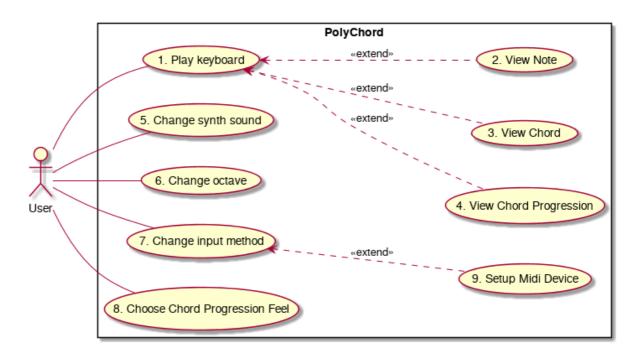
Use Case Models and Use Case Descriptions

Use Case Models

Piano Keyboard Input

Use Case model:



Use Case Descriptions:

Play Keyboard:

- Use Case ID: 1
- Relevant User Story IDs: 1,2
- Actors: User
- Related Use Cases:
 - Extended by 2. View Note
 - o Extended by 3. View Chord
 - Extended by 4. View Chord Progression
- Preconditions: None Post-conditions: None Exceptions handled: None

Steps:

User Actions

System Responses

- User plays notes on the piano - System plays the corresponding sounds for the notes

View Note:

- Use Case ID: 2
- Relevant User Story IDs: 31
- Actors: User
- Related Use Cases: None

- Preconditions: User Plays Piano
- Success Post-conditions: System displays each note as it is played
- Exceptions handled: None

User Actions

System Responses

- User plays notes on the Piano
- System plays the corresponding sounds for the notes
- User views notes as they play System displays each note as it is played

View Chord:

- Use Case ID: 3
- Relevant User Story IDs: 1, 4
- · Actors: User
- Related Use Cases: None
- Preconditions: User Plays Piano, notes played form a valid chord
- Success Post-conditions: Chord being played is displayed
- Exceptions handled: If the notes aren't a chord, nothing is displayed

Steps:

User Actions

System Responses

- 1. User plays notes on the Piano
- 2. System plays the corresponding sounds for the notes
- 4. User views chords as they play 3. System displays the chord name

View Chord Progression:

- Use Case ID: 4
- Relevant User Story IDs: 28, 30
- Actors: User
- Related Use Cases: None
- Preconditions: User Plays Piano, notes played form valid chord
- Success Post-conditions: System displays chord progression as it is played
- Exceptions handled: If the notes aren't a chord, nothing is displayed

Steps:

User Actions

System Responses

- User plays notes on the Piano
 System plays the corresponding sounds for the notes
 User views notes as they play
 System displays chord progression suggestion

Change Synth Sound:

- Use Case ID: 5
- Relevant User Story IDs: 9, 22
- Actors: User
- · Related Use Cases: None
- Preconditions: None
- · Success Post-conditions: System uses selected synth sound
- Exceptions handled: None

Steps:

User Actions

System Responses

- User changes Synth sound selection - System changes the sound profile that is played by piano

Change octave:

- Use Case ID: 6
- Relevant User Story IDs: 17
- Actors: User
- Related Use Cases: None
- Preconditions: None
- Success Post-conditions: System outputs synthesized audio in selected octave
- Exceptions handled: None

User Actions

System Responses

- User changes octave - System changes the octave that is played by piano

Change input method:

- Use Case ID: 7
- Relevant User Story IDs: 7, 31
- Actors: User
- Related Use Cases:
- Extended by 9. Setup Midi Device
- Preconditions: In order for the Midi input to be selected, a Midi device must be set up
- Success Post-conditions: System uses selected input method
- Exceptions handled: If no Midi device is set up, the system must prompt the user to set one up, or leave the input on 'keyboard'

Steps:

User Actions

System Responses

- User changes from Keyboard to MIDI or MIDI to keyboard input

- System accepts piano input only from the selected input

Choose Chord Progression Feel:

- Use Case ID: 8
- Relevant User Story IDs: 16
- Actors: User
- Related Use Cases: None
- Preconditions: None
- Success Post-conditions: System uses desired feel when selecting chords
- Exceptions handled: None

