

SW Engineering CSC 648/848 - FALL 2020

Milestone 2

Team 5 - *Project String*

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1 Data Definitions V2

1. String Account: Account of a Registered user on the platform.
 - (a) Email - an email address of the Registered User
 - (b) Password - used to log into the String Account.
 - (c) Name - the name of the Registered User.
 - (d) Phone number - (optional) phone number of the Registered User.
 - (e) Location - (optional) the address of the Registered User.
 - (f) Location Coordinates - (optional) the address coordinates of the Registered User.
 - (g) Role - (optional) list of roles the Registered User can perform.
 - (h) Genre(s) - (optional) list of primary musical interests (i.e. classical, jazz, rock, electronic)
 - (i) Profile picture - (optional) Registered User's picture.
2. Administrator String Account: Account of an Administrator on the platform (i.e. the team building and managing the String Platform).
 - (a) Email: an email address of the Administrator.
 - (b) Password: used to log into the Administrator String Account.
 - (c) Name: the name of the Administrator.
 - (d) Role: role of the Administrator in the team (i.e frontend lead, team lead, content manager, etc.).
3. Registered User: A person who has a String account and is logged into that account
4. Guest: A person who does not have a String account and is just viewing pages on our platform
5. Administrator: A person who has an Administrator String account and is logged into that account. They have access over all information, items and entities on the platform. They are the ones who will manage inappropriate content.
6. Band Member: A registered user who joins a Band, with a Band Admin's permission.
 - (a) Band Admin: if the Band member has admin access in the band. (a boolean value)
 - (b) Role: Role that the Band Member has in the Band.
 - (c) Date joined: When the Band Member joined the Band.

7. Band: A band can be created by a registered user. It is an entity that other registered users can join if Band Admin permits.

- (a) Band Name: (required) Name of the band. (unique)
- (b) Band logo image: Logo image of the Band.
- (c) Band Description: A short description of what the band is about.
- (d) Band Links: list of links.
 - i. Link: the link pointing to another webpage.
 - ii. Short description: a small description of the link.
- (e) Band Post: Image or video uploaded by bands.
 - i. Media: Link pointing to an image or a video (could be on youtube or Vimeo or Google Drive).
 - A. Type of media: either image or video.
 - B. Link: link to that image or video.
 - ii. Title (required): title of what the Band Post is about.
 - iii. Description (optional): description of the Band Post
- (f) Location (required): Address that the band belongs to and where they are performing.
- (g) Location Coordinates (required): latitude and longitude of the address of the Band
- (h) Event Entry: A band can create an entity known as an event in order to provide information on an upcoming rehearsal, or performance - with sections for information and Set List.
 - i. Event title: (required) The title of the event.
 - ii. Date of event: (required) month day and year the event is taking place.
 - iii. Start Time of event: (required) time at which the event will begin.
 - iv. End time of event: (required) time at which event will end.
 - v. Location of event (required): Address and description of where the event will be held.
 - vi. Coordinates: (required) latitude and longitude of the address of the Event
 - vii. Event description: description of the event.
- viii. Set Entry: A song which the band is planning to play for a specific event/performance.
 - Includes details such as run time, tempo, and order in performance.
 - A. Song: name of the song.
 - B. Run time: length of the song.

- (i) Repertoire Entry: A song which the band can play, including details such as:
 - i. Song - name of the song.
 - ii. Run time - length of the song.
 - iii. Genre - genre of the song.
 - iv. Link - Link to a site with more description/media about the performance of this song.
- 8. Invitation: Sent by a registered user to join a band in response to availability post
 - (a) Message: A short paragraph of why the user would want to join the Band
 - (b) Date: Date on which the Invitation was sent.
 - (c) Sender account: the String Account who sent the invitation
 - (d) Receiver band: the Band that the invitation was sent to.

2 Functional Requirements V2

2.1 Priority 1

2.1.1 Guest

1. Guest shall be able to view all Bands.
 2. Guest shall be able to view all Band Members.
 3. Guest shall be able to view all Bands' Posts.
 4. Guest shall be able to view all Bands' Event List.
 5. Guest shall be able to access contact information of all Bands.
 6. Guest shall be able to search for any Band by name.
 7. Guest shall be able to filter any Bands by genre.
 8. Guest shall be able to filter Bands by location.
 9. Guest shall be able to register an account with a valid email address.
 10. Guest shall be able to view all Events' Set List.
 11. Guest shall be able to view all Bands' Repertoire List.
-
- #### **2.1.2 Registered User**
1. Registered User shall be a Guest.
 2. Registered User shall have a String Account.
 3. Registered User shall be able to view their String Account information.
 4. Registered User shall be able to log in using their email and password.
 5. Registered User shall be able to send an invitation to apply to join a Band.
 6. Registered User shall be able to create Band(s).
 7. Registered User shall be able to view all the Bands information they are a Band Member of.
 8. Registered User shall be able to change their password in their String Account.

9. Registered User shall be able to edit the field indicating their name in their String Account.
10. Registered User shall be able to edit the field indicating their role.
11. Registered User shall be able to edit their current geographical location in their String Account.
12. Registered User shall be able to edit their contact information in their String Account.

2.1.3 Band

1. Band can only be created by a Registered User.
2. Band shall have only one Band Admin.
3. The Registered User who creates the Band is set as the Band Admin.
4. Band shall have a field indicating if they are accepting invitations from Registered Users.
5. Band shall have a field indicating their geographic location.
6. Band shall have Band Post(s).
7. Band shall have contact information.
8. Band shall have an Event List indicating upcoming events.
9. Band shall have a Repertoire List.

2.1.4 Band Member

1. Band Member should be registered users.
2. Band Member shall be able to leave their Band at any time.
3. Band Member shall be able to add Band posts to their Band.
4. Band Member shall be able to delete Band posts to their Band.
5. Band Member shall be able to add an Event Entry in the Event List of their Band.
6. Band Member shall be able to delete an Event Entry in the Event List of their Band.
7. Band Member shall be able to add a Set Entry to an Event Entry of their Band.
8. Band Member shall be able to delete a Set Entry to an Event Entry of their Band.
9. Band Member shall be able to add a Repertoire Entry to their Band.
10. Band Member shall be able to delete a Repertoire Entry to their Band.

2.1.5 Band Admin

1. Band Admin should be a Band member.
2. Band Admin shall remove a Band member of their Band.
3. Band Admin shall be able to view all Invitations in their Band.
4. Band Admin shall be able to accept an Invitation in their Band.
5. Band Admin shall be able to delete an Invitation in their Band.

2.1.6 Band Post

1. Band Post shall contain an image.
2. Band Post shall contain a video.
3. Band Post shall contain a description.
4. Band Post shall contain a title

2.1.7 Invitation

1. Invitation shall have a message field.
2. Invitation shall have a date indicating when it was sent.
3. Invitation shall have a field indicating which Registered user sent it.
4. Invitation shall have a field indicating which Band was it sent to.
5. Accepting an Invitation shall result in adding the registered User who sent it to the Band as a Band member.

