B-Sharp Technical Design Document

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I. Software requirements:

The software shall have independent users.
The software shall have a unique login with with verification for each user.
The software shall have two tiers of users.
The software shall store .pdfs of sheet music.
The software shall allow dynamic manipulation of user access to .pdfs.
The software shall allow a director user to have multiple bands.
The software shall allow a user to be a member of multiple bands.
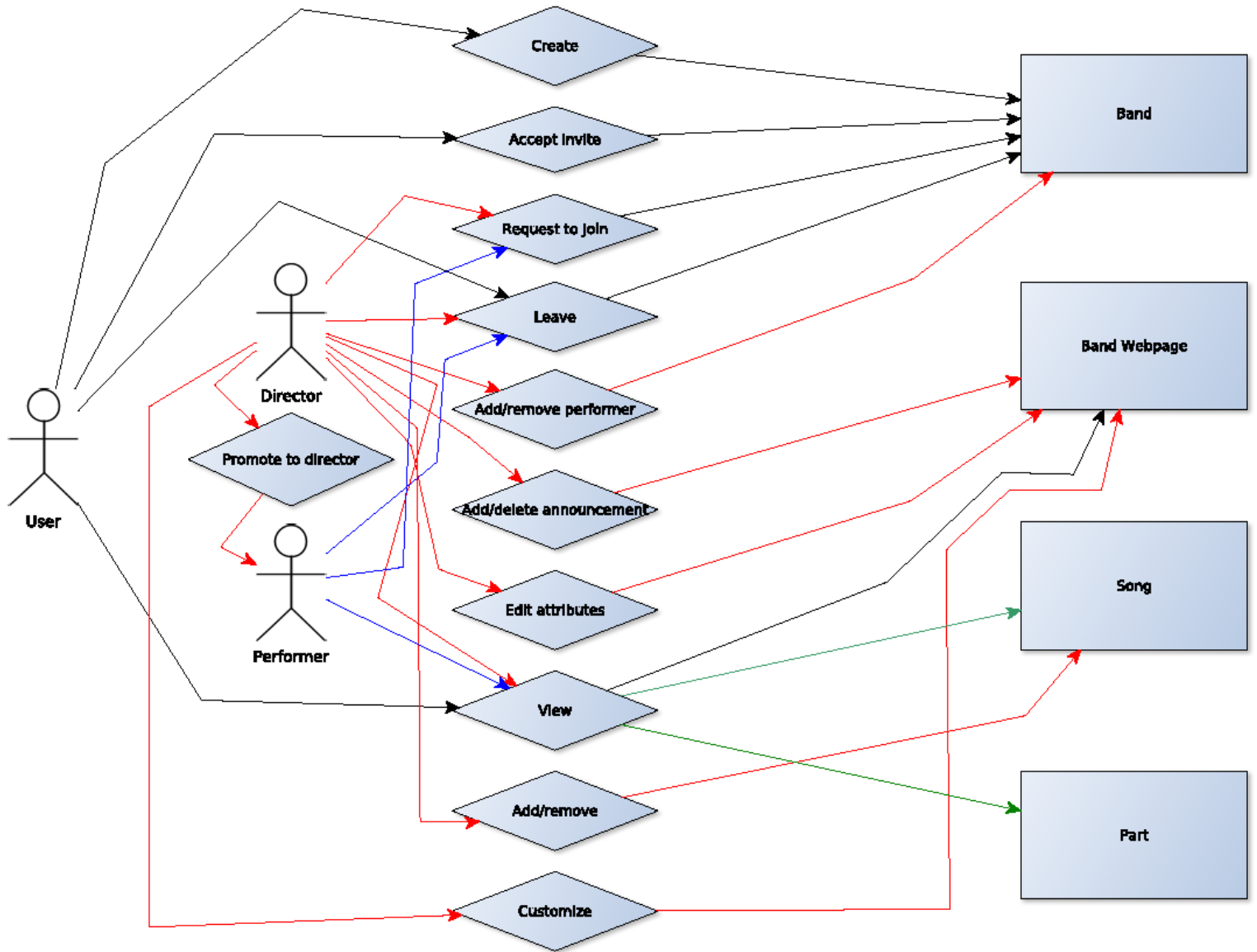The software shall allow a user to create a band page.
The software shall allow a director to change the instrument of a performer.
The software shall allow the director to limitedly customize their bands home page.
The software shall have the ability to handle an instrument having multiple parts.
The software shall allow a band to sign up for the software.

