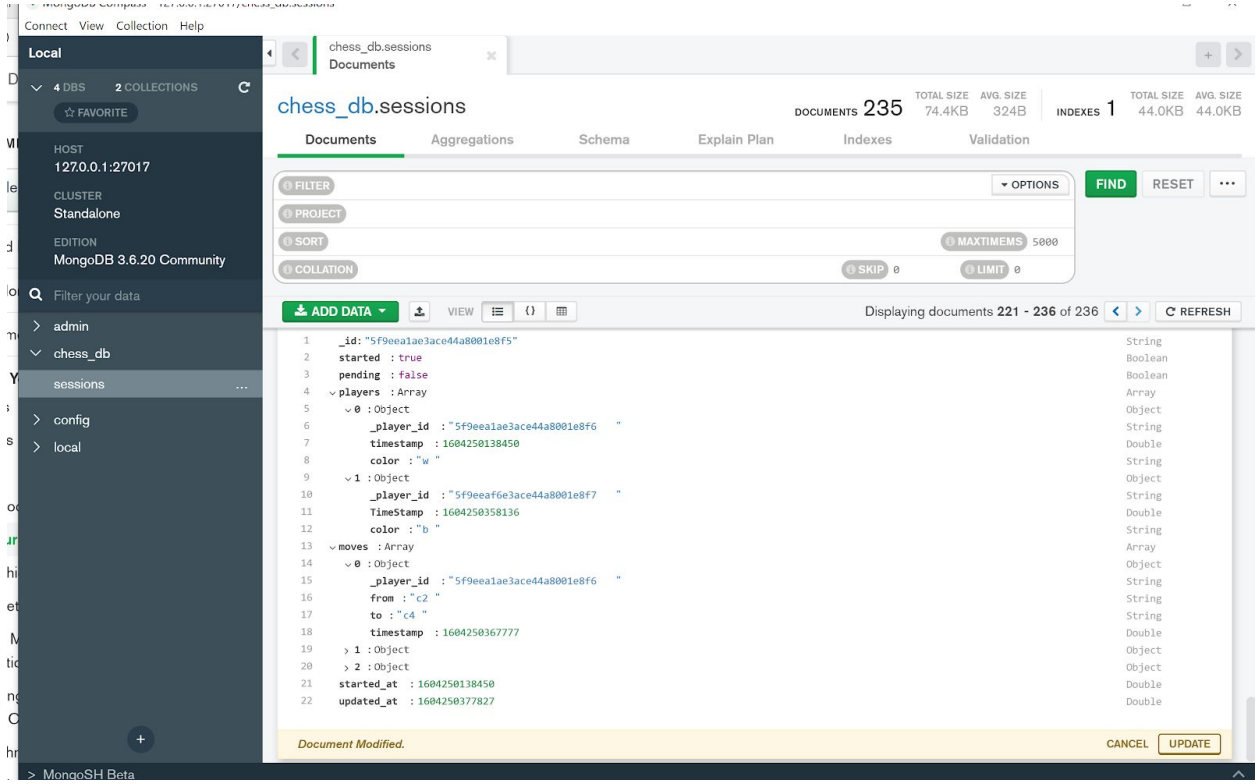
Tools used during testing:

- Windows 10 - OS
- Intellij IDE + Vscode
- Mongo DB Compass
- Selenium + Typescript
- Protractor
- Pupeeteer
- Testcafe
- Google Docs for documenting the case observation
- Notepad
- MongoDB Compass

For my understanding:

- First of all, I read this document provided in ReadMe.md and understand it carefully.
- Then I set up the environment with command prompt
- I set up env in two different machines

```
1.Machine 1: has port 8080 occupied for another application
APPLICATION started on port 8081 :
there should be message for user on which port application should be running
2. Machine 2: APPLICATION started on port 8080
```