2.1.8 Event Entry

1. Event Entry shall have a title field.
2. Event Entry shall have a location field indicating where the event will take place.
3. Event Entry shall have a date field indicating when the event will take place.
4. Event Entry shall have a time field indicating when the event will take place.
5. Event Entry shall have a field indicating which Band created it.

6. Event Entry shall have a description field.
7. Event Entry shall have a list of Set Entries.

2.1.9 Repertoire Entry

1. Repertoire Entry shall have a field indicating song's name.
2. Repertoire Entry shall have a field indicating song's genre.
3. Repertoire Entry shall have a field indicating song's run time.
4. Repertoire Entry shall have a link.

2.1.10 Set Entry

1. Set Entry shall have a field indicating song's name.
2. Set Entry shall have a field indicating song's run time.
3. Set Entry shall have a field indicating play order.

2.2 Priority 2

2.2.1 Guest

1. Guest shall be able to add review to a Band.
2. Guest shall be able to play songs attached with the Repertoire Entry.
3. Guest shall be able to search Band Post. location.

2.2.2 Registered User

1. Registered Users shall be able to change their email in their String Account.
2. Registered Users shall be able to like a band post.
3. Registered Users shall be able to add a comment on a band post.
4. Registered Users shall be able to RSVP to an event.

2.2.3 Administrator

1. Administrator shall be able to change their email in their Administrator String Account.
2. Administrator shall be able to change their password in their Administrator String Account.
3. Administrator shall be able to delete any Set List in any Event Entry in any Band.
4. Administrator shall be able to delete any Repertoire Entry in any Band.
5. Administrator shall be able to log in using their email and password.
6. Administrator shall be able to delete any Band.
7. Administrator shall be able to delete any content posted by any Band.
8. Administrator shall be able to delete any Event Entry in any Band

2.2.4 Band

1. Band shall have a Repertoire List

2.2.5 Band Member

1. Band Member shall be able to edit an Event Entry in the Event List of their Band.
2. Band Member shall be able to edit a Set List to an Event Entry of their Band.
3. Band Member shall be able to edit a Repertoire Entry in the Repertoire List of their Band.

2.2.6 Band Admin

1. Band Admin shall be able to assign other Band Member as Band Admin.
2. Band Admin shall be able to change the name of their Band.

2.2.7 Event Entry

1. Event Entry shall have an image
2. Event Entry shall have an RSVP list

2.2.8 Repertoire Entry

1. Repertoire Entry shall have a playable song link.

2.2.9 Set Entry

1. Set List shall contain a list of Set Entries.
2. Set List must contain at least one Set Entry
3. Set List shall have Set Entries in projected performance order.

2.2.10 Repertoire List

1. Repertoire List shall contain a list of Repertoire Entries

2.2.11 Band Post

1. Band Post shall have a count of likes.
2. Band Posts shall have a comment section for participation from Registered Users.

2.3 Priority 3

2.3.1 Guest

1. Guest shall be able to contact an Administrator to get help at any time.

2.3.2 Registered User

1. Registered User shall be able to delete their String Account.
2. Registered User shall be able to add comments to an Event.

2.3.3 Administrator

1. Administrator shall be able to create a Band.
2. Administrator shall be able to delete any Registered User.
3. Administrator shall be able to add registered users.
4. Administrator shall be able to add registered users to any Band.
5. Administrator shall be able to remove any Band Member in any Band.
6. Administrator shall be able to change Band Admin in any Band.

2.3.4 Band

1. Band shall have at least one Band Member.
2. Band which have no Band Members shall be deleted.
3. Band shall have one or more Band Admin(s).

2.3.5 Band Member

1. Band Members shall have access to a text chat viewable only by Band Members.
2. Band Members can invite Registered Users to an Event.

2.3.6 Band Admin

1. Band Admin shall be able to delete their Band.
2. Band Admin shall be able to make other Band Members to be an additional Band Admin.

2.3.7 Repertoire Entry

1. Repertoire Entry shall have a list of links.
2. Repertoire Entry shall have a field indicating if the song is in the rehearsal stages.
3. Repertoire Entry shall have notes.

2.3.8 Event Entry

1. Event Entry shall have a list of registered users invited to the event.
2. Event Entry shall have a section for Registered Users to comment and discuss.

