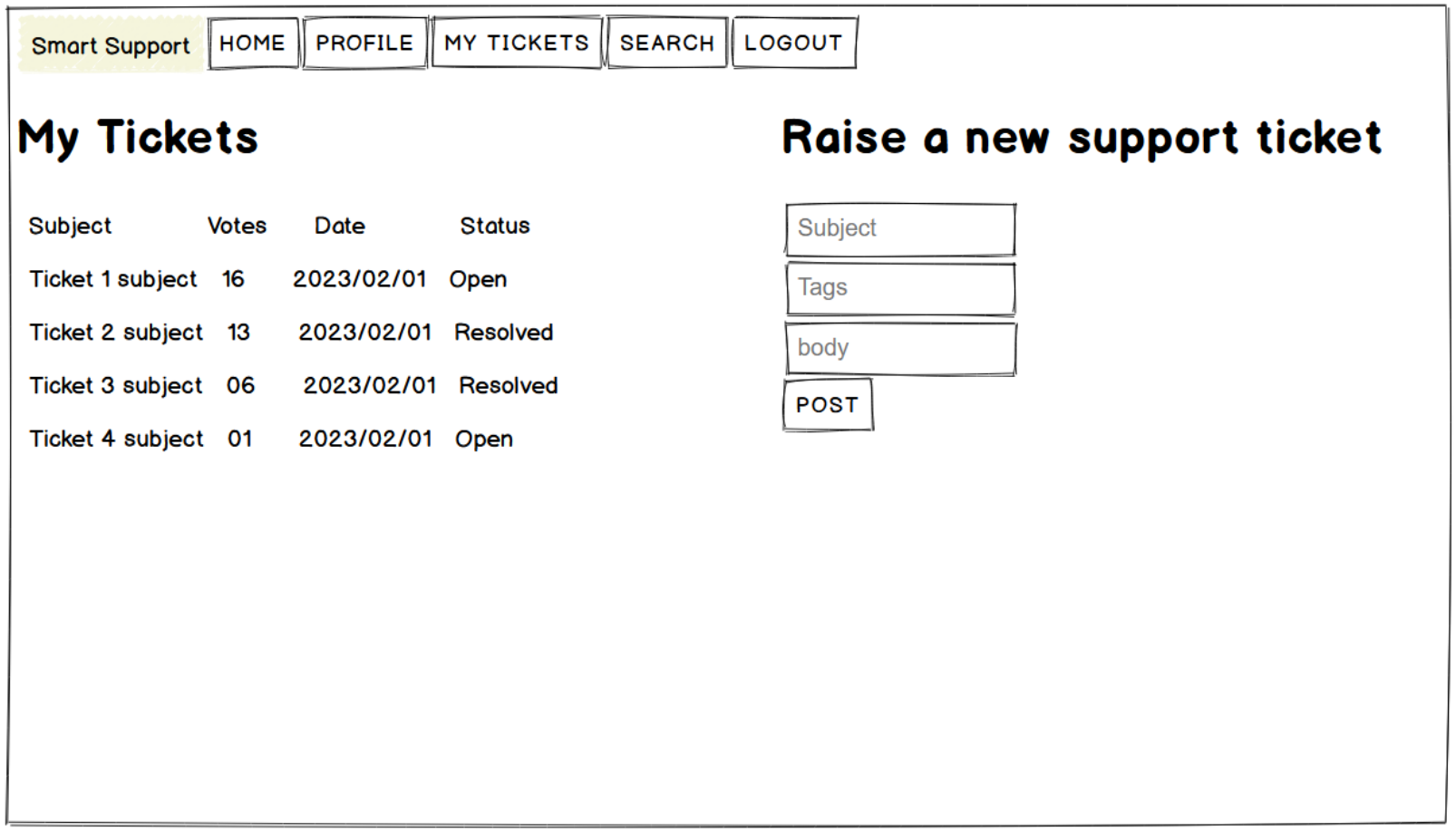




The student is presented with a login page where she needs to enter her credentials to access the support ticketing system. She can also click on **Register** link if she is new to the system.

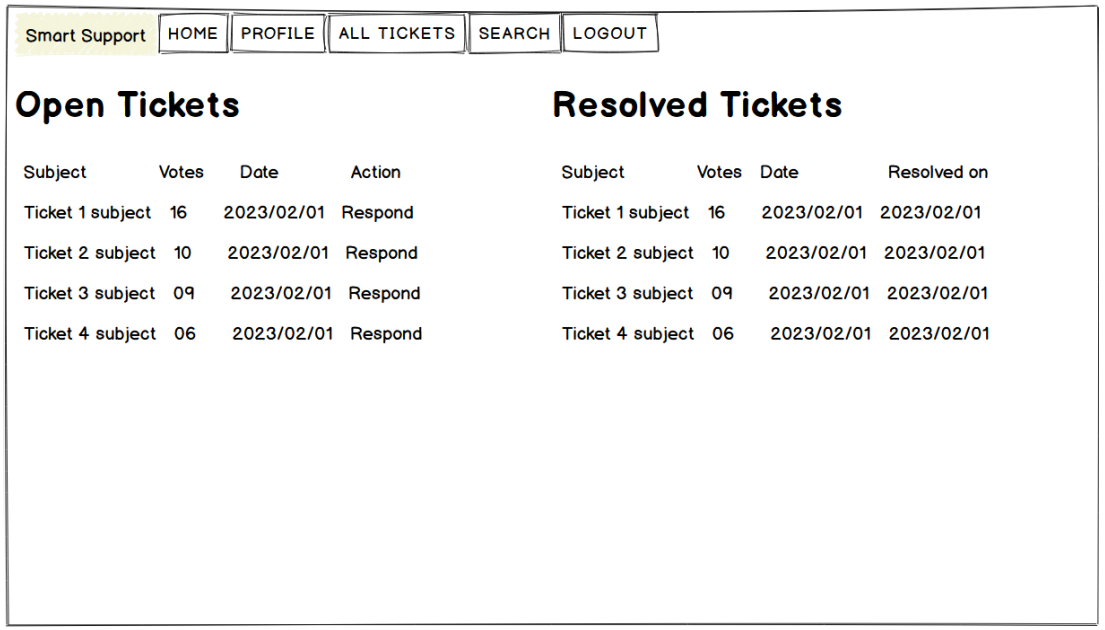


After logging in, the student is directed to the home page of the support ticketing system where she can create a new ticket or view her existing tickets.

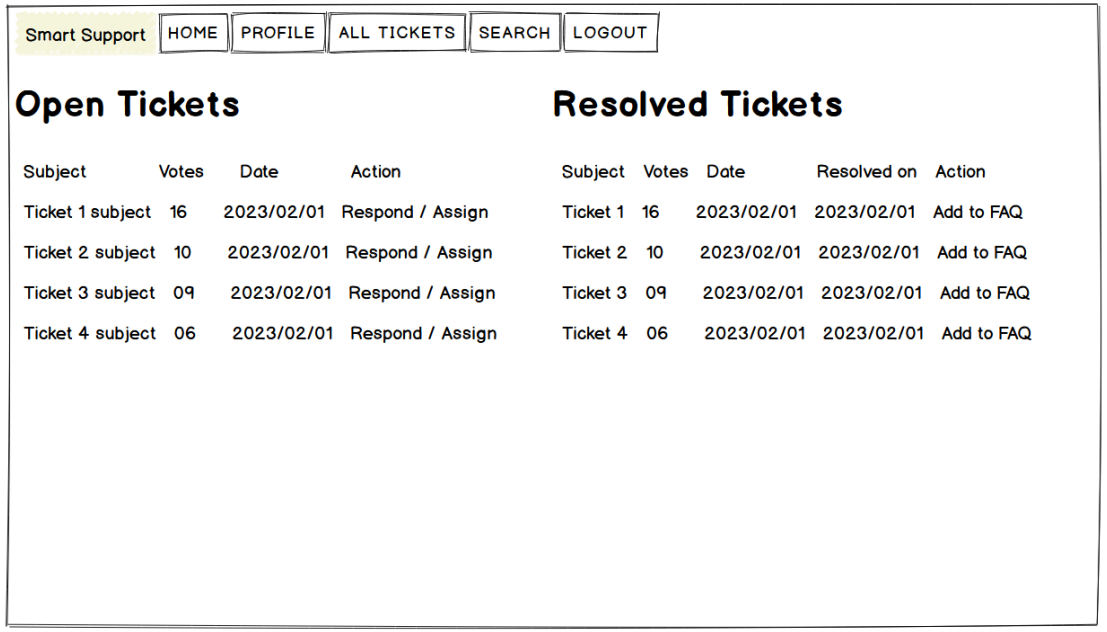


- In **Raise a new support ticket** *form* she can enter the details of her query or concern.
- The system automatically checks if there are any similar tickets already created by other students.
- If there are other similar tickets, the system displays the existing tickets to the student and prompts them to check if their concern has already been addressed.
- She can also **upvote** an existing ticket.