-
- I went through the code base provided and try to understand it
- I set up the environment
- Then I did exploratory testing and functional testing with front end and check with three different tabs and underand the chess board functionality
- I also see the details with database connection
- 

My Observation:

1. I tried with selenium - protractor - puppeteer initially
2. **I observe that drag and drop is not supporting very well with all of them for this application**
3. **I also tried Move mouse and hover event - but no success**
4. **But i can also verify later with JAVA or python luggage with selenium**
5. Then I checked with test cafe and it was working with it
6. It was the first time I have worked with test cafe so , please test code structure is very simple.
7. ALso there is no much requirement i see for now to create different component and pages ans it is single page application and done not have many complex functionalities
8. I use the helper class for adding common utilities

Steps for Happy Path:

1. Set up the env as mentioned in the Readme.md
2. Start the frontend service and backend connection
3. On browser CHROME Tab 1: open http://localhost:8080
4. On browser CHROME Tab 2: open http://localhost:8080
5. On browser EDGE Tab 1: open http://localhost:8080
6. On step3: Start new Game (User 1)
7. On step4: Join Game (User 2)
8. User 1 : performs valid move
9. User 2 : Chess board is updated performs valid move

Observation 1:

As mentioned in document visitor user can quit the game but it should not affect the session

If visitor user clicks on the Quit Game is closes the live session as well.

Observation 2:

I could not write any unit tests for this application.

Because I do not understand a few processes and code base at the moment.

Also it took so much time to verify with selenium and other tools.

Observation 3:

Also on page refresh the live session is disconnected . This should not happen

Observation 4:

On user turn , User can move pieces to

- Opponent piece location
- EMpty box location
- Just they are not allowed to put piece on own piece location
- There is no chess rule working for this application

For TEST Plans keep following steps

1. Analyze the product
    - Web application - supported to browsers and mobile browsers
    - Contains frontend and backend tests
2. Design the Test Strategy

- UAT tests
- Functional tests
- Browser specific tests
- Performance load tests
- Unit Tests

```
I did not get a chance as I could not understand for create
unit tests in this project .
I will require guidance in first hand then I can create on my
own
Also Some of the functionality cases will be covered during
unit tests
```

-
- System tests

Functional tests

1. E2E tests
2. Regression
3. Smoke
4. Sanity
5. Functionality based tests

3. Define the Test Objectives
4. Define Test Criteria
5. Resource Planning
6. Plan Test Environment
7. Schedule & Estimation
8. Determine Test Deliverables

I have added some of the functionality based scenarios or we can say different modules based on that we can create such flows

Funcatinalty bases tests

Scenario 1: Connection time out behaviour

```
Internet connection time out when there is live session
 - User 1 turn - User 1 - connection lost for 5 Second and
reconnect
 - User 1 turn - User 2 - connection lost
 - User 2 turn - User 1 - connection lost
 - User 2 turn - User 2 - connection lost
 - User 2 turn - Server is restarted or server connection is
lost
 - User 1 turn  - Server is restarted or server connection is
lost
```

Scenario 2: Connection time out behaviour

```
Internet connection time out when User has clicked start new
Game
 - User 1 turn - User 1 - connection lost for 5 second and re
connect to system
 - A: User 2 clicks on Join the game before 5 seconds
 - B: User 2 clicks on Join the game After 5 seconds
```

Scenario 3: Session behaviour

```
User is already playing in active session
 - Verify chess board behaviour on different Browser
 - Verify session after closing the tab and re opening the
tab on browser
 - Verify session after closing the browser and re opening
the browser
 - Verify session after Navigating to different Tabs on same
browser
 - Verify session after Refreshing the browser tab
 - Verify session on clearing browser cookies in live session
 - connecting in  multiple devices or browser
```

Scenario 4: Browser specific

```
 - Verify chess board behaviour on different Browser
 - Verify chess board behaviour on different OS Device
browser
 - Verify chess board behaviour on different Browser
Resolution
 - connecting in  multiple devices or browser

Also:
   - Verify the functionality and chess board after clicking
     on Button  / moving pieces
```

Scenario 5: User Interface

```
- Verify system shows correct messages and buttons as per the
user activity performed
   1. Main User
   2. Opponent
   3. Visitor

ON JOINING the game :
- Check whether all the pieces of the both sides are
available or not and also check whether they are properly
organised or not.

ON QUITTING the game:
```

```
- Check whether all the pieces of the both sides are
rearranged in an old manner or not and also check whether
they are properly organised or not.

ON Moving the pieces:
- Check whether all the pieces of the both sides are getting
updated and respective message is displayed

ON SYSTEM connection notification :
- Check proper message is displayed on browser  to all users

   1. 1. System connection issue notifications
   2. 2. User turn
   3. 3. User specific messages
   4. 4. Additional information Instruction message
```

Scenario 6: User permission

```
- Verify user can access pieces of his own only : When his
turn is active
- Verify user can access pieces of his own only : When his
turn is NOT active
- Verify visitor user has only view permission and can not
edit the board of any user
- Verify visitor user can quit the view
- Verify on clicking JOIN GAME  - button at same time by two
different users check the system behavior
```

Scenario 7: Performance / Load test

```
- It is a web application
- When it will be live with different user session
→ Check the performance test JMETER / New Relic agent or
OTHER tool
```

Scenario 8: GeoLocation test

```
- Verify when the users are interacting from two different
geographic location and observe the system behavior
- Also observe the database entry
```

Scenario 9: Database

```
  1. Verify in database stores and updates all details
     related to
- user session history
- player move details
- make sure all details are correct

There can be many cases as per the flow
```

Scenario 10: Functional Test

```
- Visiter user clicks on Quit game
- Main user clicks on Quit game
- Opponent user clicks on Quit game

Main user Refresh the Live session
Opponent user : Refresh the live session
Verify when the MainUser user quits the session
```

CASTING

```
Verify casting: E1 to A1
Verify casting: E1 to H1
Verify casting: E8 to H8
Verify casting: E8 to H8
Verify casting: After A1 is already moved once
Verify casting: After H1 is already moved once
Verify casting: After E1 is already moved once
Verify casting: After A8 is already moved once
Verify casting: After H8 is already moved once
Verify casting: After E8 is already moved once
Verify casting: After E8 is has been checked once
Verify casting: After E1 is has been checked once

 1. The castling must be kingside or queenside.
 2. Neither the king nor the chosen rook has previously
moved.
 3. There are no pieces between the king and the chosen rook.
 4. The king is not currently in check.
 5. The king does not pass through a square that is attacked
by an enemy piece.
 6. The king does not end up in check. (True of any legal
move.)
```

Player moves

```
Verify player can not move pieces in wrong place
Verify player can not move opponent pieces
```

Pieces Direction

```
Verify valid move direction : Knight
Verify valid move direction : Rook
Verify valid move direction : Bishop
Verify valid move direction : King
Verify valid move direction : Queen
Verify valid move direction : Pawn
```

```
Verify valid move direction : Pawn
 - Single move forward
 - double move forward
 - move forward is Stopped as there is piece in front of it
 - move cross
 - Also at the end of black line - PAWN can create the valid
(QUEEN-ROOK-Bishop-Knight)
```

Check - Check Mate cases

```
White to black: Verify move : check
Black to White: Verify move : check
Black to White: Verify move : check mate
White to black: Verify move : check mate
```

Quit Game

```
White/Black player quits game: on his turn
White/Black player quits game: Not on his turn
```

Website DESIGN

```
APART from this there will be other cases related
  - LOGO
  - Website design
  - Tool tip
  - Page headers
  - Messages
  - User look and feel
  - Spelling mistakes
```

Scenario 11: System test

Once all the system is working fine .

- Check in the beta version and test it
- Also make pair testing session
- in HOUSE Testing
- Friends and Family session