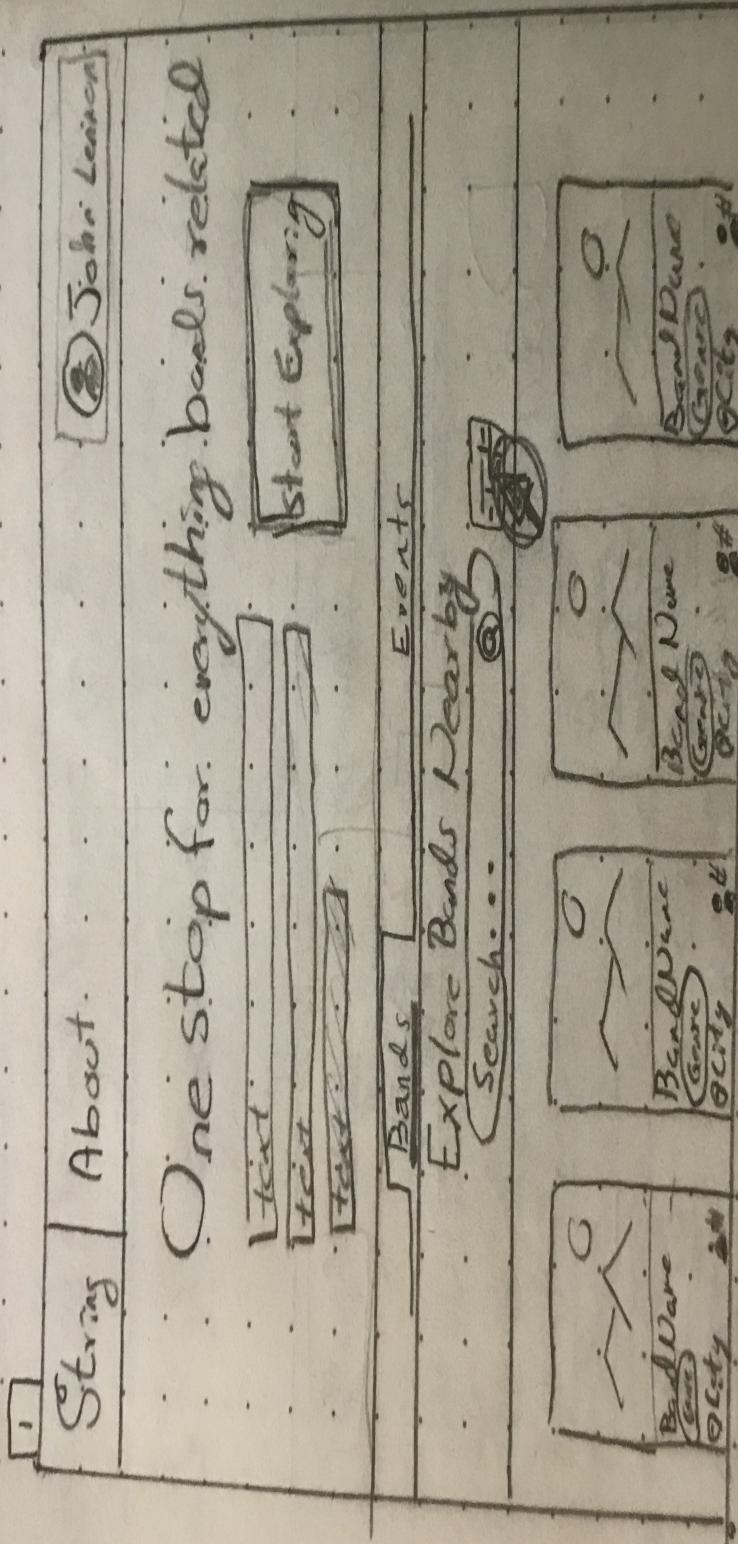
3 UI Mockups and Storyboards

3.1 Use Case 1: A solo artist looking for a band to join

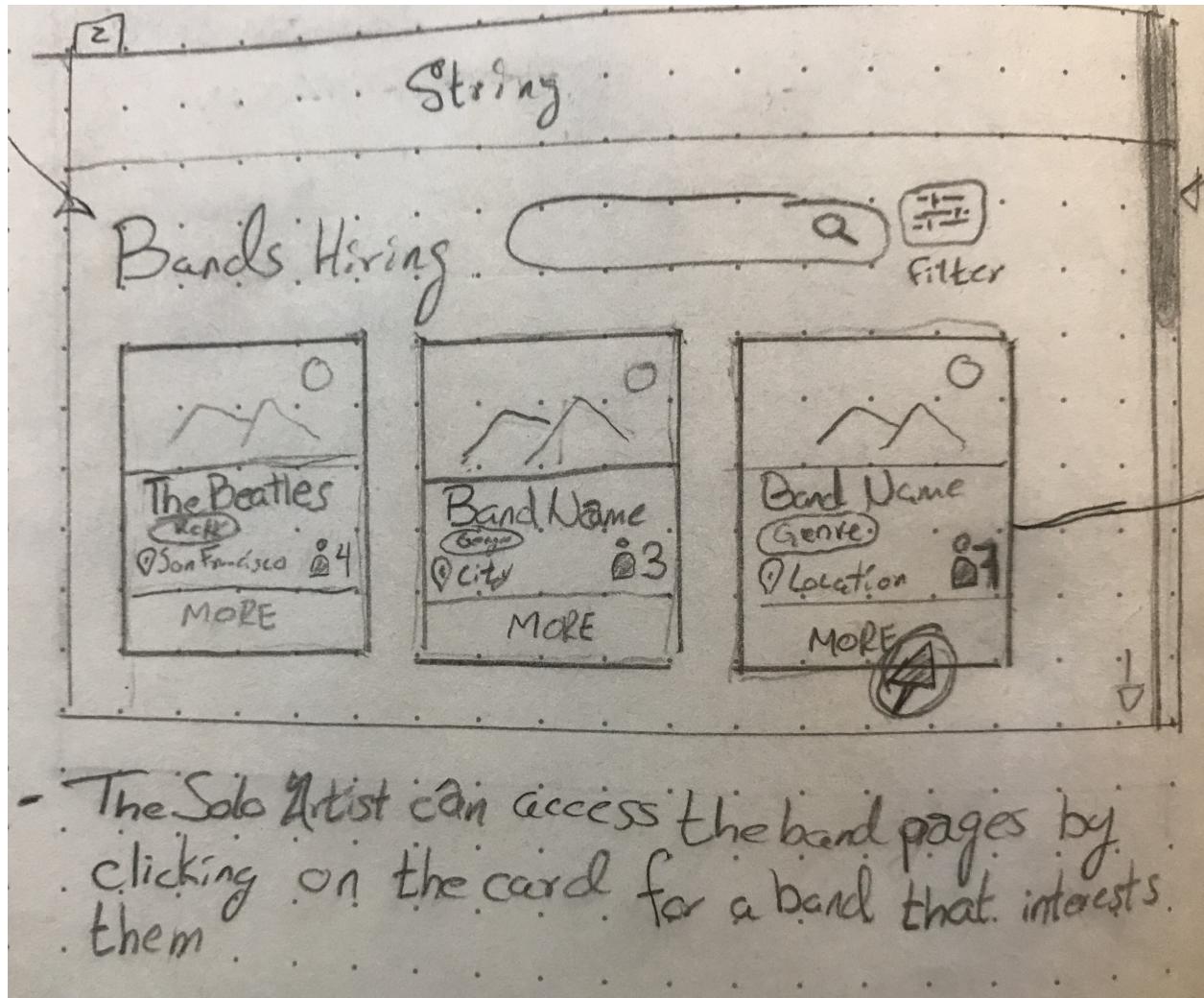
1. A registered user as solo artist goes to the explore page and taps the filter button
2. In the filter modal user selects to browse Bands by “Bands that are hiring”.
3. Scroll down to find more
4. The user gets a list of all the bands in their city that are looking for new members
5. Solo artists can access the band pages
6. Inside the band pages registered users can click the “apply” apply button to send a notice of interest on the role to that band
7. Alternatively, they can reach out directly to the bands that have their contact information set as public

Use case ①

A solo artist looking for a band to join



- A registered user as a solo artist goes to the explore page and taps the filter button
- In the filter modal user selects to browse bands by "Bands that arre here now"



31

String | Band Page

The Beatles

3 Rock San Francisco

Music Repository Events Posts About

Members

Aldo Patrik George

About

This band is looking for a drummer

APPLY

- Solo Artists can click on "send request/APPLY" button in the band page to notify the band about their interest.

3.2 Use Case 2: A band manager onboards, searching to have one place manage/display all bands he manages

1. User clicks on the sign up button in the explore page or any other public page.
2. Onboarding user inputs: name, last name, email, phone number, and password, address, role, instrument and genre
3. User selects to sign ups as “Band Manager” and is prompted to create a band after signup (can also just click the “+” button under the bands section)
4. The user may complete the details for the band page or finish later (Band name, logo/image, street address, genre, description, links, events, posts, music repertoire)

Use case (2) A band manager onboards and creates a band on String

[1]

String	Explore About	Login	Sign up
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- User clicks on the "Sign Up" button in the explore pg.

