Choonz

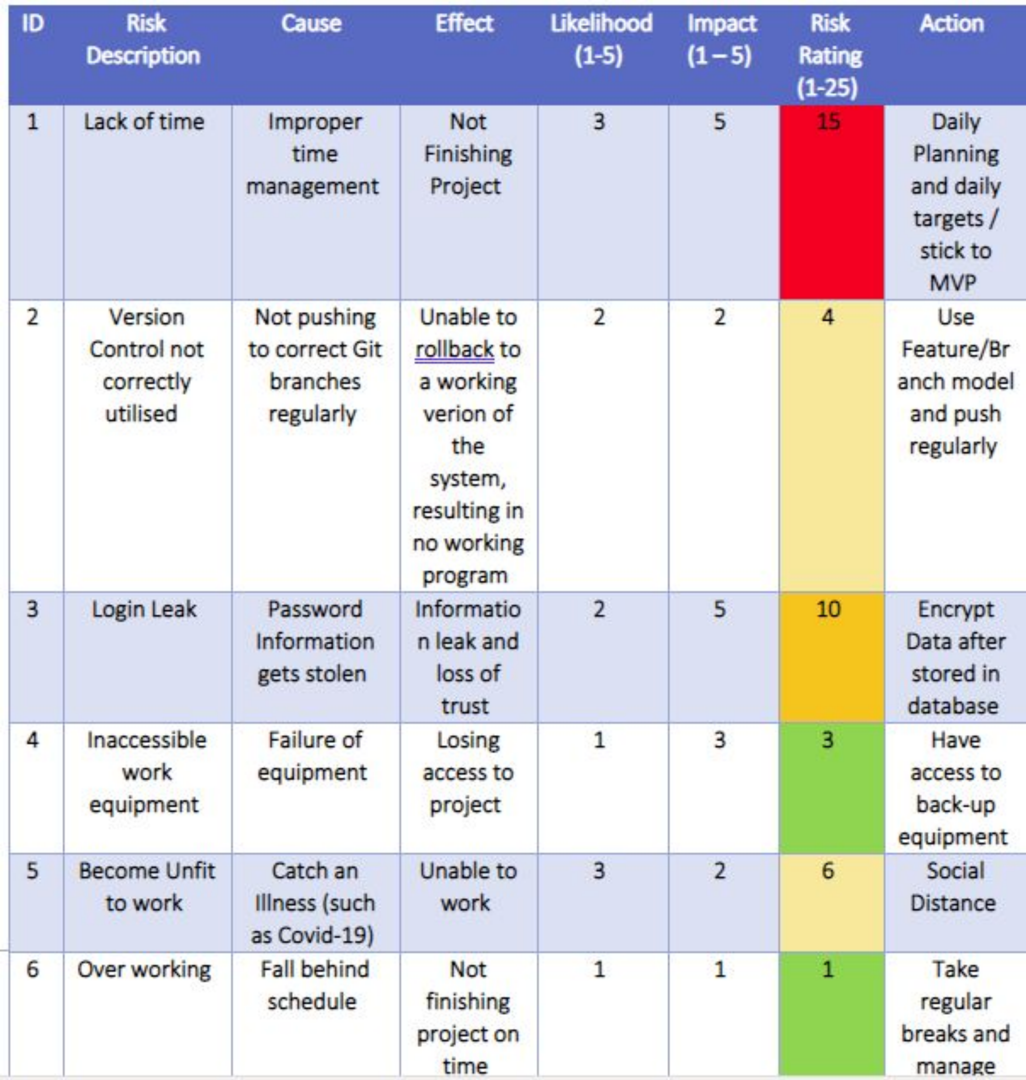
By Team 4

Introduction

Process of Development

- Looked at current state of the project (API and Front-End)
- Created a risk assessment for project
- Decided on the priority of the features for final product (to quickly provide a MVP)
- Split the user stories into sprints
- Added project to Git
- Worked using main/dev/feature branch model.