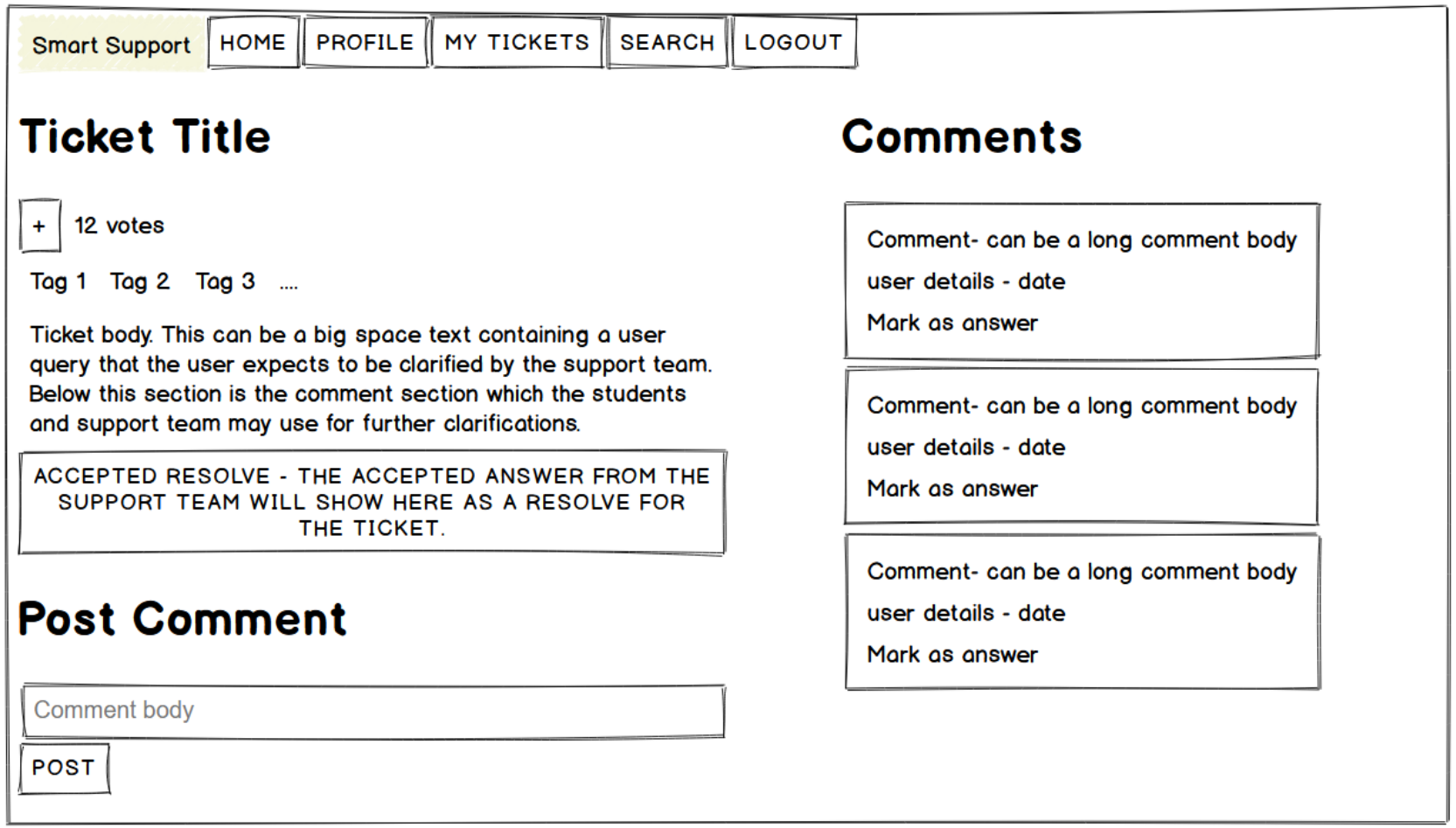
Support Dashboard



Admin Dashboard

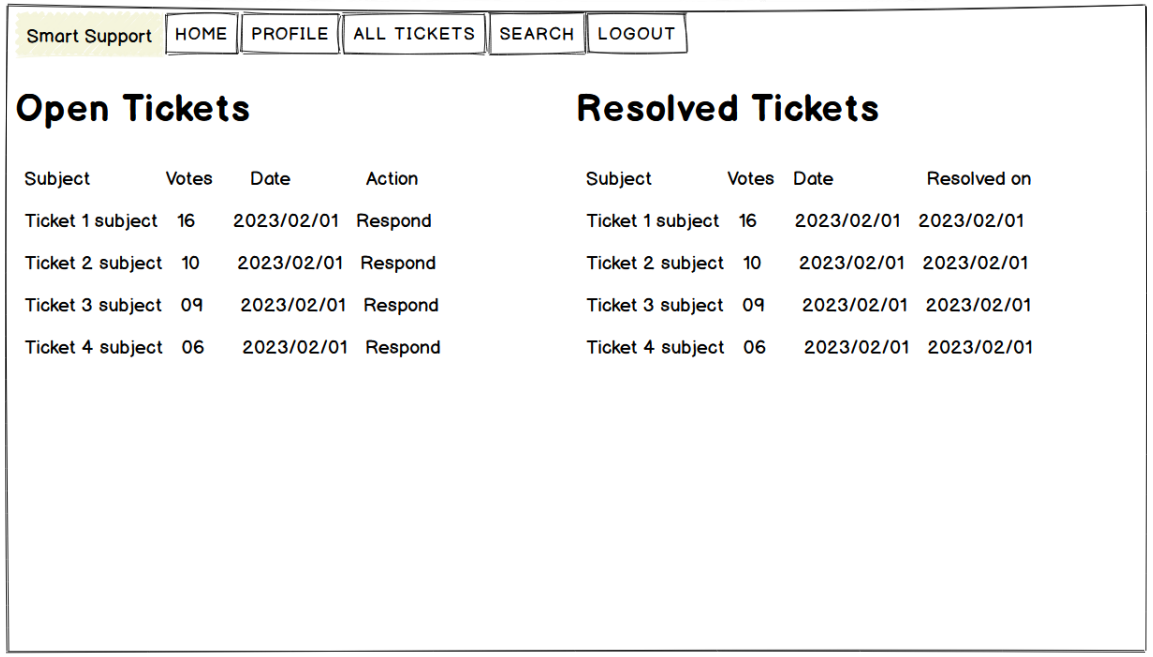


The system updates the ticket with the number of **upvotes** it has received and displays the most popular tickets at the top of the list on support and admin dashboards.



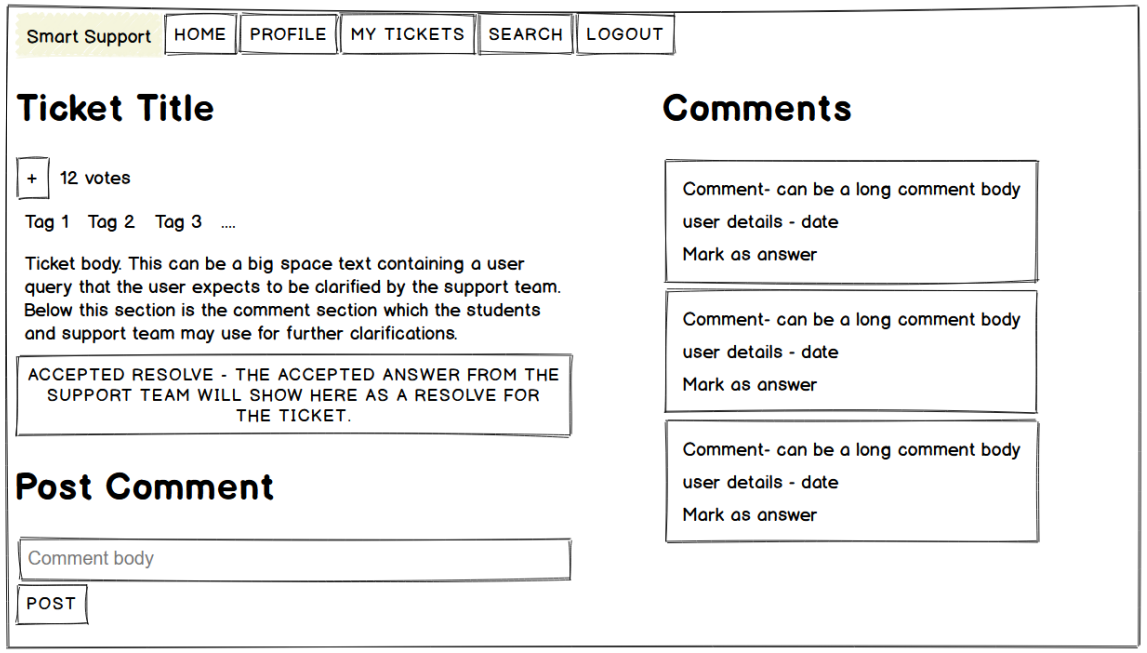
If the student decides to add a comment to the existing ticket instead of creating a new one, she can do so by visiting the relevant Ticket page