[2]

String	About	Explore
--------	-------	---------

Sign Up

Name

Email

Password

Show pw

Phone #

Street address

City

State Zip

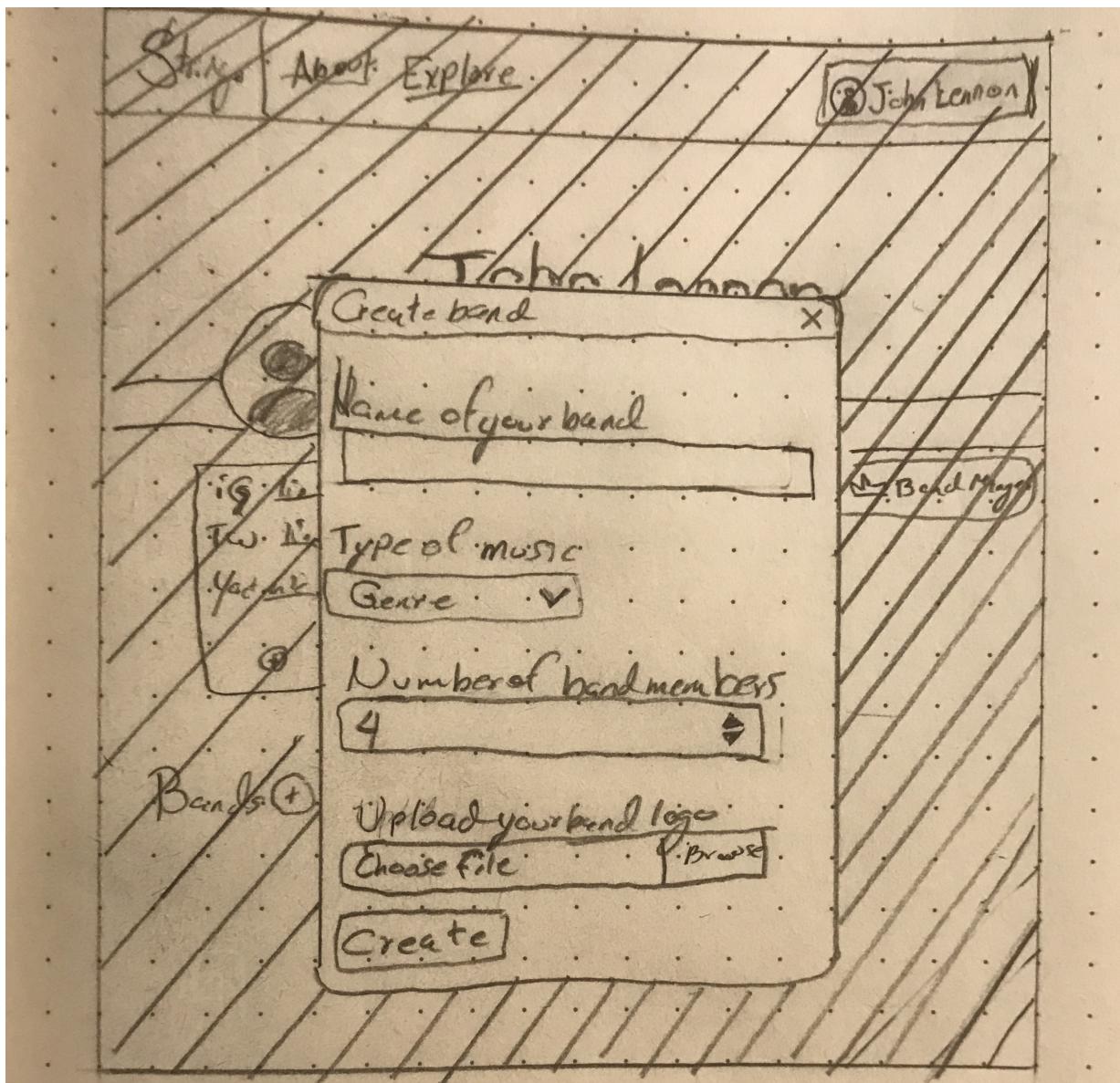
Role

Manager

Genre

NEXT

- Onboarder user inputs Name, email, phone#, Password, Address, role, genre. (User selects to sign up as "Manager")

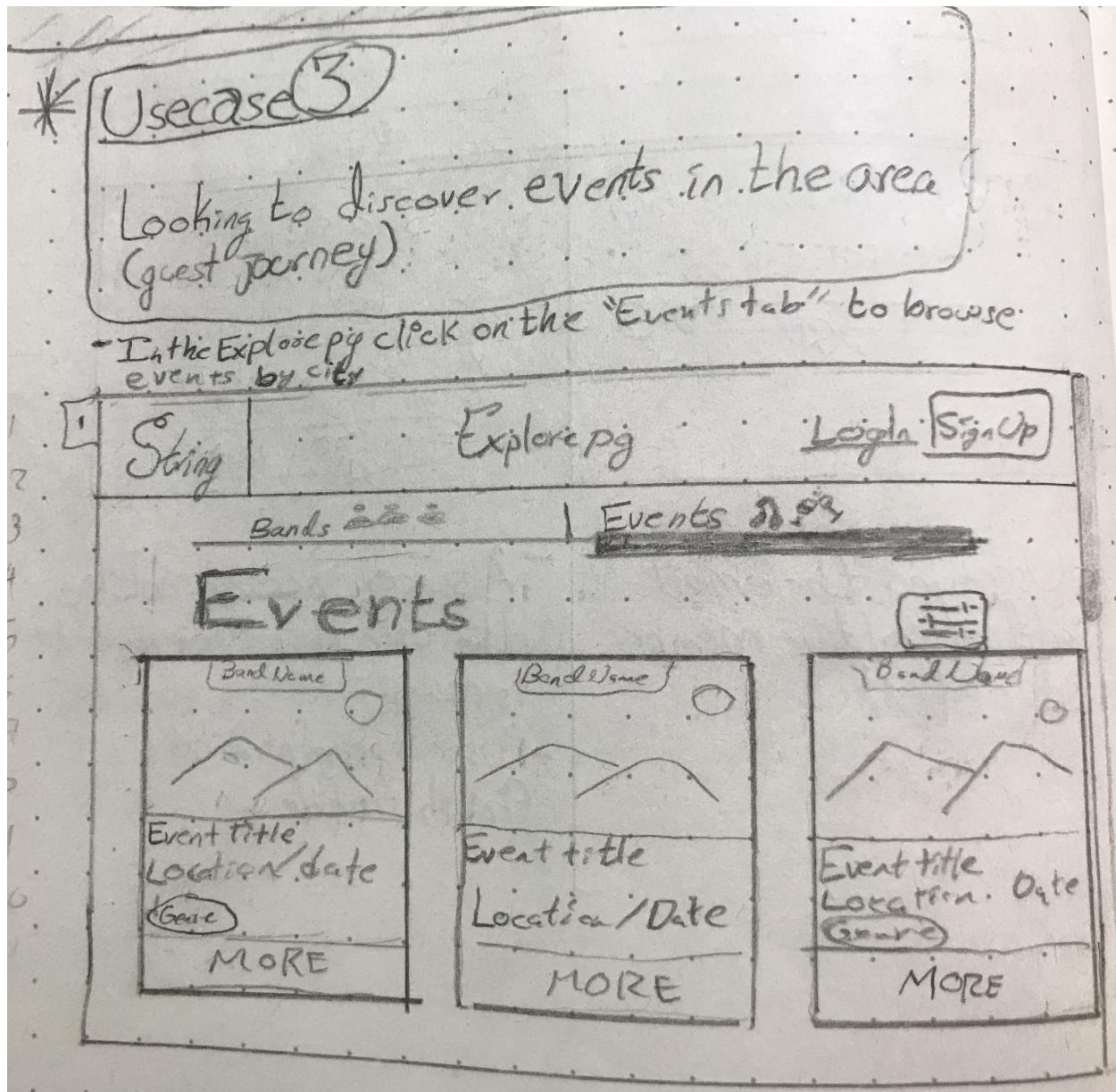


- User is prompted to create a band after sign up (can also click the "+" button under the Bands section)

- The user may complete the details for the band page or finish later (Band name, logo/image, street address, genre, description, tracks, events, posts, music repertoire).