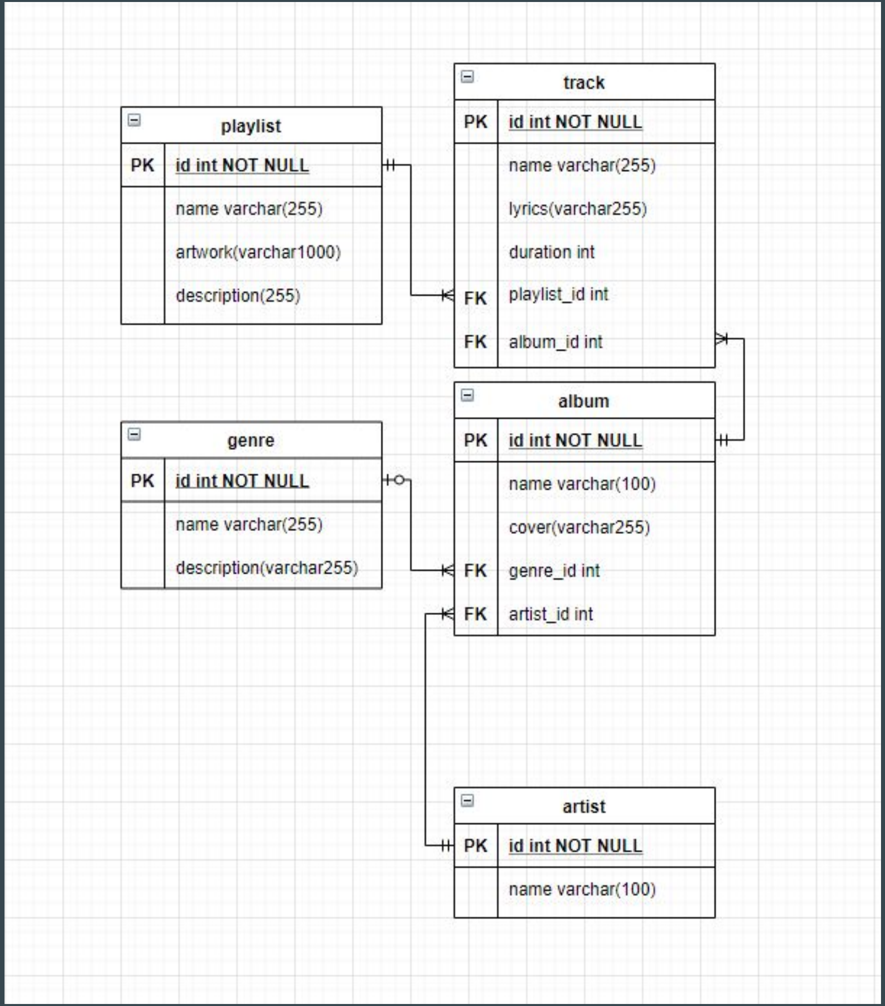
Risk Assessment



ID	Risk Description	Cause	Effect	Likelihood (1-5)	Impact (1 – 5)	Risk Rating (1-25)	Action
1	Lack of time	Improper time management	Not Finishing Project	3	5	15	Daily Planning and daily targets / stick to MVP
2	Version Control not correctly utilised	Not pushing to correct Git branches regularly	Unable to rollback to a working verion of the system, resulting in no working program	2	2	4	Use Feature/Branch model and push regularly
3	Login Leak	Password Information gets stolen	Information leak and loss of trust	2	5	10	Encrypt Data after stored in database
4	Inaccessible work equipment	Failure of equipment	Losing access to project	1	3	3	Have access to back-up equipment
5	Become Unfit to work	Catch an Illness (such as Covid-19)	Unable to work	3	2	6	Social Distance
6	Over working	Fall behind schedule	Not finishing project on time	1	1	1	Take regular breaks and manage

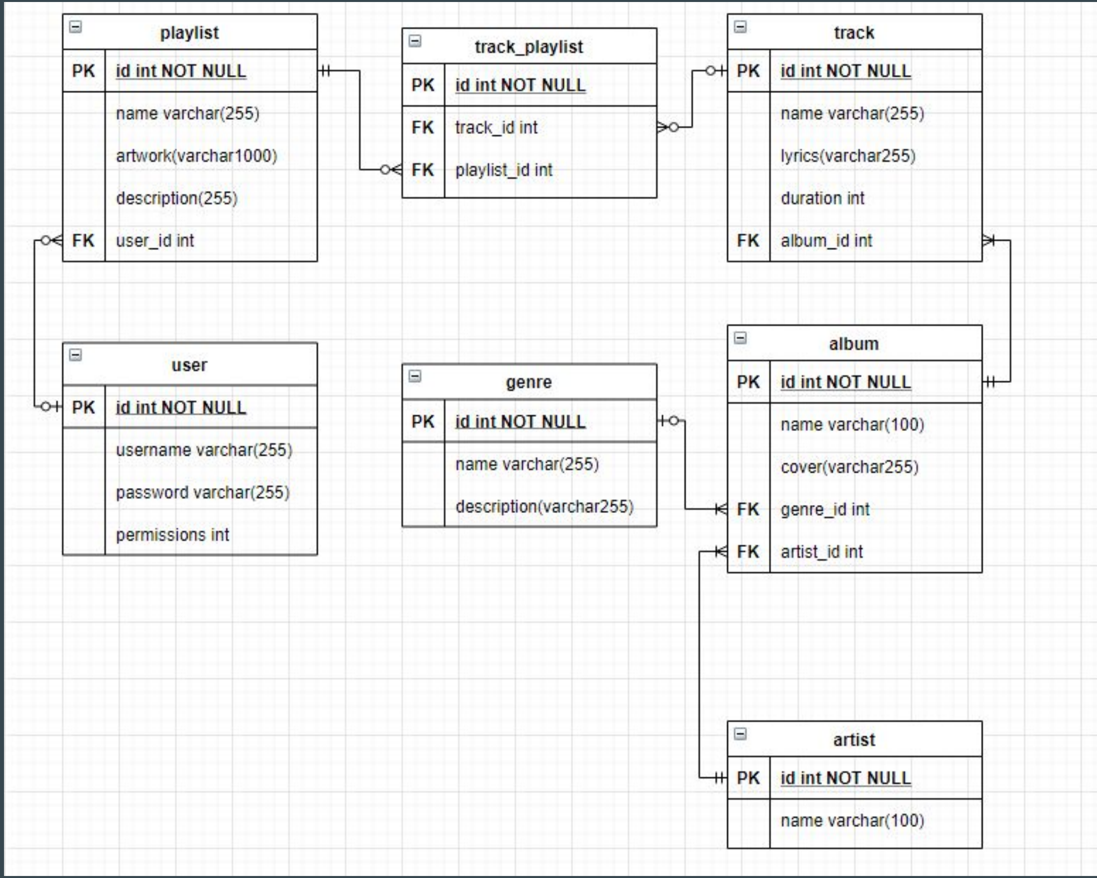
Diagrams

- ERD at the start of the project
- No User Table
- Track contained a playlist ID