Support Dashboard



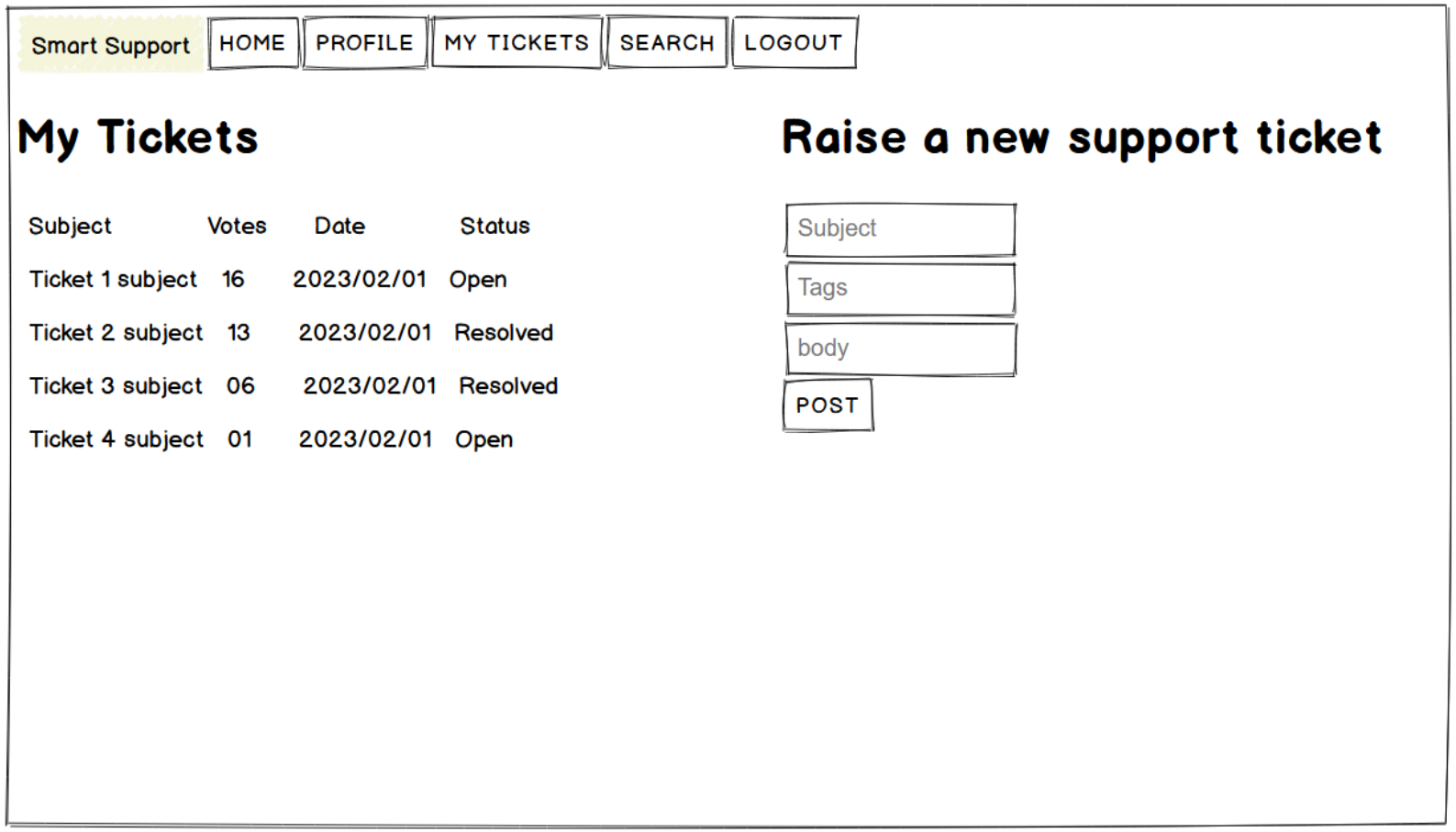
The support team receives the ticket and begins working on a solution.

Ticket Page



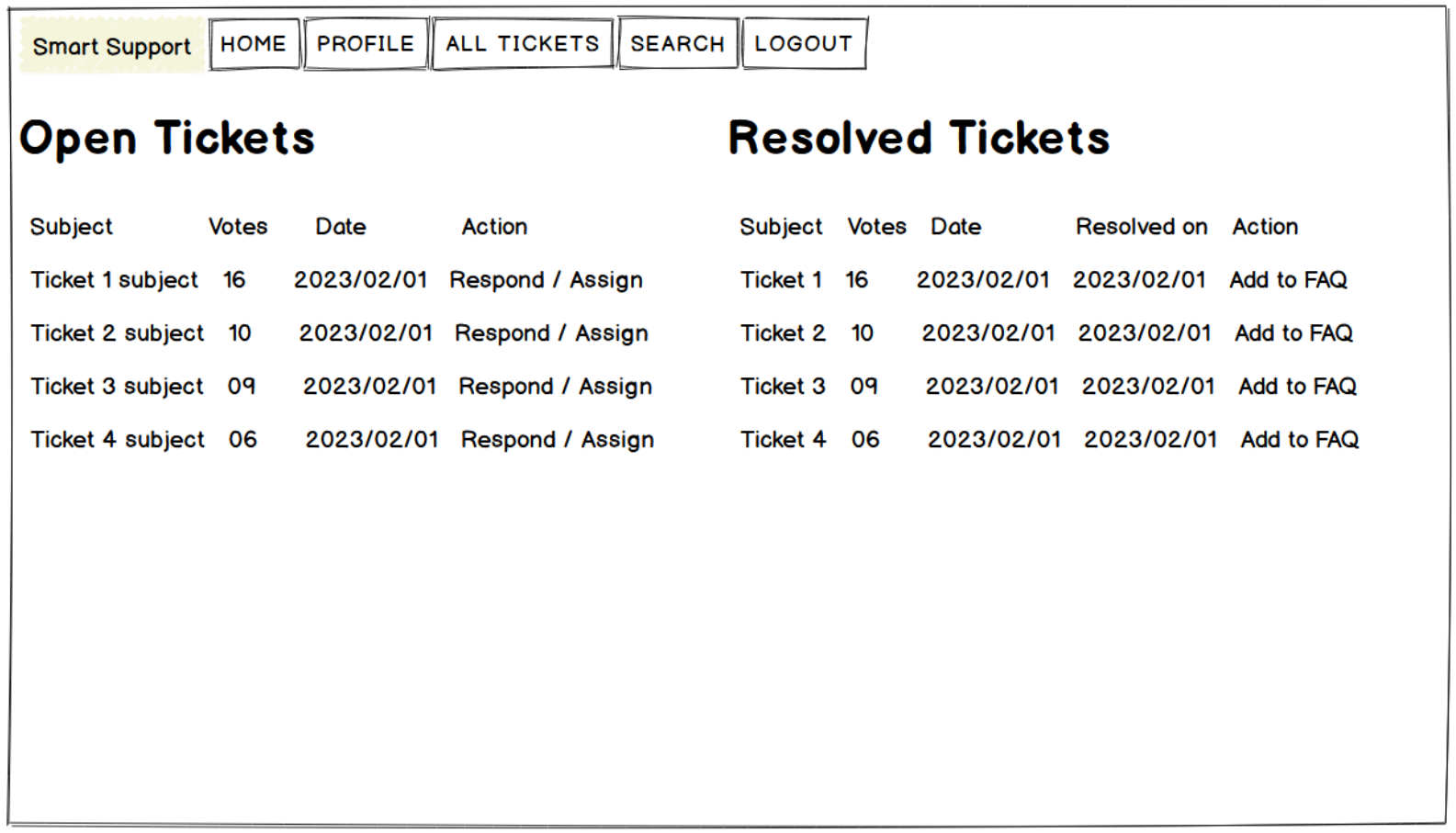
They can view the ticket, add comments, and update the ticket status as they work on the issue.