3.3 Use Case 3: Looking to discover music events in their area (guest journey)

1. In the explore page tap the Events button to browse events by city.
2. Scroll down to find more.
3. For filtering results of any kind the filter button located on the top right of the screen opens an overlay with filter preferences (i.e. zip, genre, city, size).

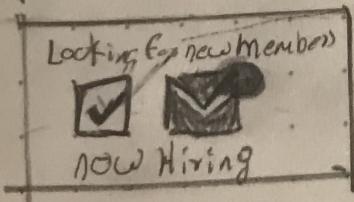


3.4 Use Case 4: A band looking for musicians

1. A band manager enables "looking for new members" checkbox on the band page
2. An envelope icon appears next to the checked checkbox and would display a red bubble with the amount of requests from users interested shall anyone click on the "apply" button on their page

Use case ④ A band looking for musicians

- A band manager enables "looking for new members" checkbox on the band page



- An envelope icon appears next to the checked checkbox, and would display a red bubble with the amount of requests from users interested shall anyone click on the "apply" button on their page

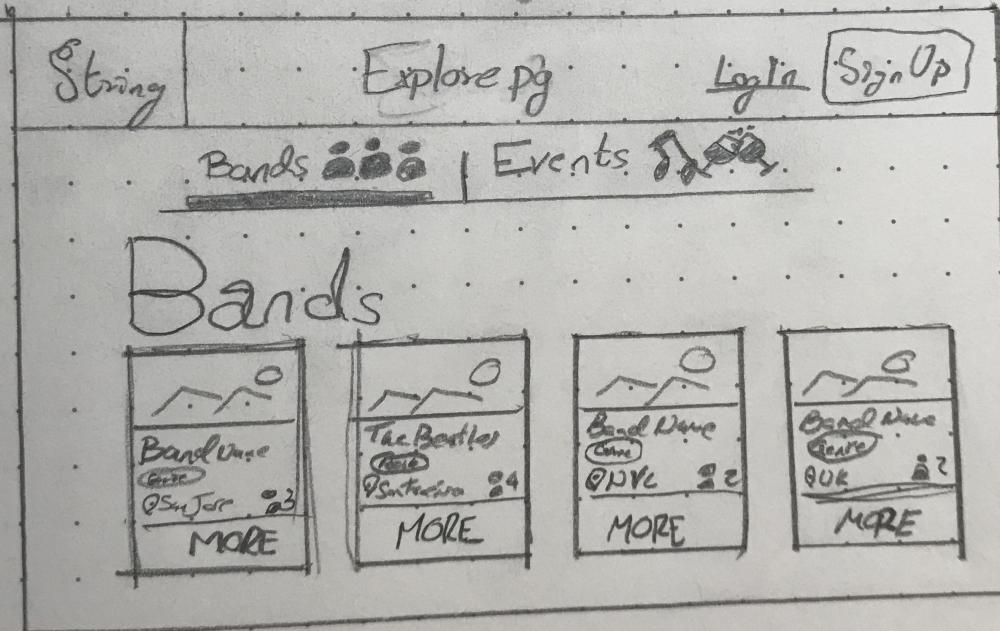
3.5 Use Cases 5 & 6: Guest user looking to sell products to local bands (looking for contact info), Guest user looking for bands to play at their event

1. In the explore page tap the Bands button to browse Bands by city.
2. Scroll down to find more.
3. For filtering results of any kind the filter button located on the top right of the screen opens an overlay with filter preferences (i.e. zip, genre, city, size).
4. By tapping on either one result the guest user is funneled to the respective bands page.
5. Guests can reach out directly to the bands that have their contact information set as public.

Use cases 5.86

- Guest user looking for bands to play at their event
- Guest user looking to sell products to local bands