Steps:

User Actions

System Responses

- User chooses desired chord progression feel

- System prioritizes the user's desired feel when suggesting chord progressions

Setup Midi device:

- Use Case ID: 9
- Relevant User Story IDs: 7, 31
- Actors: User
- Related Use Cases: None
- Preconditions:
- Success Post-conditions: Input can be changed to Midi
- Exceptions handled: If no Midi device can be detected for setup, the system must present an error to the user

Steps:

User Actions

System Responses

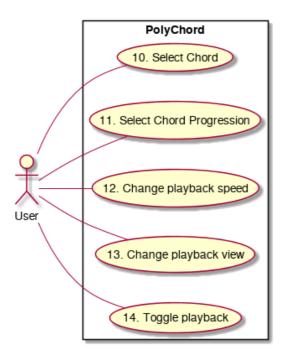
User Actions

System Responses

- User sets up Midi device - System attempts to detect Midi device - System sets up detected Midi device

Playback Interface

Use Case model:



Use Case Descriptions:

Select Chord:

- Use Case ID: 10
- Relevant User Story IDs: 8
- Actors: User
- Related Use Cases: None
- Preconditions: None.
- Success Post-conditions: System plays back selected Chord
- Exceptions handled: None

Steps:

User Actions ### System Responses

- Select chord - Switch playback to the selected chord

Select Chord Progression:

- Use Case ID: 11
- Relevant User Story IDs: 8
- Actors: User
- Related Use Cases: None
- Preconditions: None.
- Success Post-conditions: System plays back selected Chord Progression
- Exceptions handled: None

Steps:

User Actions

System Responses

- Select chord progression - Switch playback to the selected chord progression

Change playback speed:

- Use Case ID: 12
- Relevant User Story IDs: 8
- · Actors: User
- Related Use Cases: None
- Preconditions: None.
- Success Post-conditions: System uses updated playback speed.
- Exceptions handled: None

Steps:

User Actions

System Responses

- Increase or decrease playback speed - If playing: Modulate playback speed based on input - If paused, update speed to be used when playback starts

Change Playback View:

- Use Case ID: 13
- Relevant User Story IDs: 8
- Actors: User
- Related Use Cases: None
- Preconditions: None.
- Success Post-conditions: System uses selected output view
- · Exceptions handled: None

Steps:

User Actions

System Responses

- Select Fretboard, Ledger, or Piano Roll - System changes current playback view to the one that the use view selected

Toggle Playback:

- Use Case ID: 14
- Relevant User Story IDs: 8
- Actors: User
- Related Use Cases: None
- Preconditions: None.
- Success Post-conditions: System will playback selected Chords/Chord Progression
- Exceptions handled: The user has not selected a chord or chord progression, the system will play a
 default C major chord.

Steps:

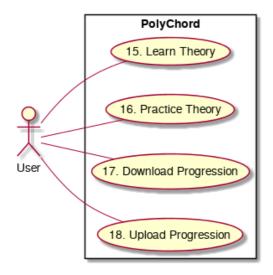
User Actions

System Responses

- Toggle the play/pause button - If the system was already playing, stop - If the system was not playing, start playback

Playback Peripherals

Use Case model:



Use Case Descriptions:

Learn Theory:

• Use Case ID: 15

• Relevant User Story IDs: 37

• Actors: User

• Related Use Cases: None

• Preconditions: None.

• Success Post-conditions: System displays theory lessons

• Exceptions handled: None

Steps:

User Actions ### System Responses

1. Select Learn Theory 2. Display theory lessons

Practice Theory:

• Use Case ID: 16

• Relevant User Story IDs: 24

• Actors: User

• Related Use Cases: None

• Preconditions: None.

• Success Post-conditions: System displays theory excercises

• Exceptions handled: None

Steps:

User Actions ### System Responses

1. Select Practice Theory 2. Display theory excercises

Download Progression:

• Use Case ID: 17

• Relevant User Story IDs: 6,21,39

• Actors: User

• Related Use Cases: None

• Preconditions: Selected progression is not empty

• Success Post-conditions: User downloads file containing a progression.