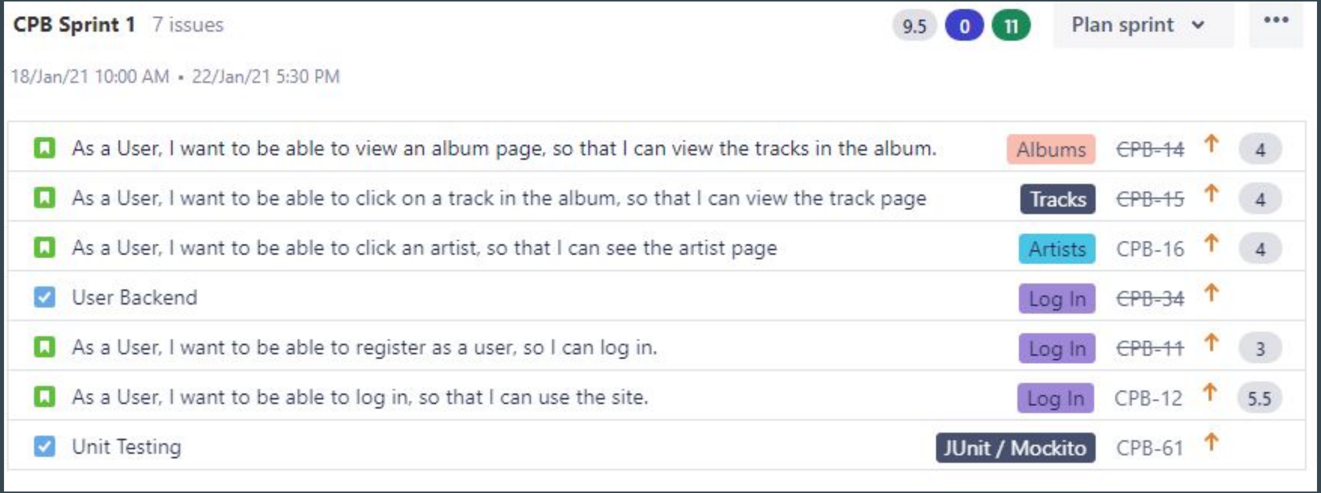


Diagrams

- ERD after refactoring
- User table was added
- A user owns a playlist
- A user can be admin
- Track_playlist table was added



Sprint 1



CPB Sprint 1 7 issues

9.5 0 11 Plan sprint •••

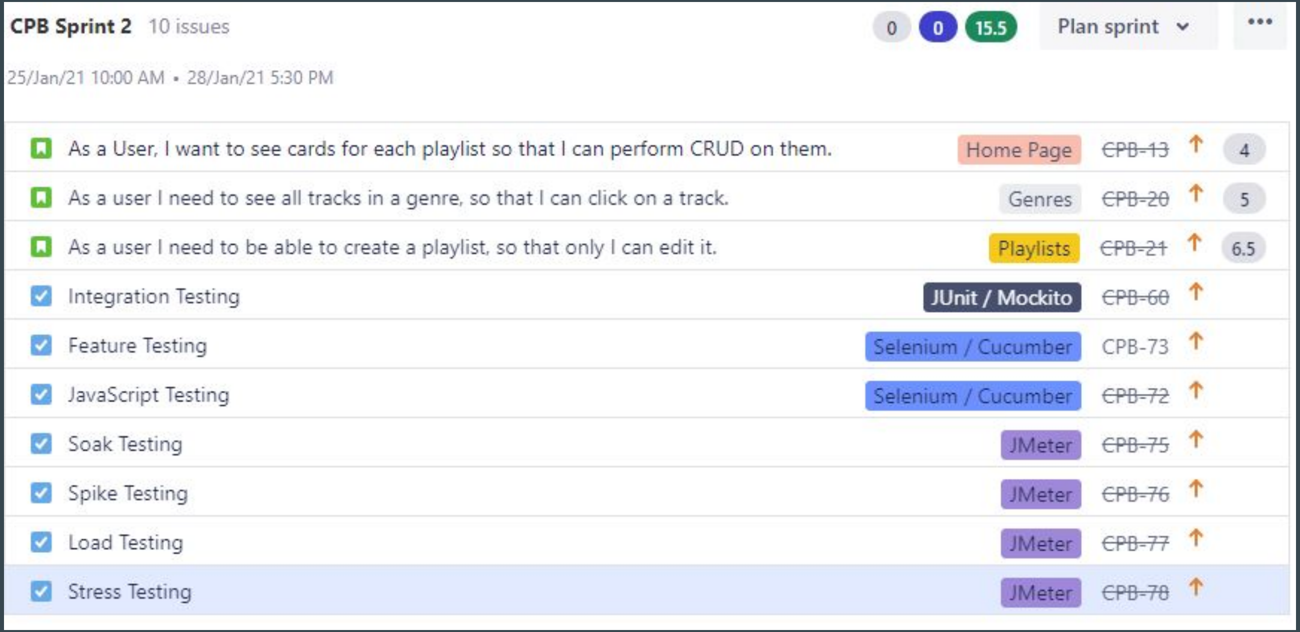
18/Jan/21 10:00 AM • 22/Jan/21 5:30 PM

As a User, I want to be able to view an album page, so that I can view the tracks in the album.	Albums	~~CPB-14~~	↑	4
As a User, I want to be able to click on a track in the album, so that I can view the track page	Tracks	~~CPB-15~~	↑	4
As a User, I want to be able to click an artist, so that I can see the artist page	Artists	CPB-16	↑	4
User Backend	Log In	~~CPB-34~~	↑	
As a User, I want to be able to register as a user, so I can log in.	Log In	~~CPB-11~~	↑	3
As a User, I want to be able to log in, so that I can use the site.	Log In	CPB-12	↑	5.5
Unit Testing	JUnit / Mockito	CPB-61	↑	

Sprint 1: Retrospective

- Because this sprint was mainly to quickly produce a MVP, this was completed relatively quickly.
- There was no delete from playlist function. This was before we decided to implement the track_playlist table.
- Real data should be used rather than using test data
- The only testing that was implemented was Unit testing and Postman. This was taken into consideration for the next sprint where testing was performed regularly.