- In the Explore pg click on "Bands" to browse bands by city



4 High level database architecture and organization

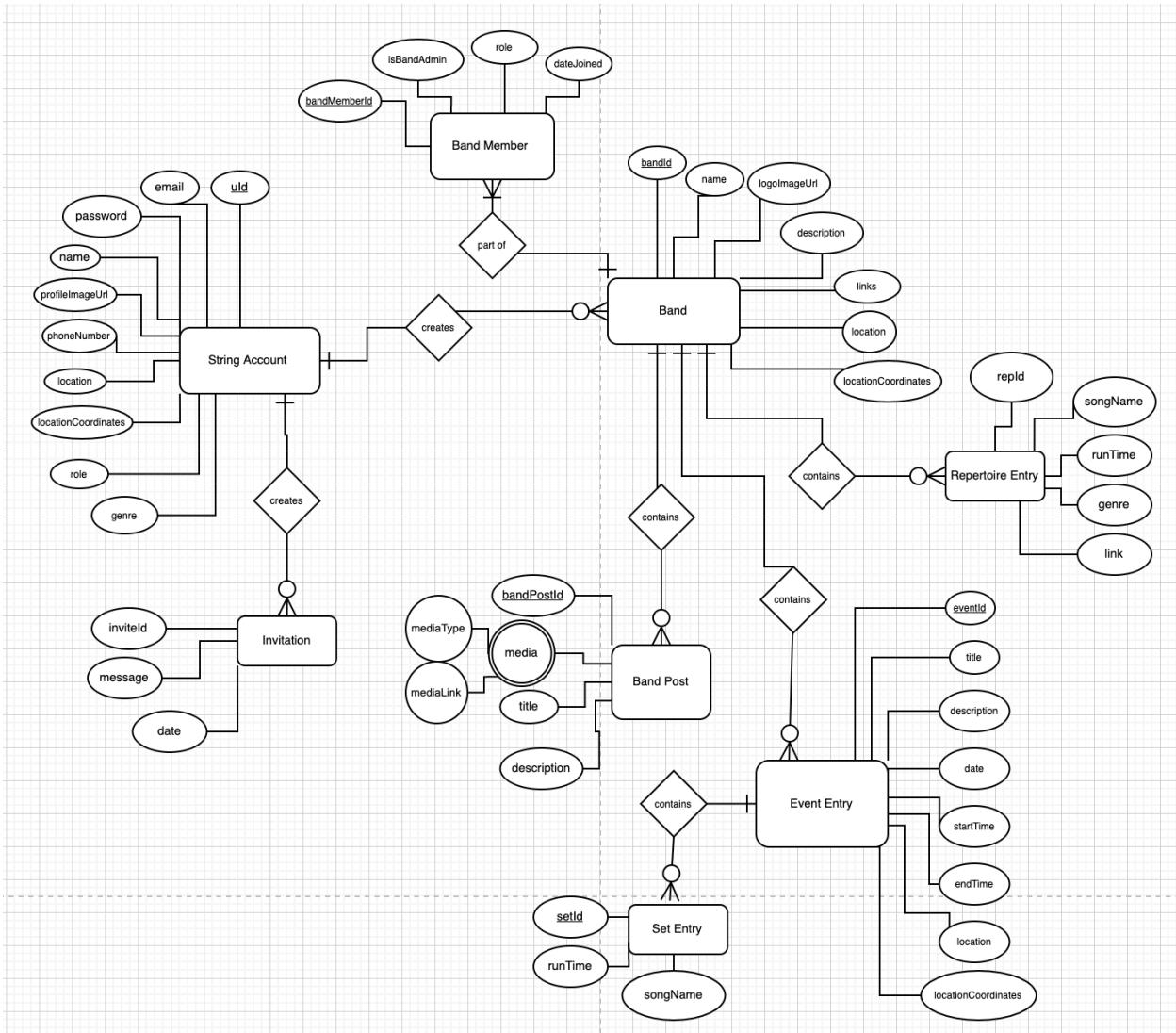
4.1 Business Rules

1. One Guest(with a email) can have one String Account.
2. Each String Account can be a part of zero or more Band(s).
3. Each Band can have one or more Band member(s)
4. Each Band can have zero or more Event Entry.
5. Each Event can have zero or more Event Entry.
6. Each Band can have zero or more Repertoire Entry.
7. Each Band can have zero or more Band Post.
8. Each String Account can send zero or more invitation(s)

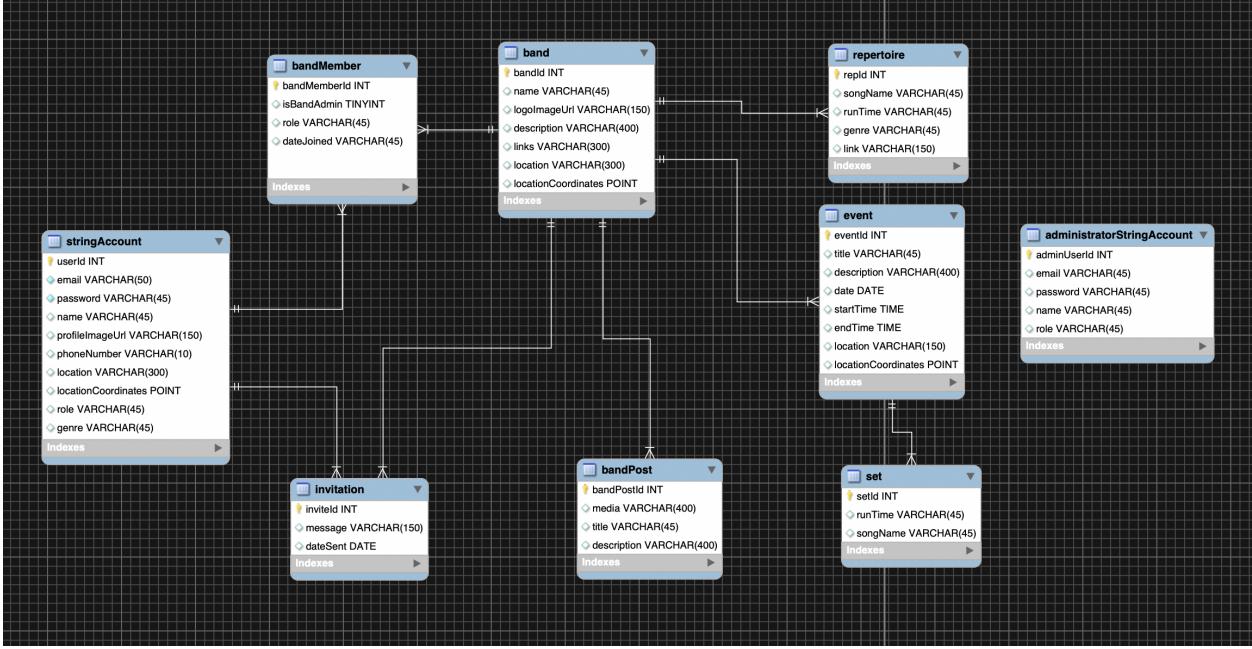
4.2 Entities Description

Same as described in Data Definitions V2 (section 1 of this document)

4.3 ERD



4.4 Database model



We chose to use MySQL database because most of our team members were familiar with it and AWS RDS offered MySQL server.

4.5 Media Storage

We will be using S3 buckets to store profile pictures of Individuals and Bands.

For image files we will accept files with extension jpg, jpeg, png and gif.

The size of the file should be less than 10mb.

We will not be storing videos but if Bands want to upload video on their Band Post they will upload a link to the video uploaded on other websites like youtube.

4.6 Search/filter architecture and implementation

We will have a search feature for Bands and for events. The searching will be through band name and event title. The search function will use SQL like and % functions to get results matching search query.

We will have some filters out of which location filter will be the most important. We take the location of all Bands and of registered users which will be converted to coordinates using Here map's api which will be stored in the database as a POINT element. We would then use MySQL geospatial functions to sort using this point and the user's location coordinates.

5 High Level APIs and Main Algorithms

- /api/register
 - POST request
 - Will be used to create a new String account
- /api/login
 - POST request
 - Will be used to log into an existing String account
- /api/getBands
 - POST request
 - Will be used to get Bands according to search value and filters applied
- /api/getEvents
 - POST request
 - Will be used to get Events according to search value and filters applied
- /api/getBand?bandId
 - GET request
 - Will be used to get Band corresponding to bandId
- /api/getEvent?eventId
 - GET request
 - Will be used to get Event corresponding to eventId

The following api are only accessible to a user logged into their string account:

- /api/user/changeLocation
 - POST request
 - Will be used to change the location of the registered user
- /api/band/create

- POST request
 - Will be used to create a band
- /api/band/invite/send
 - POST request
 - Will be used to create an invitation to join a band

The following api are only accessible to a band member of a band:

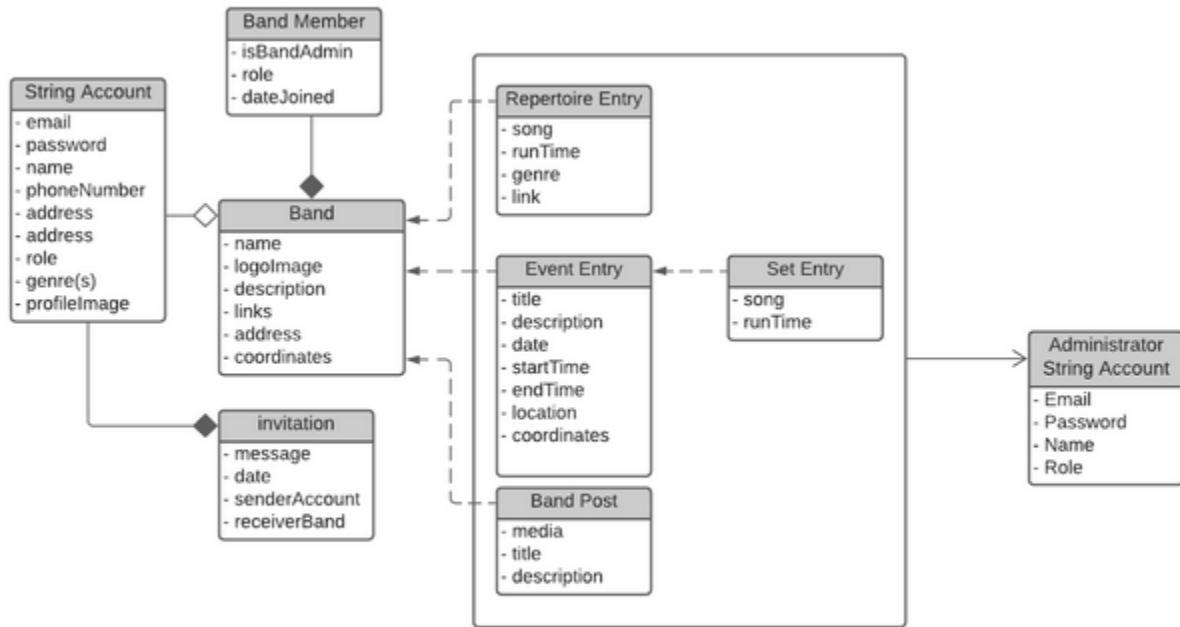
- /api/band/rep/create
 - POST request
 - Will be used to create a repertoire entry for a band
- /api/band/event/create
 - POST request
 - Will be used to create an event entry for a band
- /api/band/post/create
 - POST request
 - Will be used to create a band post for a band
- /api/band/rep/delete
 - POST request
 - Will be used to delete a repertoire entry for a band
- /api/band/event/delete
 - POST request
 - Will be used to delete an event entry for a band
- /api/band/post/delete
 - POST request
 - Will be used to delete a band post for a band

The following api are only accessible to a Band Admin of a band:

- /api/band/delete
 - POST request
 - Will be used to delete a band
- /api/band/invite/accept
 - POST request
 - Will be used to accept an invite to join a band from a registered user

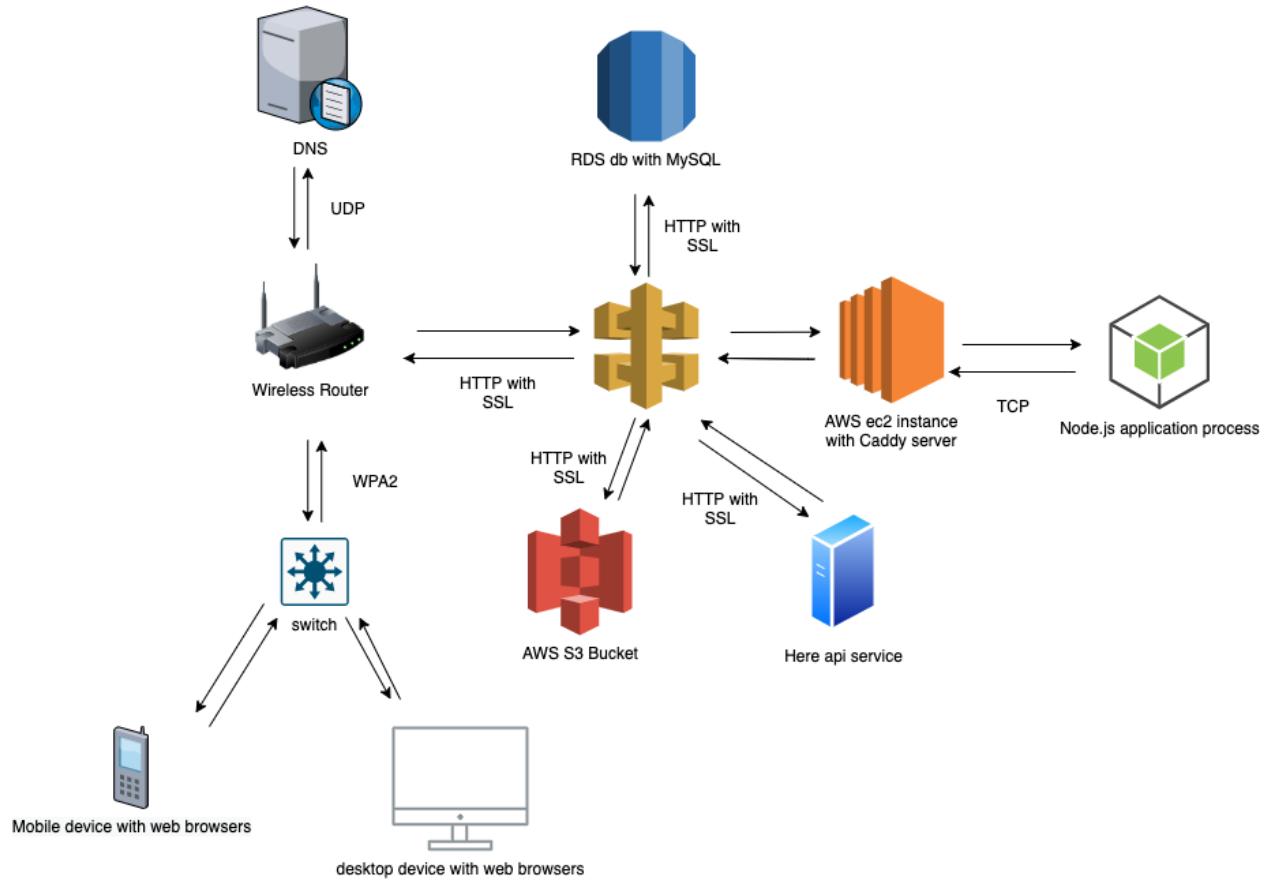
We have not changed any of our existing frameworks but have added AWS S3 to store image assets and will be using Here api to convert a location to its coordinates.

6 High Level UML Diagrams

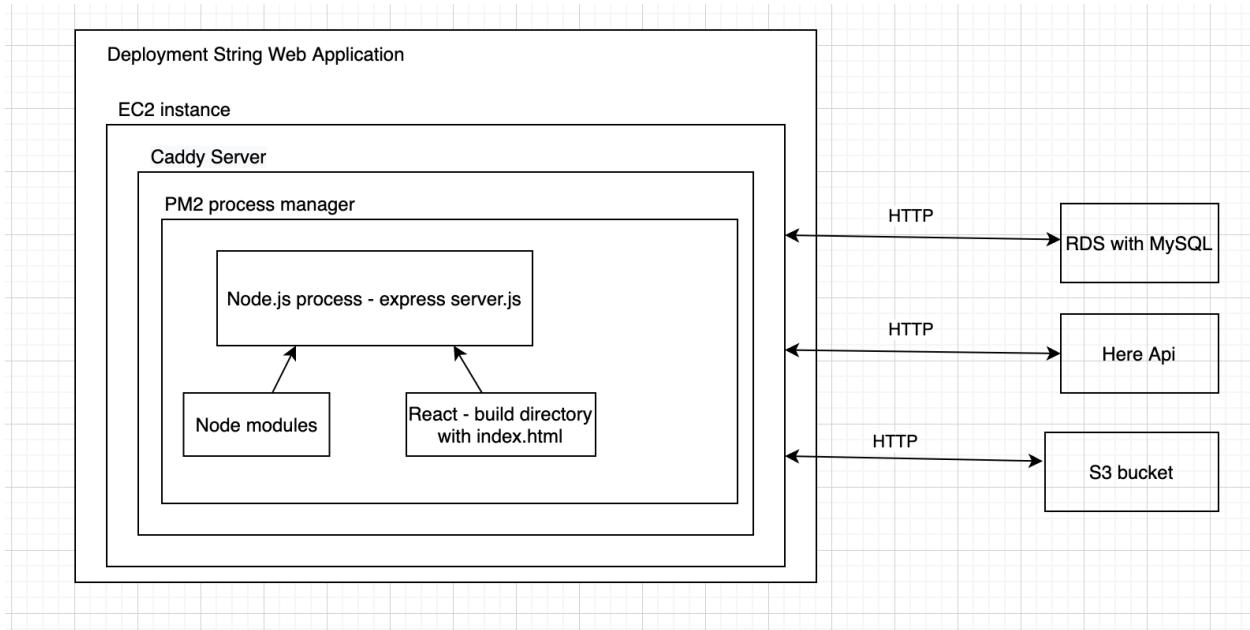


7 High Level Application Network and Deployment Diagrams

7.1 Application Networks Diagram



7.2 Deployment Diagram



8 Key Risks at time of writing

8.1 Skills risks

- No risks as currently assessed

8.2 Schedule risks

- Time shortage: Our project has a complex UI with different user views and can take longer than a month to complete
 - Complete priority 1 and basic functioning of the app before moving to priority 2 or optimising the app UI.

8.3 Technical risks

- Working with multer and s3 buckets could be challenging to manage images and assets.
 - Use youtube tutorials to follow along how to upload images using aws sdk and multer, such as [this](#).
- Using redux to store the state persistently between screens has a steep learning curve.
 - Use boilerplate redux and change the functionality and methods to work with our requirements.

8.4 Teamwork risks

- No risks as currently assessed.

8.5 Legal/content risks

- Band uploading inappropriate content on the String platform.
 - Legal document with behavioral guidelines that only content that is legally permissible and age appropriate should be uploaded or used on the platform.
 - Use Administrator String account to monitor the postings and remove them if they are not in accordance with the terms & conditions of the platform.
- Band copying other band's work(images/videos) or Fraudulent bands

- Our solution to this would be a set of legally binding terms users agree to when they register stating all work uploaded is their own and have rights to, and String is not responsible for any content that is not such.
- Safety of guests in the case of a fraudulent event (or other issues with the information posted on the platform)
 - Legal document that String is not responsible for user safety, that the user acknowledges that they are ultimately responsible for themselves, and that String's responsibility ends with hosting the information as received from the originator(s).
- Setting up the Terms and Condition documents.
 - Use boilerplate Terms and Conditions document and change it according to our needs and specifications.
 - In the event of further application development, legal consulting is a possibility.

9 Project Management

- We are using Trello as our project management tool:
 - We create cards that multiple team members are assigned to and notified of as they change from “current week - TO DO” to “IN PROGRESS” to “Ready for review - MERGE” (on applicable tasks) and finally to “SHIPPED - DONE.”
 - On the board we also have a section for “References & Resources” where we keep things like the links to the shared google drive, the zoom room, and the milestone documents.
 - We also create further modifications to cards as applicable, for instance to do lists within cards this makes sure everyone is aware of what other members are doing at any given point.
- We distributed the parts of the milestone amongst the frontend and backend teams:
 - The Frontend team worked on part 3 and frontend of the vertical prototype.
 - The Backend team worked on part 4,5,6,7 and API development of the vertical prototype.
- We did updates before every meeting in order to come to an understanding of what both teams had worked on and were planning on doing until the next meeting
- We completed some parts: 1,2,8,9 together during the meeting time because they concern all team members.
- From next milestone on:
 - We would follow a similar management pattern.
 - Tasks that concern the team will be done during team meetings.
 - Tasks that concern a specific sub team will be done on their time and a report will be presented in the beginning of the meeting.
 - All the tasks will be uploaded on Trello which will be a central place to know who is working on which part of the application and its progress.

10 Detailed list of contributions

- Jainam Shah: (Team Lead)
 1. Organised two weekly meetings and built agenda and plans to complete the milestone in time.
 2. Managed and distributed tasks amongst team members.
 3. Worked on the defining data entities, prioritising functional requirements and indentifying key risks.
 4. Verified and completed the ERD and UML diagrams and database structure.
 5. Created the S3 and file management part of the backend and built a home screen as per design for the vertical prototype.
 6. Deployed the vertical prototype on the EC2 instance.
- Alfredo Diaz: (Frontend lead)
 1. Timely attendance and participation in discussions during meetings.
 2. Worked on the defining data entities, prioritising functional requirements and indentifying key risks.
 3. Created user journeys and clarified functionality of components on main screens and created the paper UI Mockups.
 4. Coordinated with the fronted team what components we could use from existing libraries & assigned tasks to build basic components for vertical prototype.
 5. Shared card component vision by handing off high fidelity wireframes for vertical prototype.
- Leonid Novoselov: (Frontend developer)
 1. Participation in discussions during meetings.
 2. Worked on the defining data entities, prioritising functional requirements and indentifying key risks.
 3. Worked on creating paper UI mockups and storyboards.
 4. Worked on the display card component for the vertical prototype.
- Eric Chen: (Frontend developer)
 1. Attended weekly meetings and participated in discussions.

2. Worked on the defining data entities, prioritising functional requirements and indentifying key risks.
- Warren Singh: (Backend lead)
 1. Timely attendance and participation in discussions during meetings.
 2. Worked on the defining data entities, prioritising functional requirements and indentifying key risks.
 3. Helped create Business Rules and database design.
 4. Edited and Compiled M2 document
 5. Coordinated with back end team on workflow for vertical prototype.
 6. Contributed in defining routes for the vertical prototype.
 - Ritesh Panta: (Backend developer)
 1. Timely attendance and participation in discussions during meetings.
 2. Worked on the defining data entities, prioritising functional requirements and indentifying key risks.
 3. Contributed in defining business rules and creating network and deployment diagrams.
 4. Contributed in building the MYSQL queries for the vertical prototype.