Student Dashboard



- Once the support team resolves the issue, they update the ticket status to **Resolved** and notify the student.
- The student receives a notification about the updated status of the ticket and can view the solution provided by the support team.
- The status of ticket changes from **Open** to **Resolved** on the *Student Dashboard*

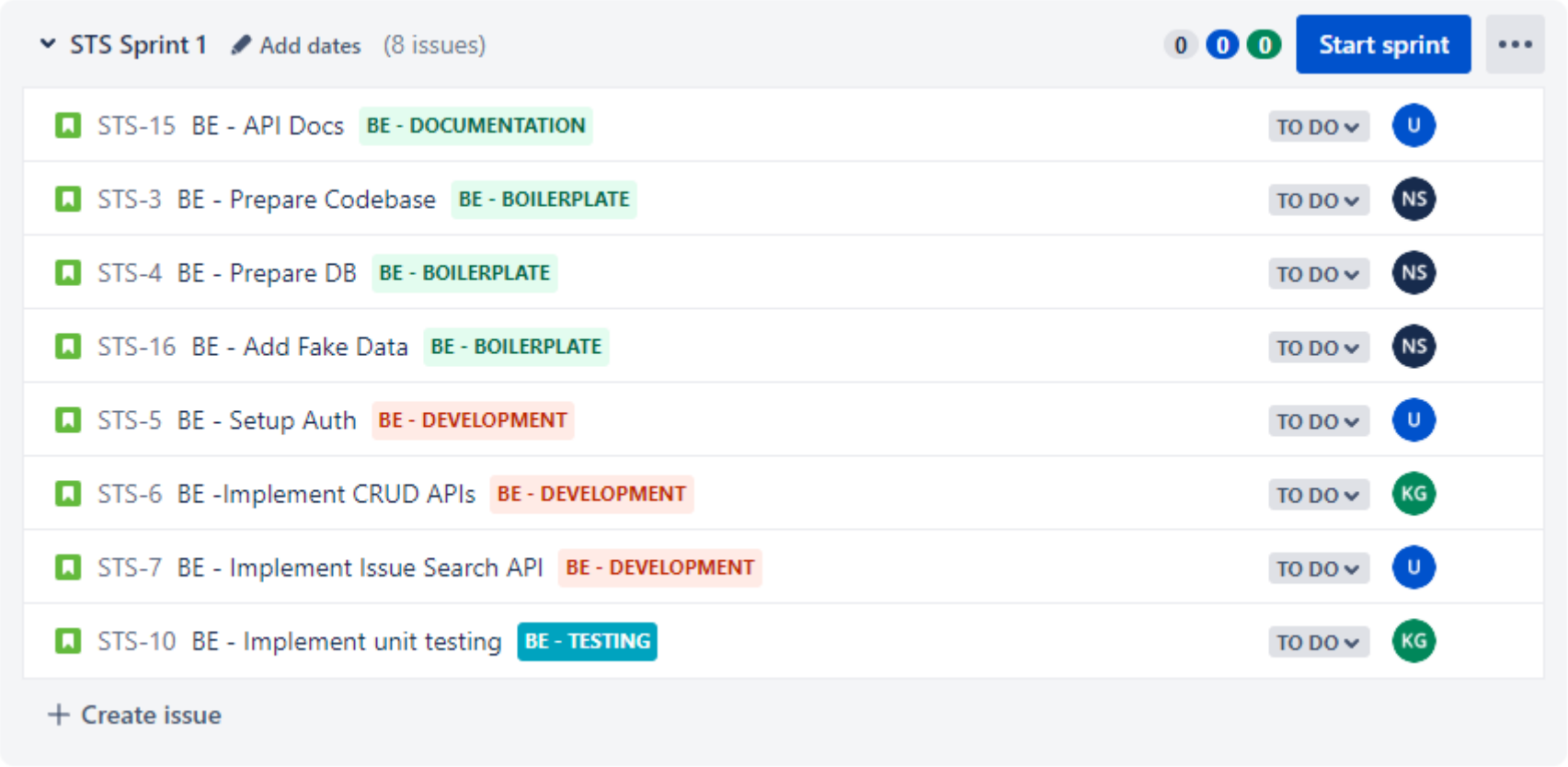
Admin Dashboard



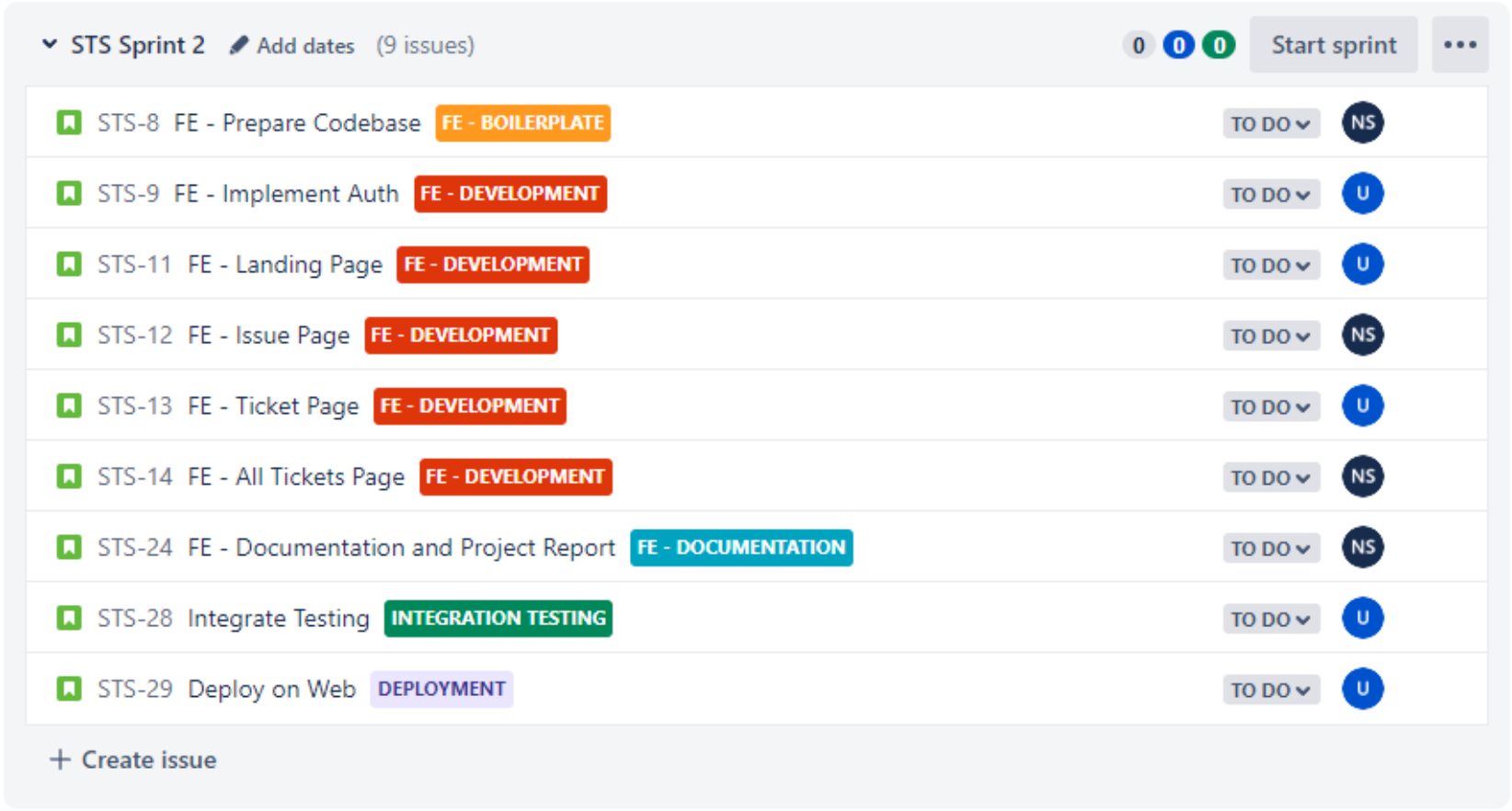
- *Admins* can see the list of all **Open** and **Resolved** tickets on their dashboard sorted by *upvotes* and *date.*
- They can *assign* the tickets to specific support users or they can *respond* to the tickets themselves.
- They can also add any of the resolved tickets to FAQs list.