Sprint 2



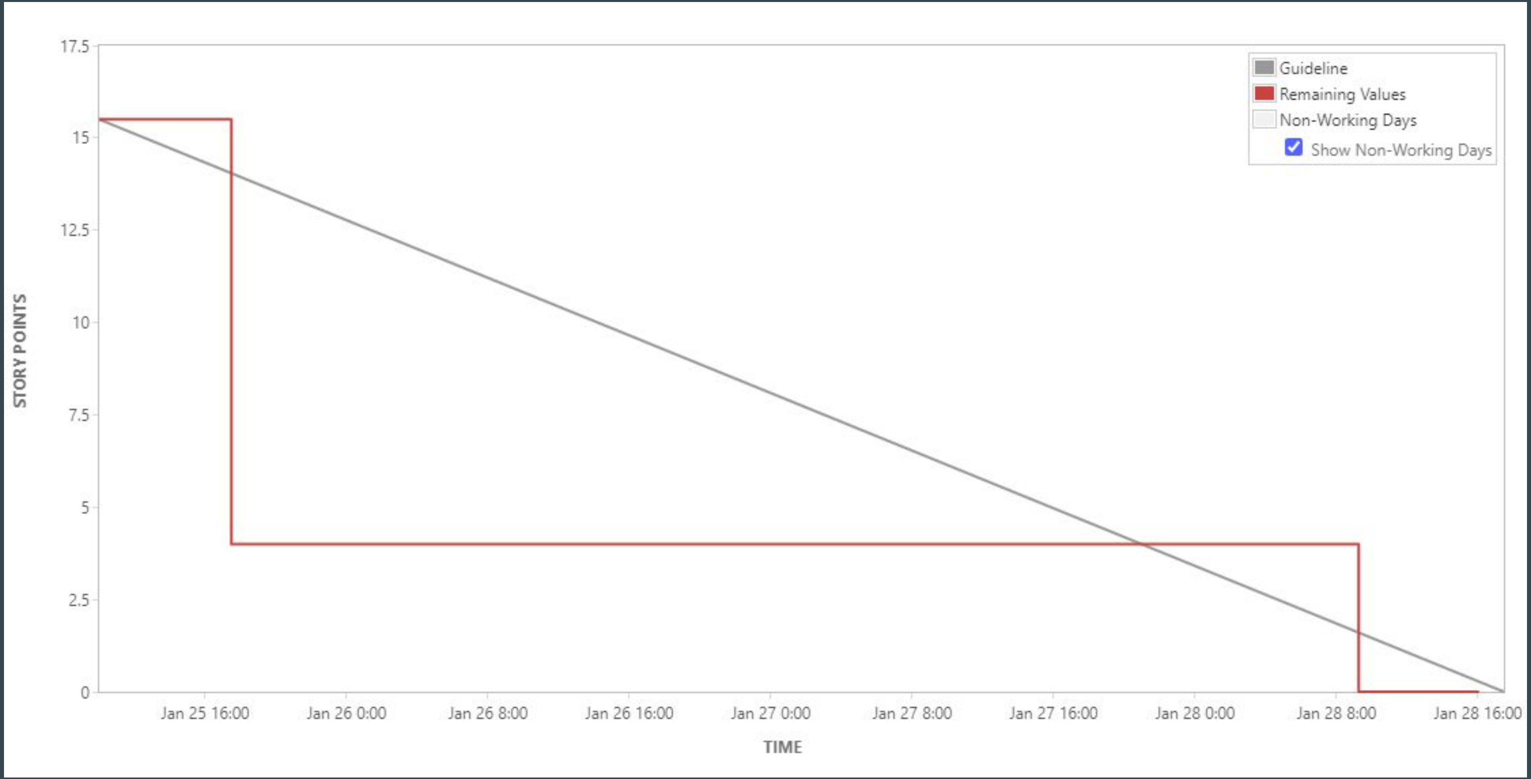
CPB Sprint 2 10 issues

0 0 15.5 Plan sprint

25/Jan/21 10:00 AM • 28/Jan/21 5:30 PM

As a User, I want to see cards for each playlist so that I can perform CRUD on them.	Home Page	~~CPB-13~~	4
As a user I need to see all tracks in a genre, so that I can click on a track.	Genres	~~CPB-20~~	5
As a user I need to be able to create a playlist, so that only I can edit it.	Playlists	~~CPB-21~~	6.5
Integration Testing	JUnit / Mockito	~~CPB-60~~	
Feature Testing	Selenium / Cucumber	CPB-73	
JavaScript Testing	Selenium / Cucumber	~~CPB-72~~	
Soak Testing	JMeter	~~CPB-75~~	
Spike Testing	JMeter	~~CPB-76~~	
Load Testing	JMeter	~~CPB-77~~	
Stress Testing	JMeter	~~CPB-78~~	

