

## 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 start.
- 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 applicationexception 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 –

Coverage: com.zendesk.ticketviewer in demo

100% classes, 79% lines covered in 'all classes in scope'

Element	Class, %	Method, %	Line, %
com.zendesk.ticketviewer	100% (7/7)	92% (48/52)	79% (147/184)

## 6. Screenshots of the working Application –

- Application fails to start if Environment Variable “Username”, “Password”, “subdomain” is not present –

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TicketViewerApplicationRunner x com.zendesk.ticketviewer in demo x
=====|_|=====|_|_/_/_/
:: Spring Boot :: (v2.6.0)

2021-11-28 14:14:34.567 INFO 4187 --- [main] c.z.t.TicketViewerApplicationRunner : Starting TicketViewerApplicationRunner using Java 16.0.2 on Nikita
2021-11-28 14:14:34.568 INFO 4187 --- [main] c.z.t.TicketViewerApplicationRunner : No active profile set, falling back to default profiles: default
2021-11-28 14:14:36.027 INFO 4187 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (http)
2021-11-28 14:14:36.042 INFO 4187 --- [main] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2021-11-28 14:14:36.043 INFO 4187 --- [main] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.55]
2021-11-28 14:14:36.126 INFO 4187 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
2021-11-28 14:14:36.126 INFO 4187 --- [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 running)
Username or Password or subdomain are not set in the environment variable in the run configuration. Set Username and Password and subdomain in Environment Variable and Closing the Ticket Viewer Application.

Process finished with exit code 0

```

- quit option –

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TicketViewerApplicationRunner  com.zendesk.ticketviewer in demo
/Users/nikitapatil/Library/Java/JavaVirtualMachines/openjdk-16.0.2/Contents/Home/bin/java ...

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:: Spring Boot :: (v2.6.0)

2021-11-28 14:01:03.911 INFO 4046 --- [main] c.z.t.TicketViewerApplicationRunner : Starting TicketViewerApplicationRunner using Java 16.0.2 on
2021-11-28 14:01:03.913 INFO 4046 --- [main] c.z.t.TicketViewerApplicationRunner : No active profile set, falling back to default profiles: def
2021-11-28 14:01:05.723 INFO 4046 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (http)
2021-11-28 14:01:05.740 INFO 4046 --- [main] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2021-11-28 14:01:05.741 INFO 4046 --- [main] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.55]
2021-11-28 14:01:05.862 INFO 4046 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
2021-11-28 14:01:05.862 INFO 4046 --- [main] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed in 1875
2021-11-28 14:01:06.457 INFO 4046 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with context path ''
2021-11-28 14:01:06.470 INFO 4046 --- [main] c.z.t.TicketViewerApplicationRunner : Started TicketViewerApplicationRunner in 8.193 seconds (JVM

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

Process finished with exit code 0
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- menu Option –

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TicketViewerApplicationRunner  com.zendesk.ticketviewer in demo

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:: Spring Boot :: (v2.6.0)

2021-11-28 14:02:36.254 INFO 4082 --- [main] c.z.t.TicketViewerApplicationRunner : Starting TicketViewerApplicationRunner using Java 16.0.2 on Nik
2021-11-28 14:02:36.257 INFO 4082 --- [main] c.z.t.TicketViewerApplicationRunner : No active profile set, falling back to default profiles: default
2021-11-28 14:02:37.748 INFO 4082 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (http)
2021-11-28 14:02:37.761 INFO 4082 --- [main] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2021-11-28 14:02:37.761 INFO 4082 --- [main] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.55]
2021-11-28 14:02:37.889 INFO 4082 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
2021-11-28 14:02:37.890 INFO 4082 --- [main] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed in 1563 ms
2021-11-28 14:02:38.490 INFO 4082 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with context path ''
2021-11-28 14:02:38.513 INFO 4082 --- [main] c.z.t.TicketViewerApplicationRunner : Started TicketViewerApplicationRunner in 7.84 seconds (JVM runn

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

Select view options:
* Press 1 to view all tickets
* Press 2 to view a ticket
* Press 'quit' to exit

```

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

```

TicketViewerApplicationRunner x com.zendesk.ticketviewer in demo x
1
Total tickets 101 Showing 25 ticket per Page. Total Number of pages are 5.
Currently showing page number: 1
Ticket with id 1 with subject Sample ticket: Meet the ticket is requested by 1267056707869 and it is submitted by 1267056704669 On Fri Nov 19 20:01:54 EST 2021
Ticket with id 2 with subject velit eiusmod reprehenderit officia cupidatat is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:07 EST 2021
Ticket with id 3 with subject excepteur laborum ex occaecat Lorem is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:08 EST 2021
Ticket with id 4 with subject ad sunt qui aute ullamco is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:09 EST 2021
Ticket with id 5 with subject aliquip mollit quis laborum incididunt is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:09 EST 2021
Ticket with id 6 with subject nisi aliquip ipsum nostrud amet is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:10 EST 2021
Ticket with id 7 with subject cillum quis nostrud labore amet is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:10 EST 2021
Ticket with id 8 with subject proident est nisi non irure is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:11 EST 2021
Ticket with id 9 with subject veniam ea eu minim aute is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:11 EST 2021
Ticket with id 10 with subject magna reprehenderit nisi est cillum is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:12 EST 2021
Ticket with id 11 with subject quis veniam ad sunt non is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:12 EST 2021
Ticket with id 12 with subject tempor aliquip sint dolore incididunt is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:12 EST 2021
Ticket with id 13 with subject labore pariatur ut laboris laboris is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:13 EST 2021
Ticket with id 14 with subject officia mollit aliqua eu nostrud is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:13 EST 2021
Ticket with id 15 with subject do incididunt incididunt quis anim is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:14 EST 2021
Ticket with id 16 with subject tempor magna anim ea id is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:14 EST 2021
Ticket with id 17 with subject exercitation sit incididunt magna laboris is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:15 EST 2021
Ticket with id 18 with subject laborum ea ut in cupidatat is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:15 EST 2021
Ticket with id 19 with subject est fugiat labore pariatur esse is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:16 EST 2021
Ticket with id 20 with subject commodo sint laboris est et is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:16 EST 2021
Ticket with id 21 with subject laboris sint Lorem ex Lorem is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:17 EST 2021
Ticket with id 22 with subject esse adipisicing consectetur sunt tempor is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:17 EST 2021
Ticket with id 23 with subject sunt enim pariatur id id is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:18 EST 2021
Ticket with id 24 with subject et ad ut enim labore is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:18 EST 2021
Ticket with id 25 with subject voluptate dolor deserunt ea deserunt is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:18 EST 2021