• Exceptions handled: None

User Actions ### System Responses

- 1. Select download progression 2. Create corresponding file
- 4. Save file 3. Send file to User

Upload Progression:

• Use Case ID: 18

• Relevant User Story IDs: 6,21

• Actors: User

Related Use Cases: NonePreconditions: None.

• Success Post-conditions: System displays uploaded chord progression

• Exceptions handled: None

Steps:

User Actions ### System Responses

1. User selects upload progression

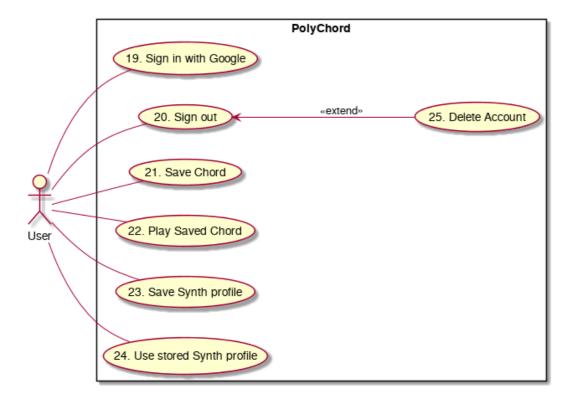
2. User uploads file

3a. Recieve file 3b. Verify file

4. Play progression 3c. Display progression

User Account management

Use Case model:



Use Case Descriptions:

Sign in with Google:

- Use Case ID: 19
- Relevant User Story IDs:
- · Actors: User
- Related Use Cases: None
- Preconditions: User has Google account
- Success Post-conditions: User is signed into PolyChord with their Google account
- Exceptions handled: None

User Actions

System Responses

- 1. Click Sign in with Google
- 3. Sign into Google account
- 2. Redirect user to Google Sign-on

5. Pass cookie to Client

- 4. Pass ID Token to backend to make cookie
- 6. User is signed in

Sign out:

- Use Case ID: 20
- Relevant User Story IDs:
- Actors: User
- Related Use Cases:
 - Extended by Delete Account
- Preconditions: User is signed in
- Success Post-conditions: User is signed out
- Exceptions handled: None

Steps:

User Actions

System Responses

- 1. User selects Sign Out
- 2. Sign out user through Google
- 3. Unset cookie 4. User is signed out

Save Chord:

- Use Case ID: 21
- Relevant User Story IDs:
- Actors: User
- Related Use Cases: None
- Preconditions: User is signed in, User has played chord
- Success Post-conditions: User's chord is saved to their account
- Exceptions handled: If User has not played a chord, they are given an error message

Steps:

User Actions

System Responses

1. User saves chord 2. System saves chord to db under user

Play Saved Chord:

- Use Case ID: 22
- Relevant User Story IDs:
- · Actors: User
- Related Use Cases: None
- Preconditions: User is signed in
- Success Post-conditions: User's saved chord is played
- Exceptions handled: None

User Actions ### System Responses

- 1. User selects saved chord to play 2. Chord is retrieved
 - 3. Chord is played

Save Synth Profile:

- Use Case ID: 23
- Relevant User Story IDs:
- Actors: User
- Related Use Cases: None
- Preconditions: User is signed in
- Success Post-conditions: User's Synth profile is saved to their account
- Exceptions handled: None

Steps:

User Actions

System Responses

1. User saves synth profile 2. System saves synth profile to db under user

Use Stored Synth Profile:

- Use Case ID: 24
- Relevant User Story IDs:
- Actors: User
- Related Use Cases: None
- Preconditions: User is signed in
- · Success Post-conditions: Synth uses save Profile
- Exceptions handled: None

Steps:

User Actions

System Responses

1. User restores saved synth profile 2. System retrieves and loads synth profile

Delete Account:

- Use Case ID: 25
- Relevant User Story IDs:
- · Actors: User
- Related Use Cases: Sign Out
- Preconditions: User is signed in
- Success Post-conditions: User's data is removed, User is signed out
- Exceptions handled: None

Steps:

User Actions

System Responses

- 1. User opts to delete their account 2. User's data is deleted from DB

 - 3. User is signed out