Sprint 2



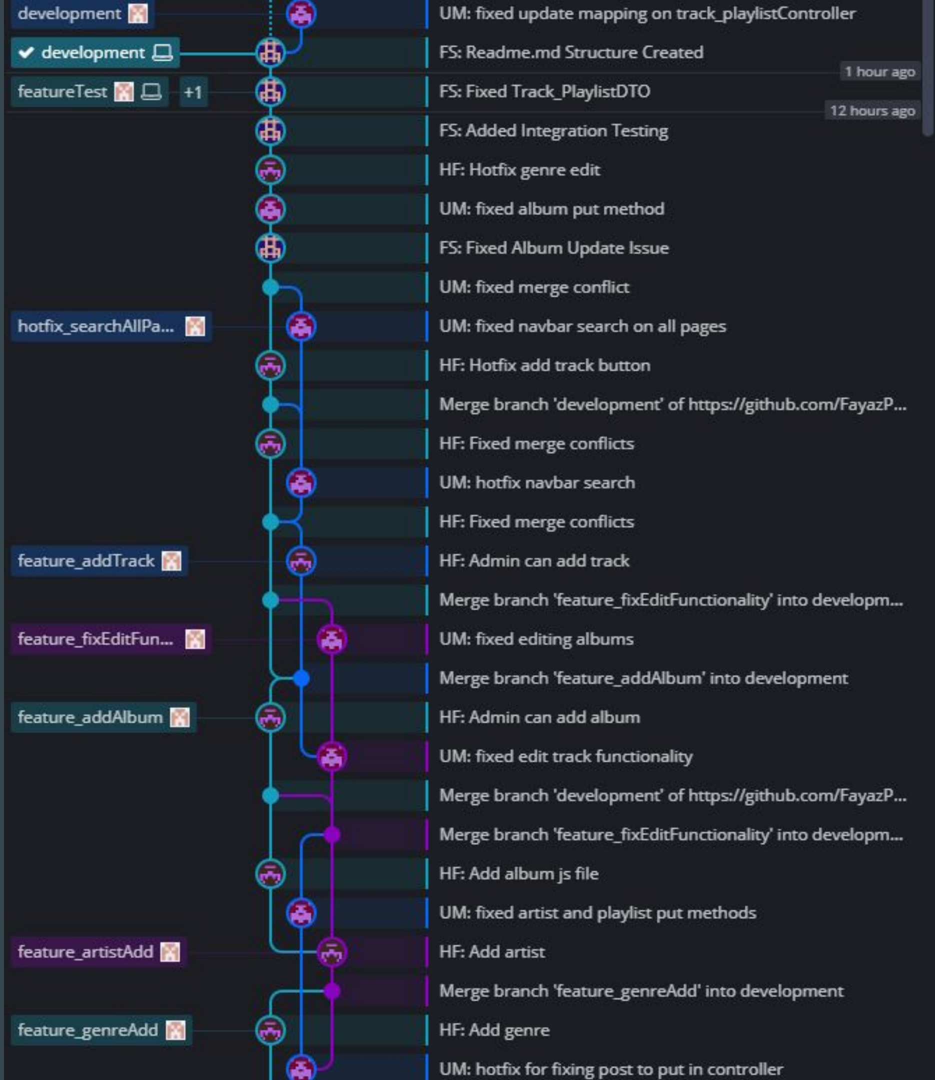
Guideline
Remaining Values
Non-Working Days
Show Non-Working Days
STORY POINTS
17.5
15
12.5
10
7.5
5
2.5
0
Jan 25 16:00
Jan 26 0:00
Jan 26 8:00
Jan 26 16:00
Jan 27 0:00
Jan 27 8:00
Jan 27 16:00
Jan 28 0:00
Jan 28 8:00
Jan 28 16:00
TIME

Sprint 2: Retrospective

- Was mainly to do with CRUD functions on the playlist and allowing an admin to perform CRUD functions on every entity.
- This meant adding permissions to a user; 0 for normal, 1 for admin.
- Creating Intermediary many to many table to track-playlist.
- Fixing bugs found through testing.
- Updating documentation for end users.