```

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

```

TicketViewerApplicationRunner x com.zendesk.ticketviewer in demo x
4
Enter Page Number(1-5) to view tickets on that page and enter any other number to check other options:

Currently showing page number: 4
Ticket with id 76 with subject commodo excepteur cupidatat aliquip quis is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:41 EST 2021
Ticket with id 77 with subject Lorem aliqua id nisi minim is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:42 EST 2021
Ticket with id 78 with subject nulla id excepteur amet deserunt is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:42 EST 2021
Ticket with id 79 with subject ad reprehenderit magna ipsum irure is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:43 EST 2021
Ticket with id 80 with subject qui laboris nostrud non sit is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:43 EST 2021
Ticket with id 81 with subject deserunt do magna occaecat id is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:43 EST 2021
Ticket with id 82 with subject dolore adipisicing fugiat ex tempor is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:44 EST 2021
Ticket with id 83 with subject anim Lorem reprehenderit Lorem esse is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:44 EST 2021
Ticket with id 84 with subject enim fugiat ad veniam est is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:45 EST 2021
Ticket with id 85 with subject veniam ullamco enim ea do is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:45 EST 2021
Ticket with id 86 with subject do excepteur magna duis consequat is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:46 EST 2021
Ticket with id 87 with subject non pariatur nisi ad est is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:46 EST 2021
Ticket with id 88 with subject eiusmod tempor dolore adipisicing est is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:47 EST 2021
Ticket with id 89 with subject quis minim quis eiusmod qui is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:47 EST 2021
Ticket with id 90 with subject duis fugiat excepteur sit do is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:48 EST 2021
Ticket with id 91 with subject non nostrud anim cillum sit is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:48 EST 2021
Ticket with id 92 with subject officia sunt aliquip duis nisi is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:48 EST 2021
Ticket with id 93 with subject ut amet eiusmod cupidatat est is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:49 EST 2021
Ticket with id 94 with subject duis excepteur cillum pariatur Lorem is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:49 EST 2021
Ticket with id 95 with subject ex cillum cillum proident commodo is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:50 EST 2021
Ticket with id 96 with subject eiusmod eu esse ex incididunt is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:50 EST 2021
Ticket with id 97 with subject excepteur consequat reprehenderit labore dolor is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:51 EST 2021
Ticket with id 98 with subject cillum commodo nulla laborum nostrud is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:51 EST 2021
Ticket with id 99 with subject elit sit laborum commodo laborum is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:52 EST 2021
Ticket with id 100 with subject adipisicing duis quis consequat velit is requested by 1267056704669 and it is submitted by 1267056704669 On Sun Nov 28 18:39:52 EST 2021

```

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

```

Ticket with id 100 with subject adipisicing quis quis consequat velit is requested by 1267056704669 and it is submitted by 1267056704669 on Sun Nov 28 18:39:30
Enter Page Number(1-5) to view tickets on that page and enter any other number to check other options:
5
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 18:39:30
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
2
Enter Ticket id to see information of that ticket:
2
Ticket with id 2 with subject velit eiusmod reprehenderit officia cupidatat and with description Aut ex sunt culpa ex ea esse sint cupidatat aliqua ex consequatur
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 ipsum
Select view options:
* Press 1 to view all tickets
* Press 2 to view a ticket
* Press 'quit' to exit

```

- Option 2 – enter ticket id which does not exist, 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
2
Enter Ticket id to see information of that ticket:
100
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
quit
Closing the Ticket Viewer Application.
Process finished with exit code 0

```

- 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 using Java 16.0.2 on Nikita
2021-11-28 14:11:20.913 INFO 4157 --- [main] c.z.t.TicketViewerApplicationRunner : No active profile set, falling back to default profiles: default
2021-11-28 14:11:22.506 INFO 4157 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (http)
2021-11-28 14:11:22.518 INFO 4157 --- [main] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2021-11-28 14:11:22.519 INFO 4157 --- [main] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.55]
2021-11-28 14:11:22.640 INFO 4157 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
2021-11-28 14:11:22.641 INFO 4157 --- [main] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed in 1659 ms
2021-11-28 14:11:23.283 INFO 4157 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with context path ''
2021-11-28 14:11:23.300 INFO 4157 --- [main] c.z.t.TicketViewerApplicationRunner : Started TicketViewerApplicationRunner in 7.965 seconds (JVM running)

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

Select view options:
* Press 1 to view all tickets
* Press 2 to view a ticket
* Press 'quit' to exit
1
User is not authenticated to perform this action.

Select view options:
* Press 1 to view all tickets
* Press 2 to view a ticket
* Press 'quit' to exit
```