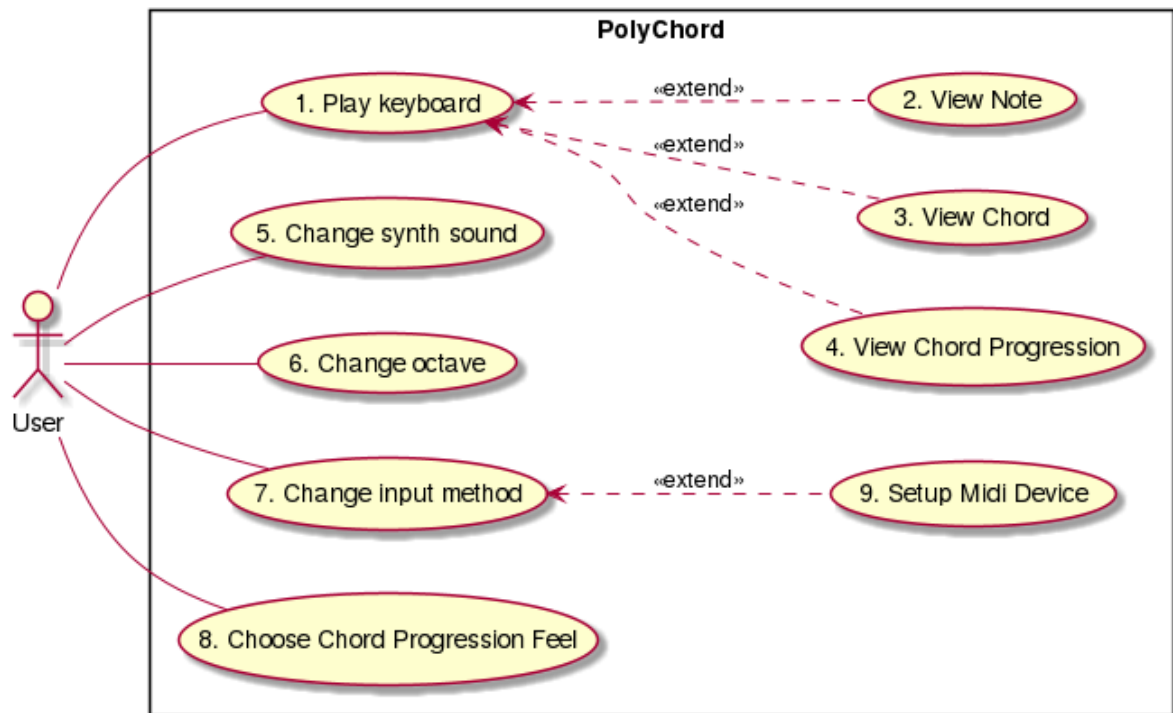


Use Case Models and Use Case Descriptions

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

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 each note as it is played |

View Chord:

- Use Case ID: 3
- Relevant User Story IDs: 1, 4
- Actors: User
- Related Use Cases: Play Keyboard
- 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: Play Keyboard
- 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**

- | | |
|----------------------------------|--|
| 1. User plays notes on the Piano | 2. System plays the corresponding sounds for the notes |
| 3. User views notes as they play | 4. 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 selects change Synth sound	- System shows synth sound menu
- User changes synth sound	- System changes 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

Steps:

### User Actions	### System Responses
- User selects change octave	- System changes the octave that is played by piano
- User sees updated octave	- System updates octave

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

- User chooses desired chord progression feel

System Responses

- 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

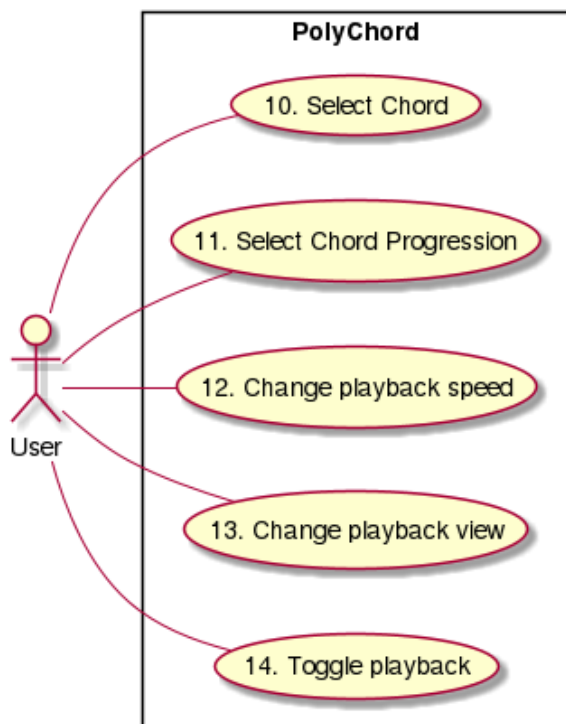
- User plugs in MIDI device
- User sets up Midi device

System Responses

- 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

- Select chord

System Responses

- 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

- Select chord progression

System Responses

- 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

- Increase or decrease playback speed

System Responses

- 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

- Select Fretboard, Ledger, or Piano Roll view

System Responses

- System changes current playback view to the one that the user 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

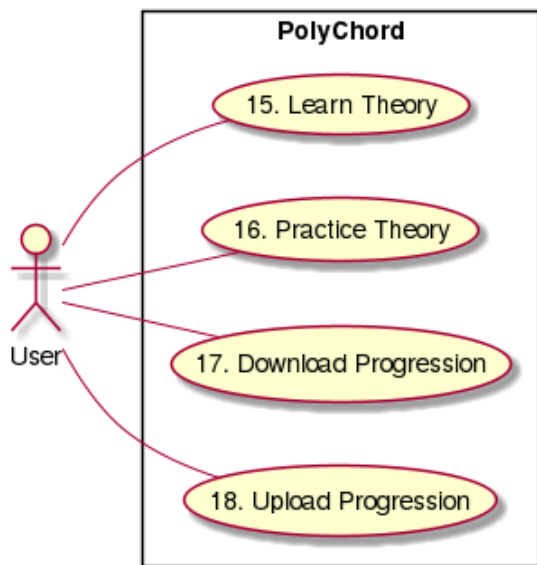
- Toggle the play/pause button

System Responses

- 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

Steps:

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: None
- Preconditions: None.
- Success Post-conditions: System displays uploaded chord progression
- Exceptions handled: None

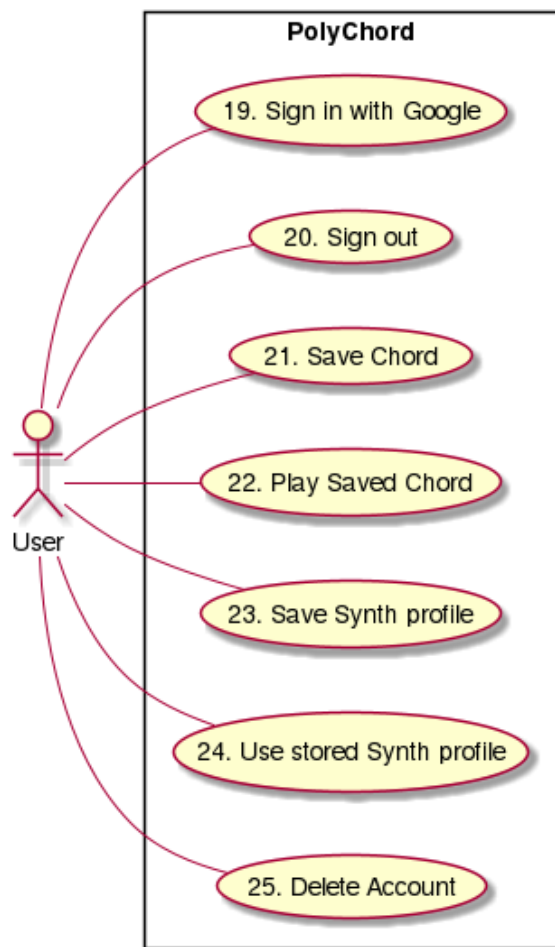
Steps:

User Actions ### System Responses

### 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: 21, 37, 39
- 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

Steps:

### User Actions	### System Responses
1. Click Sign in with Google	
3. Sign into Google account	2. Redirect user to Google Sign-on
	4. Pass ID Token to backend to make cookie
6. User is signed in	5. Pass cookie to Client

Sign out:

- Use Case ID: 20
- Relevant User Story IDs: 41
- 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
4. User is signed out	3. Unset cookie

Save Chord:

- Use Case ID: 21
- Relevant User Story IDs: 6
- 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: 8, 13
- Actors: User
- Related Use Cases: None
- Preconditions: User is signed in
- Success Post-conditions: User's saved chord is played
- Exceptions handled: None

Steps:

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: 9
- 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: 9
- 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: 41
- Actors: User
- Related Use Cases: None
- 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