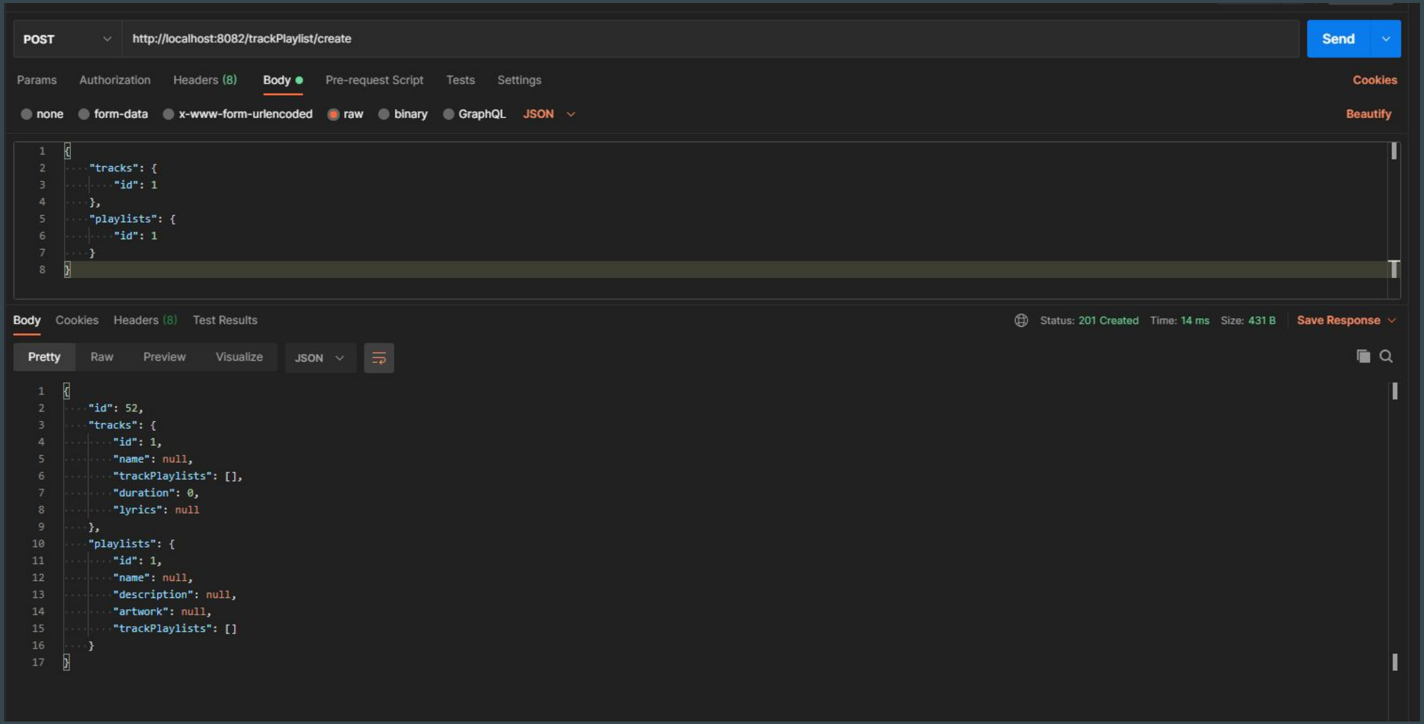
Git

- Never fully used Git in a team environment, with different developers on different branches.
- Started with a few merge conflicts in the beginning, but we all understood it relatively quickly.
- Git is now an **essential part of development**.



UM: fixed update mapping on track_playlistController
FS: Readme.md Structure Created
FS: Fixed Track_PlaylistDTO
FS: Added Integration Testing
HF: Hotfix genre edit
UM: fixed album put method
FS: Fixed Album Update Issue
UM: fixed merge conflict
UM: fixed navbar search on all pages
HF: Hotfix add track button
Merge branch 'development' of https://github.com/FayazP...
HF: Fixed merge conflicts
UM: hotfix navbar search
HF: Fixed merge conflicts
HF: Admin can add track
Merge branch 'feature_fixEditFunctionality' into developm...
UM: fixed editing albums
Merge branch 'feature_addAlbum' into development
HF: Admin can add album
UM: fixed edit track functionality
Merge branch 'development' of https://github.com/FayazP...
Merge branch 'feature_fixEditFunctionality' into developm...
HF: Add album js file
UM: fixed artist and playlist put methods
HF: Add artist
Merge branch 'feature_genreAdd' into development
HF: Add genre
UM: hotfix for fixing post to put in controller

Development with Testing



http://localhost:8082/trackPlaylist/create

```
{
    "tracks": {
        "id": 1
    },
    "playlists": {
        "id": 1
    }
}
```

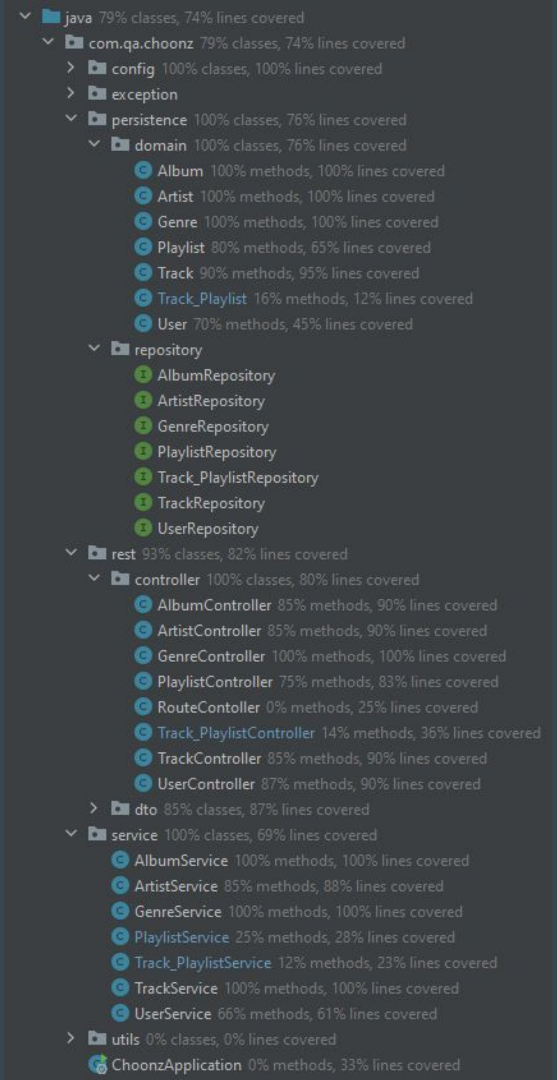
Status: 201 Created Time: 14 ms Size: 431 B

```
{
    "id": 52,
    "tracks": {
        "id": 1,
        "name": null,
        "trackPlaylists": [],
        "duration": 0,
        "lyrics": null
    },
    "playlists": {
        "id": 1,
        "name": null,
        "description": null,
        "artwork": null,
        "trackPlaylists": []
    }
}
```

