1. Setup Required to run TicketViewer Application -

- Install Any development IDE (IntelliJ, eclipse).
- Ticket viewer application uses Java 11, so make sure proper java jdk is installed. I have used jdk16.
- Install maven and set path variables if not installed already.
- Download the project from GitHub(https://github.com/nikitapatil3/TicketViewerApplication).
- Open project TicketViewerApplication in the IDE.
- Check if it is imported as maven project or not, if not import it as a maven project.
- Click on maven update project to load all project dependencies.

2. How to run TicketViewerApplication -

- Go to TicketViewerApplication/src/main/java/com.zendesk.ticketviewer/ TicketViewerApplicationRunner. Open TicketViewerApplicationRunner class.
- Click on TicketViewerApplicationRunner and click on run configurations and add environment variables.
- Environment variables required to run this project are "Username", "Password", "subdomain"
- If the set-up of these environment variables is not correct, then Application will fail to
- Click on TicketViewerApplicationRunner and run main method of this class.
- If setup of environment variable is properly done, then application will start successfully.
- Tomcat will start application on port 8080 so before running the application close any process running on 8080 port or change the port number in application.properties file.
 For example – add server.port=8081 in application.properties file present in src/main/resources.

3. How to use application –

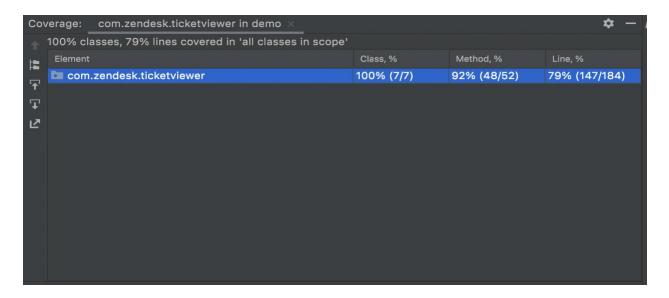
- After running Application, it will show 2 options, type menu for checking the menu options and type quit to terminate the application.
- If menu is entered by user, then Application will show menu with 3 options. Option 1 to view all tickets, Option 2 to view specific ticket, Option 3 to exit from the application.
- When user enters 1 application will show first 25 tickets and application will ask user to enter the page number to see tickets on that page. For example if there are 101 tickets then those tickets will be divided into 5 pages, when user enters page number 5, application will show ticket 101, when user enters page number 3, application will show tickets from 51 to 75. To exit from the option 1 user can enter any other page number like 0 or number greater than total number of pages, in this example if user enters 0 or value greater than 5 then user gets out of the 1'st option and then user can again choose Option 1, Option 2, or quit.

- When user enters 2, application will ask user to enter the ticket id to see specific ticket information. For example – if user enters ticket id as 2 then application will show details of the ticket with id 2.
- When user enters quit, application will terminate.
- 4. Design Overview (Choice made during development) -
 - TicketViewerApplicationRunner class is used to start the application.
 - TicketViewerUtil is the utility class used to take input from user and then call methods from TicketServiceFacade. TicketViewerApplicationRunner calls the TicketViewerUtil class methods.
 - TicketServiceFacade class is used to interact with the Zendesk ticket service api's. TicketServiceFacade class calls Zendesk ticket service api's and handles the conversion of string to proper ticket response.
 - Ticket is the pojo used to hold the information of ticket. It contains properties like id, subject, updated_at, created_at, description, assignee_id, requester_id, submitter_id, status.
 - TicketInfo is the pojo used to keep the list of tickets and total number of tickets.
 - ApplicationException is the exception class used to handle exceptions related to the API's response. For example – If Api return 401 unauthorized then application exception class is used to handle that in user friendly manner.
 - Constants is the class used to keep all the constants used in the application. For example number of tickets shown per page (25), some common error messages shown to the user.
 - When user enters option 1 to see all tickets first time at that time Zendesk List Tickets API is called which returns first 100 tickets and total number of tickets. All returned 100 tickets are then stored in the list so there is no need to call API again for those 100 tickets. So, if total number of tickets are 120 then remaining tickets are loaded only when user wants to see page number 5, at that time Zendesk List Ticket API will be called with page parameter set to 2, and again those tickets will be saved into the ticketlist, so when user wants to see page number 5 again, those tickets are loaded from local ticketlist. So, in summary I can say the Zendesk Ticket Service API is not called every time.
 - When user enters option 2 to see information about specific ticket, application will ask user to enter the ticket id, then application will call the Zendesk Show Ticket API with requested ticket id. (I am taking ticket id as a input from user because the Zendesk Show ticket API returns response according to the ticket id).
 - While displaying all tickets (Option 1), I have used id, subject, submitter_id, created_at properties of the Ticket class.
 - While displaying detailed information about specific ticket (Option 2), I have used id, subject, description, requester_id, submitter_id, created_at, status properties of the Ticket class.

Proper user message is shown if the Zendesk API's returns response other than success.
 For example – "User is not authenticated to perform this action" is shown to user if API return 401 Unauthorized status code. "Ticket Information not found in the system" is shown to user if requested ticket id does not present in the system.