Schedule and Design

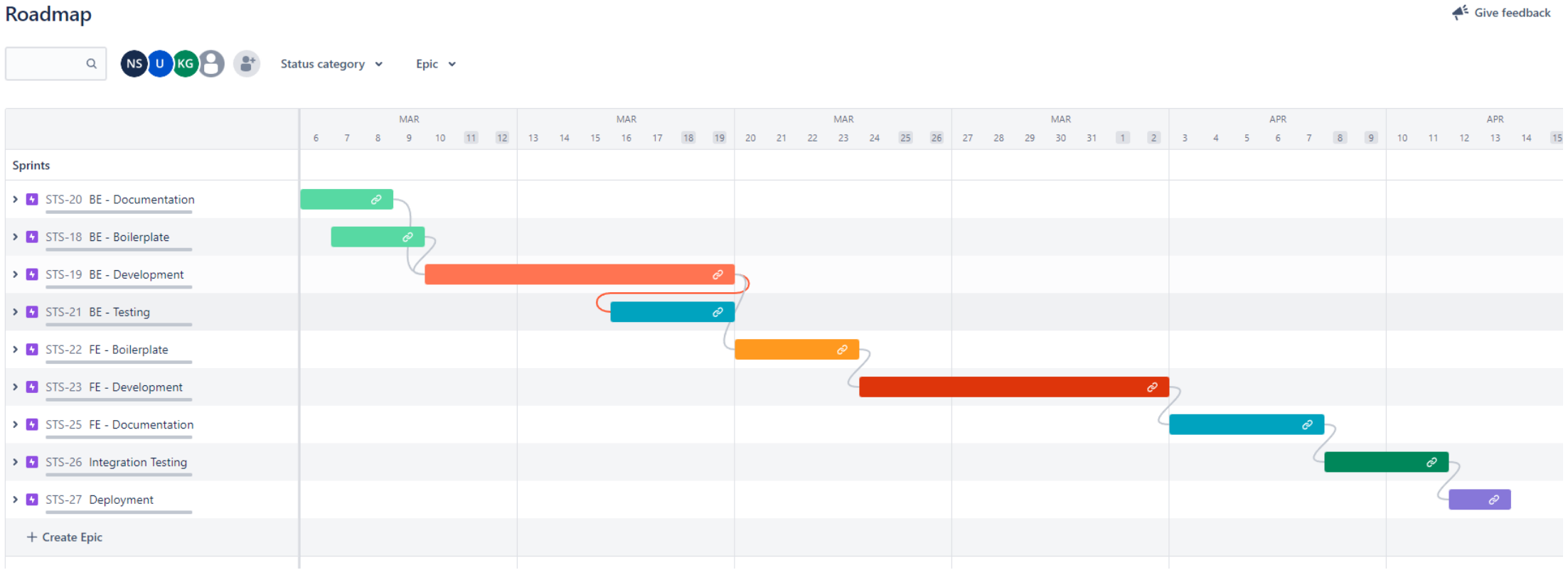
Sprint 1


STS Sprint 1
Add dates
(8 issues)
0
0
0
Start sprint
STS-15 BE - API Docs
BE - DOCUMENTATION
TO DO
U
STS-3 BE - Prepare Codebase
BE - BOILERPLATE
TO DO
NS
STS-4 BE - Prepare DB
BE - BOILERPLATE
TO DO
NS
STS-16 BE - Add Fake Data
BE - BOILERPLATE
TO DO
NS
STS-5 BE - Setup Auth
BE - DEVELOPMENT
TO DO
U
STS-6 BE -Implement CRUD APIs
BE - DEVELOPMENT
TO DO
KG
STS-7 BE - Implement Issue Search API
BE - DEVELOPMENT
TO DO
U
STS-10 BE - Implement unit testing
BE - TESTING
TO DO
KG
Create issue

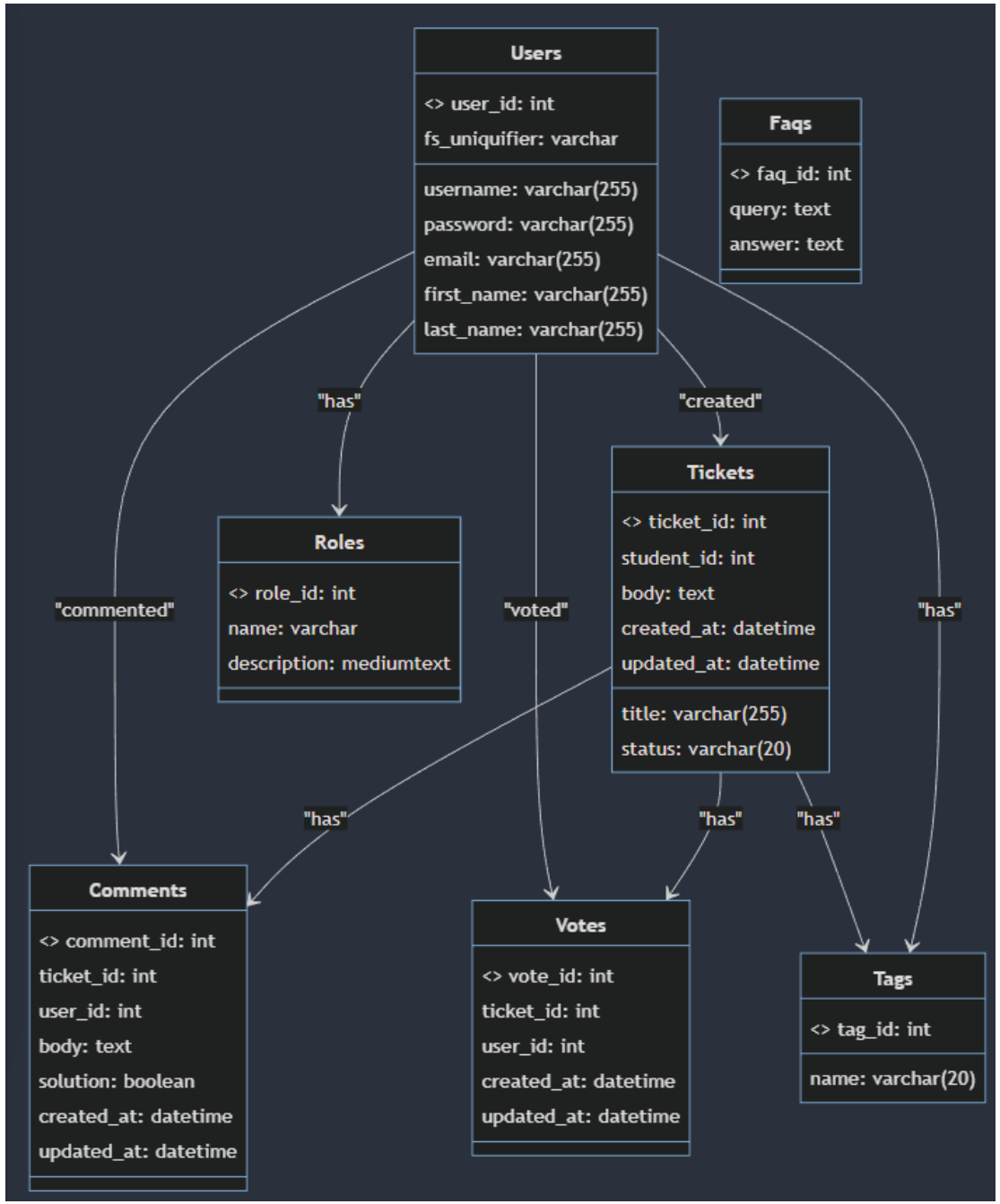
Sprint 2


STS Sprint 2
Add dates
(9 issues)
0 0 0
Start sprint
STS-8 FE - Prepare Codebase FE - BOILERPLATE TO DO NS
STS-9 FE - Implement Auth FE - DEVELOPMENT TO DO U
STS-11 FE - Landing Page FE - DEVELOPMENT TO DO U
STS-12 FE - Issue Page FE - DEVELOPMENT TO DO NS
STS-13 FE - Ticket Page FE - DEVELOPMENT TO DO U
STS-14 FE - All Tickets Page FE - DEVELOPMENT TO DO NS
STS-24 FE - Documentation and Project Report FE - DOCUMENTATION TO DO NS
STS-28 Integrate Testing INTEGRATION TESTING TO DO U
STS-29 Deploy on Web DEPLOYMENT TO DO U
Create issue