Unit & Integration testing

74% Test Coverage

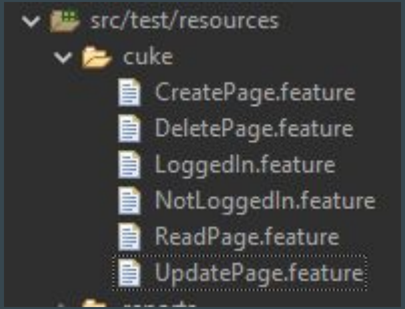
80% Industry Standard



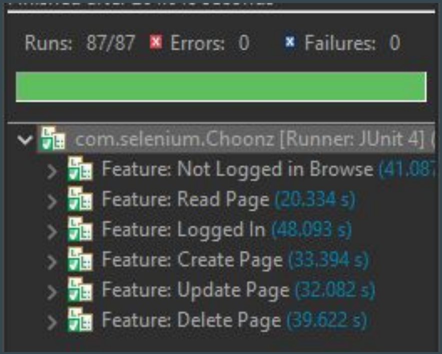
```
java 79% classes, 74% lines covered
  com.qa.choonz 79% classes, 74% lines covered
    config 100% classes, 100% lines covered
    exception
    persistence 100% classes, 76% lines covered
      domain 100% classes, 76% lines covered
        Album 100% methods, 100% lines covered
        Artist 100% methods, 100% lines covered
        Genre 100% methods, 100% lines covered
        Playlist 80% methods, 65% lines covered
        Track 90% methods, 95% lines covered
        Track_Playlist 16% methods, 12% lines covered
        User 70% methods, 45% lines covered
      repository
        AlbumRepository
        ArtistRepository
        GenreRepository
        PlaylistRepository
        Track_PlaylistRepository
        TrackRepository
        UserRepository
    rest 93% classes, 82% lines covered
      controller 100% classes, 80% lines covered
        AlbumController 85% methods, 90% lines covered
        ArtistController 85% methods, 90% lines covered
        GenreController 100% methods, 100% lines covered
        PlaylistController 75% methods, 83% lines covered
        RouteContoller 0% methods, 25% lines covered
        Track_PlaylistController 14% methods, 36% lines covered
        TrackController 85% methods, 90% lines covered
        UserController 87% methods, 90% lines covered
      dto 85% classes, 87% lines covered
    service 100% classes, 69% lines covered
      AlbumService 100% methods, 100% lines covered
      ArtistService 85% methods, 88% lines covered
      GenreService 100% methods, 100% lines covered
      PlaylistService 25% methods, 28% lines covered
      Track_PlaylistService 12% methods, 23% lines covered
      TrackService 100% methods, 100% lines covered
      UserService 66% methods, 61% lines covered
    utils 0% classes, 0% lines covered
    ChoonzApplication 0% methods, 33% lines covered
```

Functional Testing - Selenium

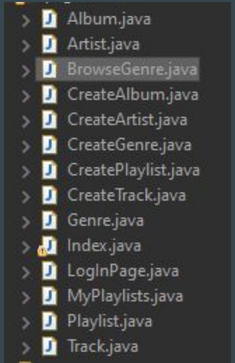
- Used Selenium to test the front-end and see if all the functions performed correctly.
- Also allowed us to see if changes in the API affected the front-end.
- Testing started with testing the difference in the site when logged in or not, then went on to test all CRUD.
- Used Cucumber and Gherkin to write the feature files
- And in the step definition file, used Selenium with POM



```
src/test/resources
  cuke
    CreatePage.feature
    DeletePage.feature
    LoggedIn.feature
    NotLoggedIn.feature
    ReadPage.feature
    UpdatePage.feature
```



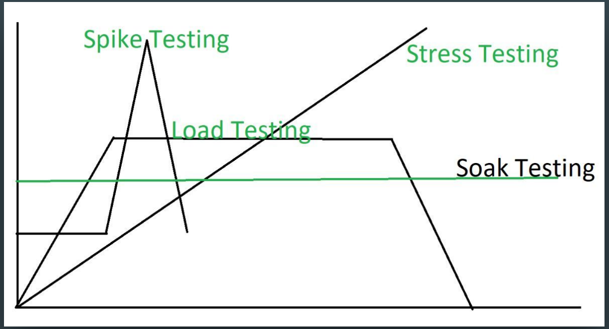
```
Runs:  87/87   Errors:  0    Failures:  0

com.selenium.Choonz [Runner: JUnit 4] (
  Feature: Not Logged in Browse (41.087
  Feature: Read Page (20.334 s)
  Feature: Logged In (48.093 s)
  Feature: Create Page (33.394 s)
  Feature: Update Page (32.082 s)
  Feature: Delete Page (39.622 s)
```



```
Album.java
Artist.java
BrowseGenre.java
CreateAlbum.java
CreateArtist.java
CreateGenre.java
CreatePlaylist.java
CreateTrack.java
Genre.java
Index.java
LogInPage.java
MyPlaylists.java
Playlist.java
Track.java
```

Non-Functional Testing

- Used JMeter for measuring performance of web application and api
- Performed Spike, Load, Stress & Soak Tests
- Performance hindered by personal hardware