II. Use Case Diagrams:

Key: User actions = black
Director actions = red
Performer actions = blue
Director/Performer actions = green
User/Director/Performer actions = black
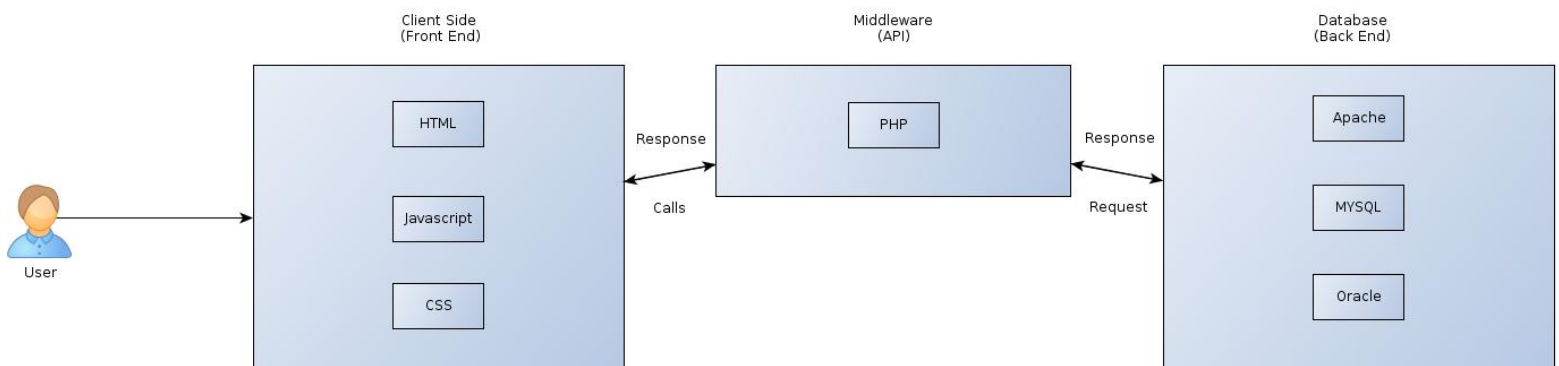
III. Database Model:

A. Explanation of how each requirement can be satisfied by the data model:

The database will contain a table named Users that holds user data that facilitates individual credentials for logins, along with their unique personal information. Each band will have an entry in a different table named Band, and the entry will be added upon signing up for the software.

Users can sign up for bands, and this will create an entry in a table called BandsIn that describes what bands each user is a part of, what instruments they play for that band, and if they are a director for that band. By additional entries into the BandsIn table, members and directors can be in multiple bands, and differentiate between if they are directors or members in those bands.

Band will have the ability to upload and access files of the extension ".pdf" to the software. These .pdf's are various parts of a song that are performed by different individuals. The file will be stored in the server's filesystem, and the database will store the location of the file in the Part table, along with the the indentifiers of who will perform that part. The Part table also tracks a song identifier that is linked to the Song table. The Song table is where it is stored as to which bands own which songs, as well as the name of the song.

IV. Software architectural diagram:

V. Object/Actions Analysis and Matrix:

Objects	Attributes	Actions
Band	Songs, Users, band name, band webpage	**All** View band webpage. **Users** Accept invite to join band. Create a band. **Performers** View parts of songs they belong to in the band. **Directors** Invite performers. Add/remove songs and parts. Alter webpage. View songs and parts. Can promote a member to a director.
Songs	Name, Parts	**Directors** Add/remove songs. Add/remove parts. **Performers** View their part for the song
Band Webpage	Images, background, announcements, logo, colors	**All** View webpage **Directors** Edit webpages tied to their bands.
Part	Part number, Instrument	**Directors** Add/delete/edit/view all parts in their band

		Performers Can view their part for a song
Users	First Name, Last Name, Password, parts, bands_in, e-mail	Users Each user can alter/view their own information

Object-Actions Hierarchy

Band

Attributes
1. Name
2. Users: List of performers, List of directors
3. Songs : List of songs
4. Band Webpage

Actions

User Role: All
1. View Band Webpage

User Role: Director
1. Add performer
2. Remove performer
3. Add song
4. Remove song
5. Customize webpage
6. Promote performer to director
7. View songs and parts

User Role: Performer
1. Leave band
2. View songs
3. View part

User Role: User
1. Create a band
2. Accept invite to a band

Users

Subtype
1. Director
2. Performer

Attributes
1. Name
2. Password
3. Bands In: List of bands
4. Instruments: List of Instruments
5. e-mail

Actions
User Role: All
1. View Attributes: All
2. Leave a band
3. Edit: password, instruments, e-mail

Band Webpage

Attributes
1. Image
2. Background
3. Logo
4. Colors: Color scheme
5. Announcements

Actions
User Role: All
1. View band webpage

User Role: Director
1. Edit all attributes

2. Add announcement
3. Delete announcement

Object-Actions Matrix

a = All   d = Director   u = User   p = Performer

		Create/Add	Edit	Delete	View	Remove	Promote to Director	Invite to band	Accept Invite
Band		u	d		a			d	u
	Name		d		d				
	Users				d, p	d	d		
	Songs	d	d	d	d, p	d			
	Parts	d	d	d	d, p	d			
	Band Webpage		d		a				
Users		a	u		u				
	Name		u						
	Password		u						
	e-mail	u	u		u	u			
	Bands In		u			u			
	Instruments	u	u		u	u			
Band Webpage			d		a				
	Image		d						
	Background		d						
	Logo		d						
	Colors		d						
	Announcements	d	d	d					

VI. Software Lexicon:

Song - Refers to the sheet music.

User Role: All - All people, even if they are not member of the website.

User Role: User - People who have created an account for the website.

User Role: Director - The creator of a band or a performer promoted to director by another director of the band. The band director has control of the band and manages the performers, music, and webpage of the band.

User Role: Performer - A user that has joined a band. A performer is a member of a band that can access their part of a song to view it.

VII. Usability Test:

Tasks:
Performer:
- Register
- Log In
- Open a PDF of sheet music

Director:
- Register
- Log In
- Create a Band
- Add Song/PDF
- Invite a performer to the band
- Open PDF of sheet music

VIII. Paper Prototype:

B# Logo/Banner

Username | Password | Log In

First Name | Last Name

E-mail Address | Username

Password | Re-Type Password

Register

The Mustang Band

B# Logo/Banner   About Band   Songs   Band Management   Upcoming Events   Band members   Contact Information

My Bands

The Mustang Band

Superband

Link To A Band A

Link To A Band B

Link To A Band C

We are the greatest and best band on the planet.
Come visit our concerts to be absolutlely blown away.
blah blah blah

Director John Lname:
Remember to practice
your part for our next
concert

Add Comment

The Mustang Band

B# Logo/Banner   About Band   Songs   Band Management   Upcoming Events   Band members   Contact Information

My Bands

The Mustang Band

Superband

Link To A Band A

Link To A Band B

Link To A Band C

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

D

Canon in D - Pachelbel

N

Nutcracker: Waltz Of The Flowers - Tchaikovsky

Nutcracker: Dance Of The Sugar-Plum Fairy - Tchaikovsky

Director John Lname: Remember to practice your part for our next concert

Add Comment

The Mustang Band

Logout

B# Logo/Banner   About Band   Songs   Band Management   Upcoming Events   Band members   Contact Information

My Bands

The Mustang Band

Superband

Link To A Band A

Link To A Band B

Link To A Band C

Manage My Bands

The Mustang Band

Create band

Band Name   Next

Director John Lname: Remember to practice your part for our next concert

Add Comment

My New Band!

| B# Logo/Banner | About Band | Songs | Band Management | Upcoming Events | Band members | Contact Information |

My Bands

The Mustang Band

Superband

Link To A Band A

Link To A Band B

Link To A Band C

| Edit About Band | Upload Songs | Edit Upcoming Events | Edit Band Memebers | Edit Contanct Information | Customize Page |

Tell the world about your band. Use this field to describe your band. This is the first thing people will see when they first log in

Update band

My New Band!

| B# Logo/Banner | About Band | Songs | Band Management | Upcoming Events | Band members | Contact Information |

My Bands

The Mustang Band

Superband

Link To A Band A

Link To A Band B

Link To A Band C

| Edit About Band | Upload Songs | Edit Upcoming Events | Edit Band Memebers | Edit Contanct Information | Customize Page |

Current Band members

You haven no band members yet! Add members to your band below!

Add Band Members

Add band members to the table. When you are finished, click the update button and emails will be sent to your members for confrirmation

Email Adress   Add New Member

Update band

My New Band!

B# Logo/Banner | About Band | Songs | **Band Management** | Upcoming Events | Band members | Contact Information

| Edit About Band | Upload Songs | Edit Upcoming Events | Edit Band Memebers | Edit Contant Information | Customize Page |

My Bands

The Mustang Band

Superband

Link To A Band A

Link To A Band B

Link To A Band C

View Uploaded Songs

You haven no Songs in your library yet! Add songs to your band below!

Upload Songs

Upload sheet music by browsing your computer for a pdf. Remember: you can select multiple pdf files by holding down ctrl(windows)/command(mac) while selecting files

Song Title   New Song

Song Composer   Guy Cockrum

Browse computer for pdf files   [Browse...]

[Update band]

My New Band!

B# Logo/Banner | About Band | Songs | **Band Management** | Upcoming Events | Band members | Contact Information

| Edit About Band | Upload Songs | Edit Upcoming Events | Edit Band Memebers | Edit Contant Information | Customize |

My Bands

The Mustang Band

Superband

Link To A Band A

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Link To A Band C

View Uploaded Songs

New Song - Guy Cockrum

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Song Composer

Browse computer for pdf files   [Browse...]

[Update band]

My New Band!

B# Logo/Banner | About Band | Songs | **Band Management** | Upcoming Events | Band members | Contact Information

My Bands

The Mustang Band

Superband

Link To A Band A

Link To A Band B

Link To A Band C

Edit About Band | Upload Songs | Edit Upcoming Events | Edit Band Memebers | Edit Contanct Information | Customize

New Song - Guy Cockrum

Sheet Music PDF	Instrument	Part
New Song_Trumpets1.pdf	Text	1
New Song_Trumpets2.pdf	Text	1
New Song_Trumpets3.pdf	Text	1
New Song_Clarinet1.pdf	Text	1
New Song_Clarinet2.pdf	Text	1
New Song_Clarinet3.pdf	Text	1

Update band

The Mustang Band

B# Logo/Banner | About Band | Upcoming Events | Band members | Contact Information

We are the greatest and best band on the planet. Come visit our concerts to be absolutley blown away. blah blah blah

The Mustang Band

Upcoming Events

① Woodstock October 5

① Bake sale Fund Raiser October 12

①

October

Calendar widget

IX. User Profiles:

Name	Age	Band Experience	Role in Band	Experience with Software Interfaces
Chris Raley	27	Orchestra	Instrument: Double bass; Performer	4 years experience and internships in development
Don Hopkins	54	Band	Instrument: Trombone; Director	Low to medium experience, mostly desktop
Jonathan Reistad	19	Band	Instrument: Trumpet; Performer	Frequent interaction with mobile and desktop interfaces
Gerry Hendrex	19	Band	Instrument: Tuba; Performer	Frequent interaction with mobile and desktop interfaces

Chris Raley: Raley is age 27 and has experience in an orchestra as a double bass player and has four years experience with user interfaces. Raley had little difficulty getting through the prototype and used his insight to help improve the design.

Don Hopkins: Hopkins has experience in band as a trombone player and has been a band director for nearly 30 years.

Jonathan Reistad: Reistad is a trumpet player with band experience.

Gerry Hendrex: Hendrex is a tuba player with band experience.

X. Usability Report:

Questions and Answers:

Q. What do you think about having a digital library for your band to access the parts you need for different songs?

> **Raley**: Really cool, quick and easy to find music if it's lost.
> **Don:** It makes it simpler for the student to copy music.
> **Jonathan:** It's a good idea for getting music quickly. The librarian's lazy.
> **Gerry:** I agree with Jonathan.

Q. Do you think a user should only be allowed to access the part they play or should they see all parts?

> **Raley**: It is nice to see other people's parts. It helps players understand the whole score.
> **Don:** Either one works.
> **Jonathan:** I'd prefer to see all parts.
> **Gerry:** Seeing all parts would be great.

Q. How much control do you want over your band?

> **Raley**: N/A
> **Don:** I want as much control as possible
> **Jonathan:** N/A
> **Gerry:** N/A

Q. What do you think about customising your band webpage?

> **Raley**: Liked the idea and compared it to wordpress. As long as the site did the basic template.
> **Don:** It would be a nice feature to have.
> **Jonathan:** YES!
> **Gerry:** Great idea!

Q. Would you prefer being able to specify a specific part for a member for a certain song or have it generalized to instrument?

    Raley: N/A
    Don: Would like it generalized for each instrument.
    Jonathan: N/A
    Gerry: N/A

Q. Do you think a band chat feature would be beneficial?

    Raley: Wouldn't be used that much.
    Don: Possibly.
    Jonathan: It's a toss-up.
    Gerry: That could be a good idea.

Q. What do you think about a Band News Feed to show upcoming events and performances?

    Raley: This feature should be elsewhere, like a school's website.
    Don: Great.
    Jonathan: Good idea.
    Gerry: Good idea.

Q. How comfortable are you with web interfaces and PDF documents?

    Raley: Pretty confident.
    Don: Not too comfortable with web interfaces, but is comfortable with pdf
    Jonathan: I am comfortable with both
    Gerry: I am comfortable with both