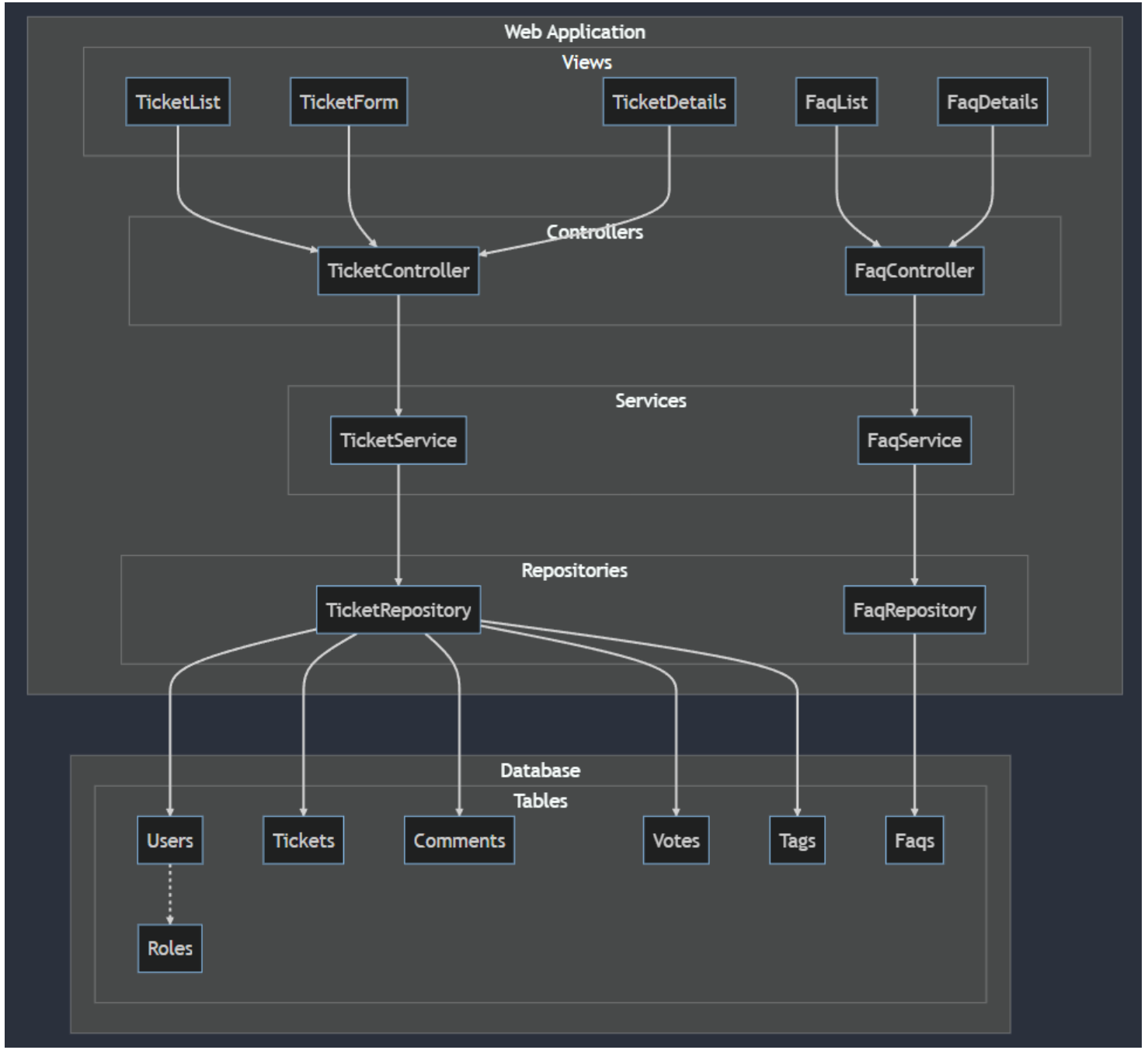
Gant Chart


Roadmap
Give feedback
NS
U
KG
Status category
Epic
MAR
APR
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Sprints
STS-20 BE - Documentation
STS-18 BE - Boilerplate
STS-19 BE - Development
STS-21 BE - Testing
STS-22 FE - Boilerplate
STS-23 FE - Development
STS-25 FE - Documentation
STS-26 Integration Testing
STS-27 Deployment
Create Epic

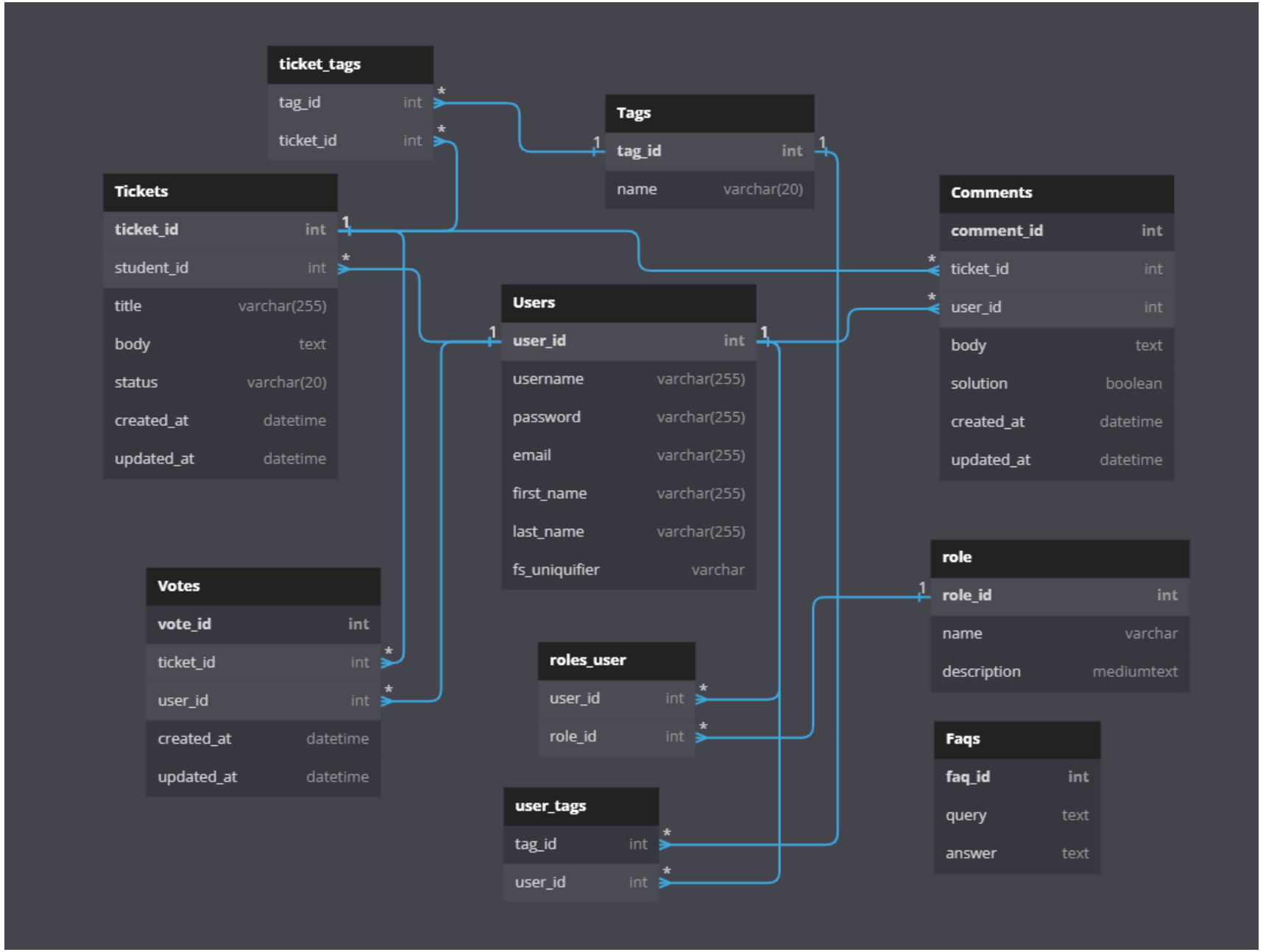
Class Diagram



Component Design



DB Schema


ticket_tags
tag_id int
ticket_id int
Tags
tag_id int
name varchar(20)
Tickets
ticket_id int
student_id int
title varchar(255)
body text
status varchar(20)
created_at datetime
updated_at datetime
Comments
comment_id int
ticket_id int
user_id int
body text
solution boolean
created_at datetime
updated_at datetime
Users
user_id int
username varchar(255)
password varchar(255)
email varchar(255)
first_name varchar(255)
last_name varchar(255)
fs_uniquifier varchar
Votes
vote_id int
ticket_id int
user_id int
created_at datetime
updated_at datetime
roles_user
user_id int
role_id int
role
role_id int
name varchar
description mediumtext
Faqs
faq_id int
query text
answer text
user_tags
tag_id int
user_id int

Scrum Meeting 1: Date: 2023-02-10 Time: 9:00 PM

Attendees:

- Uday
- Navin
- Krishu

Agenda:

1. Getting to know each other
2. Assign roles
3. Discuss general structure and timeline of the project

Minutes:

- Each member introduced themselves.
- Roles were discussed
- Discussed general structure of the project.

Scrum Meeting 2: Date: 2023-02-15 Time: 10:00 PM

Attendees:

- Uday
- Navin

Agenda:

1. Review of Milestone 2 Submission
2. Discussion of upcoming milestone goals
3. Standardize theme of all wireframes

Minutes:

- Some mock user stories discussed.
- General theme for all wireframe pages were discussed.
- A few mock wireframes were developed.
- The team discussed other business, including the need for a clearer definition of roles and responsibilities.

Scrum Meeting 3: Date: 2023-02-23 Time: 9:30 PM

Attendees:

- Uday
- Navin

Agenda:

1. Finalise Milestone 2 Submission
2. Discussion of upcoming milestone goals

Minutes:

- Final user stories and wireframe were designed by Navin
- Uday recommended some changes to wireframes
- Final Milestone 2 draft was prepared.

Scrum Meeting 4: Date: 2023-03-02 Time: 10:30 PM

Attendees:

- Uday
- Navin

Agenda:

- Discuss tools to be used for Milestone 3
- Assign roles
- Create Timeline of the project.