5. Unit Test Case Coverage -

I have tried to cover as many test cases as possible. I have used junit for the unit tests.
 Some of the lines are not covered as they are system.out.println lines.
 Test Coverage –



6. Screenshots of the working Application -

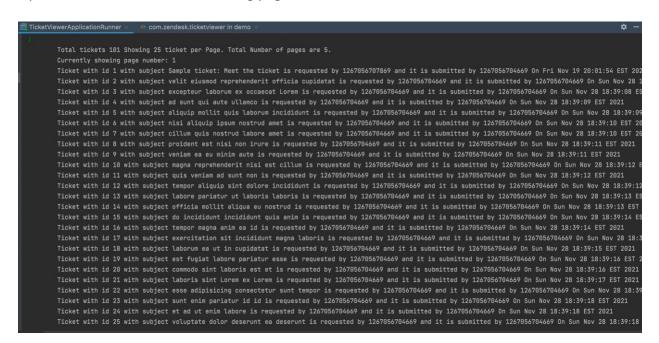
Application fails to start if Environment Variable "Username", "Password", "subdomain" is not present –

```
1____ , 1 / / / /
 :: Spring Boot ::
                                                    main] c.z.t.TicketViewerApplicationRunner : Starting TicketViewerApplicationRunner using Java 16.0.2 on Nikita
                                                    main] c.z.t.TicketViewerApplicationRunner : No active profile set, falling back to default profiles: default main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (http)
2021-11-28 14:14:34.568 INFO 4187 --- [
2021-11-28 14:14:36.027 INFO 4187 --- [
2021-11-28 14:14:36.042 INFO 4187 --- [
2021-11-28 14:14:36.043 INFO 4187 --- [
2021-11-28 14:14:36.126 INFO 4187 --- [
                                                                                                     : Initializing Spring embedded WebApplicationContext
                                                    main] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed in 1483 ms
2021-11-28 14:14:36.827 INFO 4187 --- [
                                                     main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with context path
2021-11-28 14:14:36.840 INFO 4187 --- [
                                                    main] c.z.t.TicketViewerApplicationRunner : Started TicketViewerApplicationRunner in 7.899 seconds (JVM runnin
Closing the Ticket Viewer Application.
```

quit option –

menu Option –

Option 1 – view all tickets – showing page 1 with first 25 tickets



Option 1 – showing page number 4 (Tickets from 76 to 100) –



Option 1 – Showing last page, page number 5 (only one ticket is present)–

```
Enter Page Number(1-5) to view tickets on that page and enter any other number to check other options:

Currently showing page number: 5

Ticket with id 101 with subject in nostrud occaecat consectetur aliquip is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39

Enter Page Number(1-5) to view tickets on that page and enter any other number to check other options:
```

Option 2 – enter ticket id success

```
Select view options:

* Press 1 to view all tickets

* Press 2 to view a ticket

* Press 'quit' to exit

Enter Ticket id to see information of that ticket:

Ticket with id 2 with subject velit eiusmod reprehenderit officia cupidatat and with description Aute ex sunt culpa ex ea esse sint cupidatat aliqua ex consequate Aliquip velit adipisicing exercitation irure aliqua qui. Commodo eu laborum cillum nostrud eu. Mollit duis qui non ea deserunt est est et officia ut excepteur Lorem publication processor descriptions:

* Press 1 to view all tickets

* Press 2 to view a ticket

* Press 'quit' to exit
```

 Option 2 – enter ticket id which does not exists, then proper error message is shown to user ("Ticket Information not found in the system")

```
Select view options:

* Press 1 to view all tickets

* Press 2 to view a ticket

* Press 'quit' to exit

Enter Ticket id to see information of that ticket:

127

Ticket Information not found in the system.

Select view options:

* Press 1 to view all tickets

* Press 2 to view a ticket

* Press 'quit' to exit
```

Option quit –

```
Select view options:

* Press 1 to view all tickets

* Press 2 to view a ticket

* Press 'quit' to exit

Closing the Ticket Viewer Application.

Process finished with exit code 8
```

• 401 UnAuthorized Error (Wrong password saved in the environment variable) -

```
:: Spring Boot :: (v2.6.0)

2021-11-28 14:11:20.911 INFO 4157 --- [ main] c.z.t.TicketViewerApplicationRunner : Starting TicketViewerApplicationRunner : No active profile set, falling back to default profiles: default 2021-11-28 14:11:22.980 INFO 4157 --- [ main] c.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8888 (http) 2021-11-28 14:11:22.580 INFO 4157 --- [ main] o.g. pache.catelina.core.StandardEngine : Starting Service [Tomcat] 2021-11-28 14:11:22.540 INFO 4157 --- [ main] o.g. pache.catelina.core.StandardEngine : Starting Service (Tomcat J. 11-28 14:11:22.540 INFO 4157 --- [ main] o.s.c.c.C.[Tomcat].[Coclhost].[/] : Initializing Spring embedded WebApplicationContext and on service webApplicationContext in main] o.s.b.w. embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8888 (http) with context path '' 2021-11-28 14:11:23.383 INFO 4157 --- [ main] o.s.b.w. embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8888 (http) with context path '' 2021-11-28 14:11:23.380 INFO 4157 --- [ main] o.s.b.w. embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8888 (http) with context path '' 2021-11-28 14:11:23.380 INFO 4157 --- [ main] o.s.b.w. embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8888 (http) with context path '' 2021-11-28 14:11:23.380 INFO 4157 --- [ main] o.s.b.w. embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8888 (http) with context path ''

Welcome to the Ticket Viewer Application
Type 'menu' to view options or 'quit' to exit

User is not authenticated to perform this action.

Select view options:

* Press 1 to view all tickets

* Press 2 to view a ticket

* Press 2 to view a ticket

* Press 2 to view a ticket

* Press 4 to view at ticket

* Press 5 to view a ticket
```