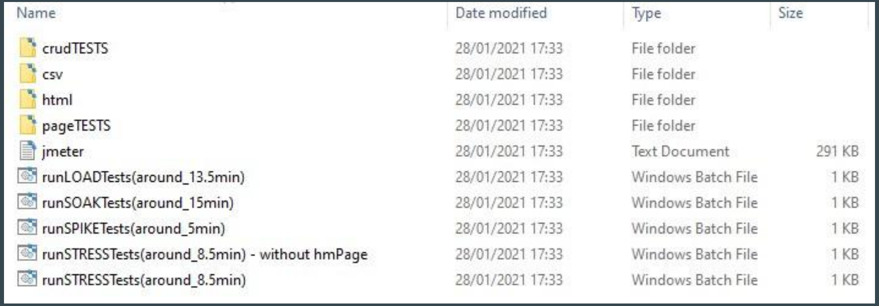


Non-Functional Testing

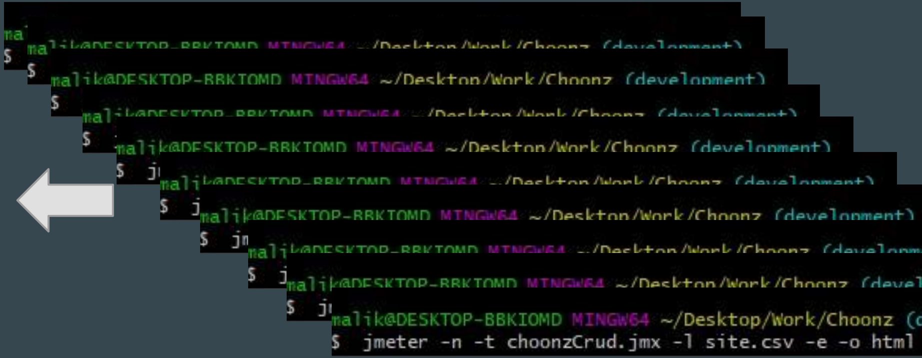
Utility Batch Files

Created Batch files to save writing command lines

Helps individuals unfamiliar with JMeter testing suite run tests easily



Name	Date modified	Type	Size
crudTESTS	28/01/2021 17:33	File folder	
csv	28/01/2021 17:33	File folder	
html	28/01/2021 17:33	File folder	
pageTESTS	28/01/2021 17:33	File folder	
jmeter	28/01/2021 17:33	Text Document	291 KB
runLOADTests(around_13.5min)	28/01/2021 17:33	Windows Batch File	1 KB
runSOAKTests(around_15min)	28/01/2021 17:33	Windows Batch File	1 KB
runSPIKETests(around_5min)	28/01/2021 17:33	Windows Batch File	1 KB
runSTRESSTests(around_8.5min) - without hmPage	28/01/2021 17:33	Windows Batch File	1 KB
runSTRESSTests(around_8.5min)	28/01/2021 17:33	Windows Batch File	1 KB



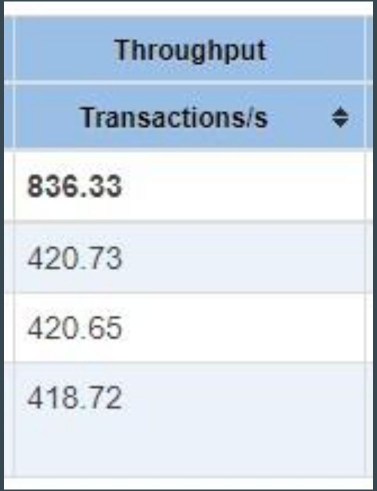
```
malik@DESKTOP-BBKIOMD MINGW64 ~/Desktop/Work/Choonz (development)
$
malik@DESKTOP-BBKIOMD MINGW64 ~/Desktop/Work/Choonz (development)
$
malik@DESKTOP-BBKIOMD MINGW64 ~/Desktop/Work/Choonz (development)
$
malik@DESKTOP-BBKIOMD MINGW64 ~/Desktop/Work/Choonz (c
$ jmeter -n -t choonzCrud.jmx -l site.csv -e -o html
```

Non-Functional Testing

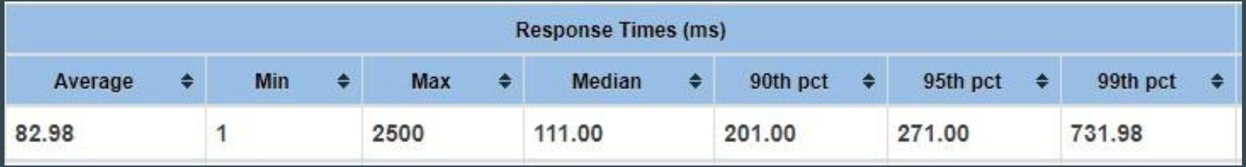
Example Test Result:

Spike Test on Album page with API crud operation.

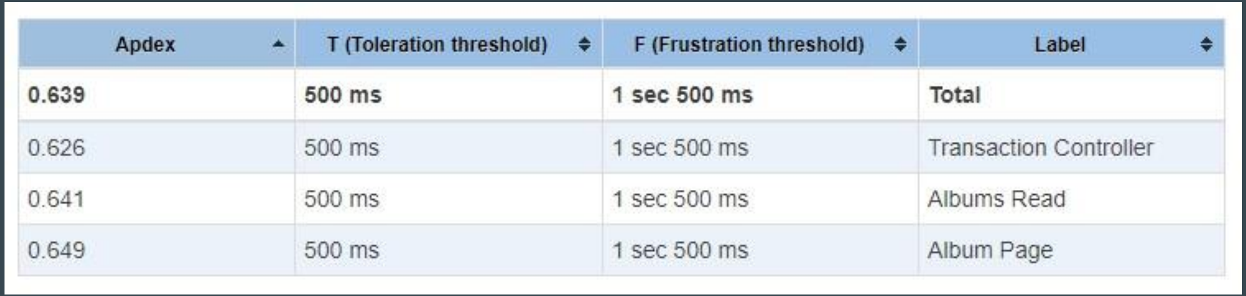
Tested with 1000 threads within 1 minute



Throughput
Transactions/s
836.33
420.73
420.65
418.72



Response Times (ms)						
Average	Min	Max	Median	90th pct	95th pct	99th pct
82.98	**1**	**2500**	**111.00**	**201.00**	**271.00**	**731.98**



Apdex	T (Toleration threshold)	F (Frustration threshold)	Label
0.639	**500 ms**	**1 sec 500 ms**	**Total**
0.626	500 ms	1 sec 500 ms	Transaction Controller
0.641	500 ms	1 sec 500 ms	Albums Read
0.649	500 ms	1 sec 500 ms	Album Page

Non-Functional Testing

Solution to meet Spec Requirements:

Hardware

Demonstration

Questions