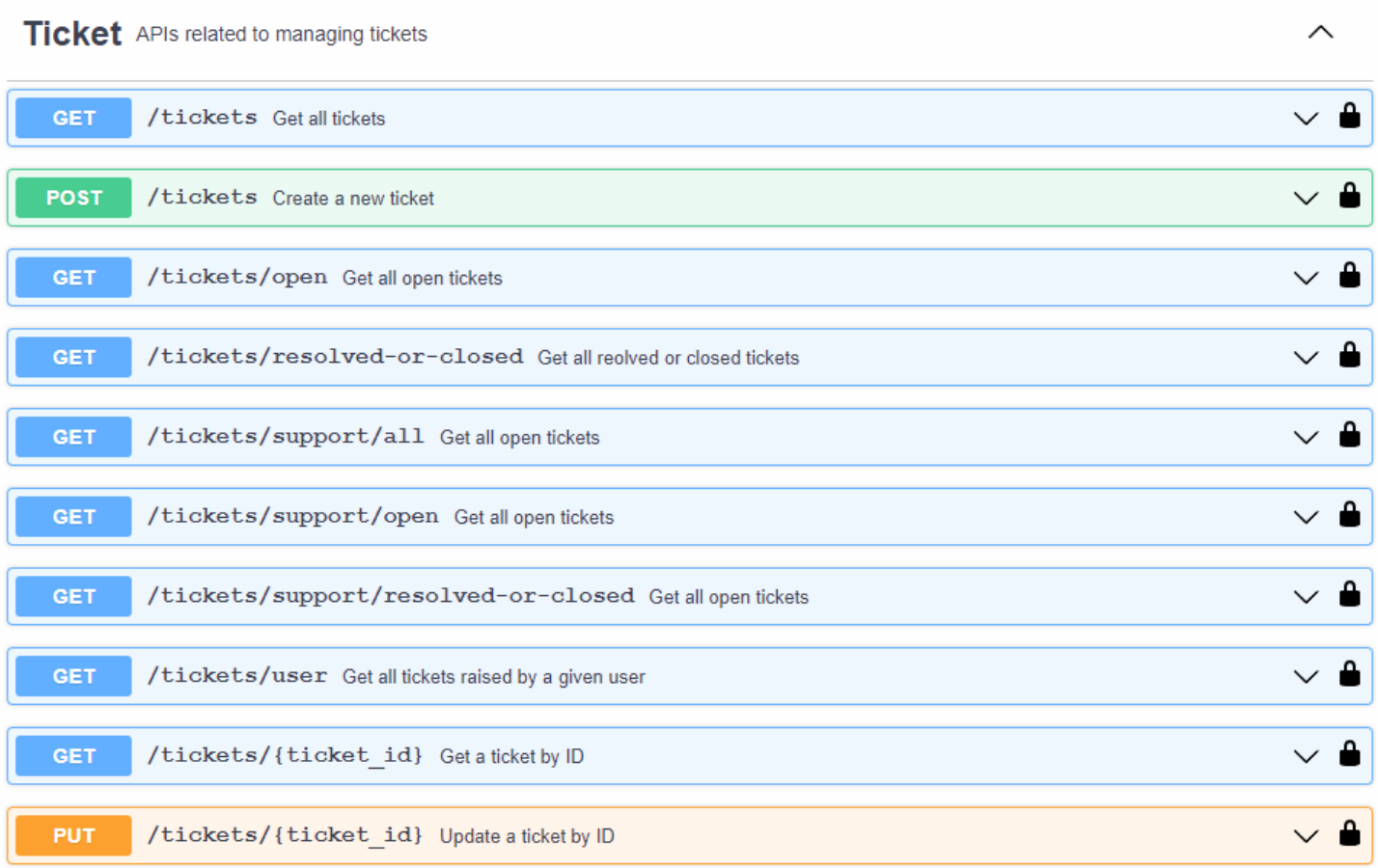
Minutes:

- Jira was decided upon for project scheduling
- Two sprints were discussed and scheduled on Jira
- Categories (Epics) and their issues/tasks were created and added to their respective sprints.
- Timeline was decided for each issues/task.
- Issues/Tasks were assigned to each member.

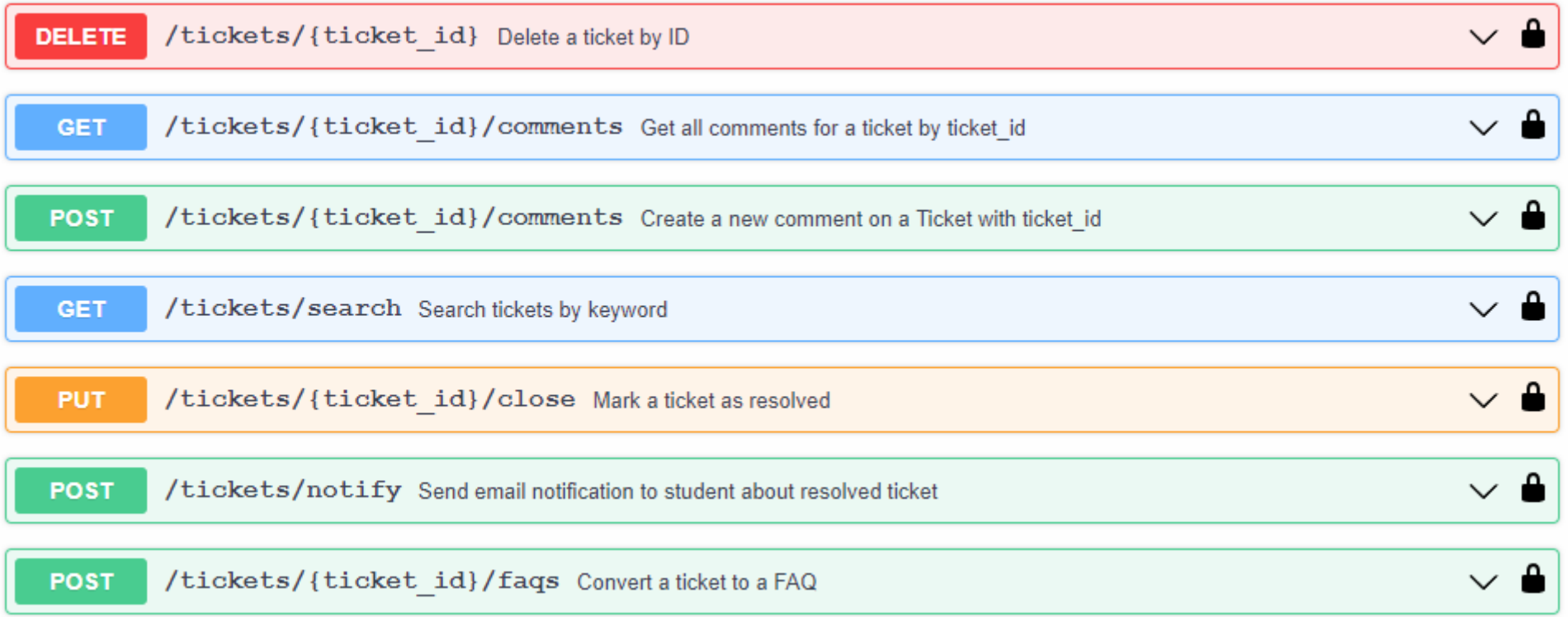
API Endpoints

User Endpoints

Ticket Endpoints

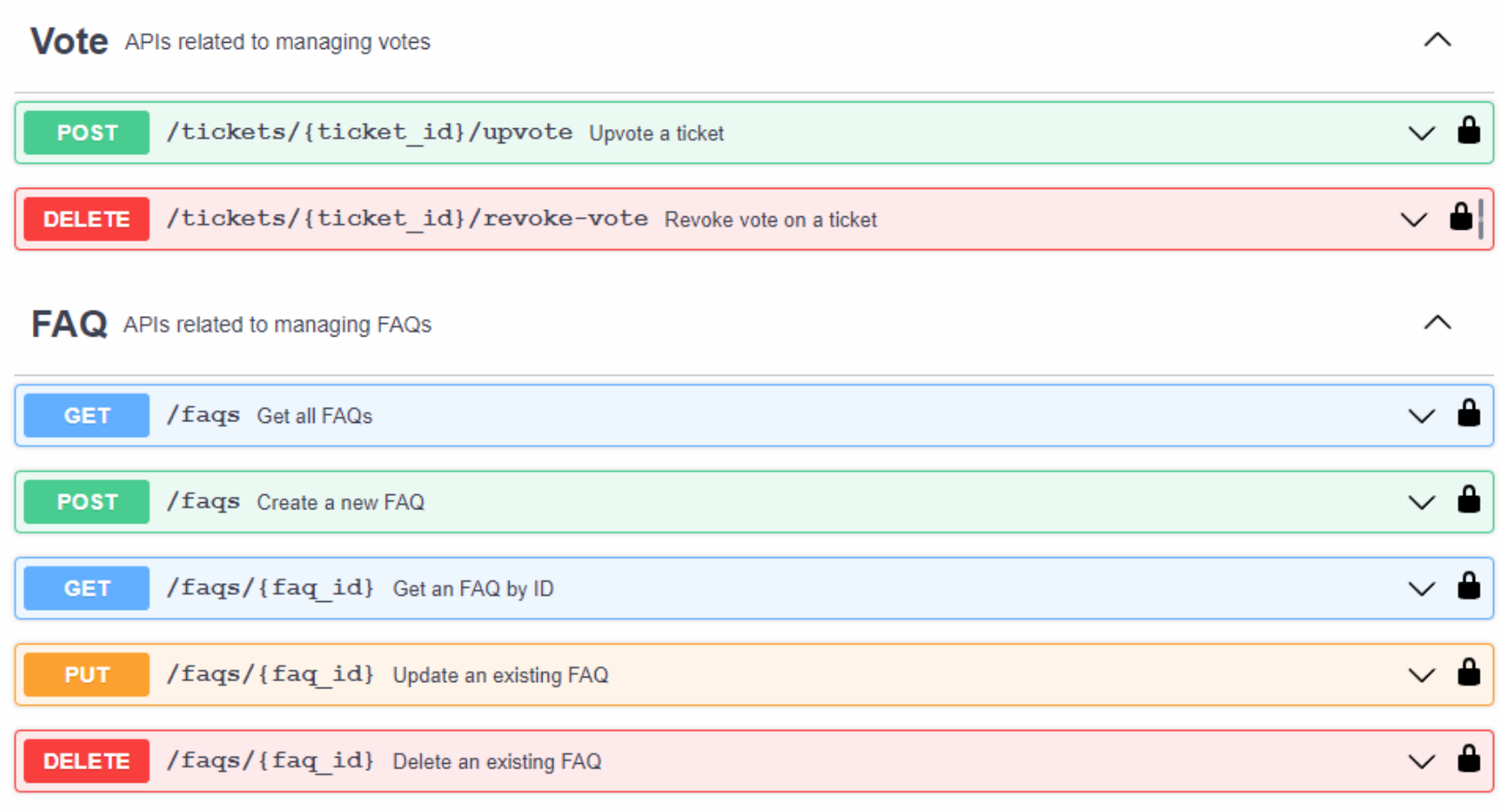


Ticket Endpoints continued…



Comment and Tag Endpoints

Vote and FAQs Endpoints



Test Cases

We have implemented API testing using **pytest** for CRUD APIs for the **Ticket** model in our application

```python
def test_login():
    global JWT
    response = app.test_client().post('/api/user/login', json={
        "username": "craig_fox",
        "password": "password"
    })
    JWT = response.get_json()['access_token']
    assert response.status_code == 200


def test_get_tickets():
    response =  app.test_client().get(
        '/api/tickets?page=0&per_page=10', headers={'Authorization': 'Bearer ' + JWT})
    assert response.status_code == 200


def test_post_tickets():
    global TICKET_ID
    response =  app.test_client().post(
        '/api/tickets', headers={'Authorization': 'Bearer ' + JWT},
        json={
            "title": "Need help with Python",
            "body": "I'm having trouble understanding Python classes. Can someone help me?"
        })
    TICKET_ID = response.get_json()['ticket_id']
    print(TICKET_ID)
    assert response.status_code == 200


def test_get_ticket_by_id():
    response =  app.test_client().get(
        '/api/tickets/{}'.format(TICKET_ID), headers={'Authorization': 'Bearer ' + JWT})
    assert response.status_code == 200
```

So far we have implemented 6 test cases for Ticket APIs (including 1 for the Login API)

```
(project) navin@DESKTOP-J1K386M:~/iit/SE/project/soft-engg-project-jan-2023-group-13/project/code/backend/smartSupport$ pytest -v
========================================== test session starts ==========================================
platform linux -- Python 3.11.0rc1, pytest-7.2.2, pluggy-1.0.0 -- /home/navin/iit/SE/project/.venv/bin/python
cachedir: .pytest_cache
rootdir: /home/navin/iit/SE/project/soft-engg-project-jan-2023-group-13/project/code/backend/smartSupport
plugins: Faker-18.4.0
collected 6 items

tests/test_tickets_api.py::test_login PASSED                                                    [ 16%]
tests/test_tickets_api.py::test_get_tickets PASSED                                              [ 33%]
tests/test_tickets_api.py::test_post_tickets PASSED                                             [ 50%]
tests/test_tickets_api.py::test_get_ticket_by_id PASSED                                         [ 66%]
tests/test_tickets_api.py::test_update_ticket_by_id PASSED                                      [ 83%]
tests/test_tickets_api.py::test_delete_ticket_by_id PASSED                                      [100%]

========================================== 6 passed in 1.43s ==========================================
(project) navin@DESKTOP-J1K386M:~/iit/SE/project/soft-engg-project-jan-2023-group-13/project/code/backend/smartSupport$
```

Some other test cases that we intend to implement in future versions

Test to get all comments for a valid ticket ID

- **Page being tested**: get_comments function
- **Inputs**: A valid ticket ID in the URL and an authenticated JWT token
- **Expected output**: A JSON response with status code 200 and a list of all comments for the given ticket ID in descending order of creation time
- **Actual output**: Same as expected output
- **Result**: Success

Test to get a single comment by ID

- **Page being tested**: get_comment function
- **Inputs**: A valid comment ID in the URL and an authenticated JWT token
- **Expected output**: A JSON response with status code 200 and the comment details for the given ID
- **Actual output**: Same as expected output
- **Result**: Success

Test to add a new comment to a valid ticket

- **Page being tested**: post_comment function
- **Inputs**: A valid ticket ID in the URL, a valid JWT token, and a JSON payload with a "body" field containing the comment text
- **Expected output**: A JSON response with status code 200 and the details of the newly created comment, including the comment ID and creation time
- **Actual output**: Same as expected output
- **Result**: Success

Test to update an existing comment

- **Page being tested**: put_comment function
- **Inputs**: A valid comment ID in the URL, a valid JWT token, and a JSON payload with a "body" field containing the updated comment text
- **Expected output**: A JSON response with status code 200 and the details of the updated comment, including the comment ID and creation time
- **Actual output**: Same as expected output
- **Result**: Success

Test to delete an existing comment

- **Page being tested**: delete_comment function
- **Inputs**: A valid comment ID in the URL and a valid JWT token
- **Expected output**: A JSON response with status code 204 and no content
- **Actual output**: Same as expected output
- **Result**: Success

Test to mark a comment as the solution for a ticket

- **Page being tested**: mark_comment_as_solution function
- **Inputs**: A valid comment ID in the URL and a valid JWT token
- **Expected output**: A JSON response with status code 200 and the details of the marked comment, including the comment ID and creation time. The associated ticket status should also be updated to "Resolved"
- **Actual output**: Same as expected output
- **Result**: Success

Besides the tests mentioned in previous pages, there can be tests written for:

- User CRUD operations
- Tickets Voting operations
- Tags CRUD operations
- FAQs CRUD operations

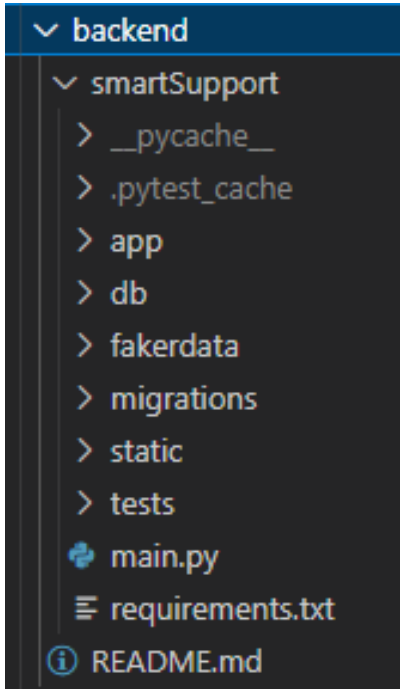
Implementation details

Folder structure

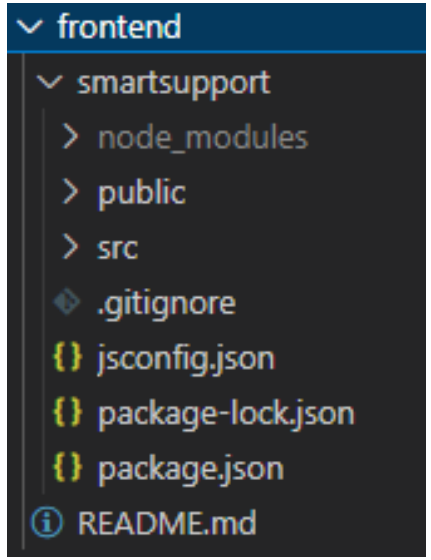
code/

backend/smartSupport
frontend/smartsupport

Backend Folder Structure:



Frontend Folder Structure:



Tech Stack

Backend:

- Flask – as scripting Framework
- SQLite – for database
- MailHog – for SMTP testing
- Faker – for generating fake data
- PyTest – for testing

Frontend:

- Vue3 – as scripting Framework
- Bootstrap 5 – as css Framework

Tools used

- **vsCode** for IDE
- **dbBrowse**r for managing SQLite database
- **MailHog** for SMTP testing
- **https://dbdiagram.io/** for generating DB Schema
- **https://imagineui.netlify.app/** for generating wireframes
- **JIRA** for project management and scheduling
- **Github** for version control

Steps to start Backend server

Step 1:

- CD to `code/backend/smartSupport` directory.

Step 2:

- Run `pip install requirements.txt` or `pip3 install requirements.txt` to install all dependencies

Step 3:

- Run `python main.py` or `python3 main.py`

To start MailHog server run:

- `~/go/bin/MailHog`

or

- `go/bin/MailHog`

Mailhog installation guide

https://github.com/mailhog/MailHog

Steps to start Frontend server

For project setup run:

`npm install`

To start Server run:

`npm run serve`

To compile and minify for production run:

`npm run build`

Issue Tracking and Reporting

We used JIRA for Issue Tracking: