GROUP 06

CONTROLLER

MODEL

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VIEW

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PROBLEM STATEMENT

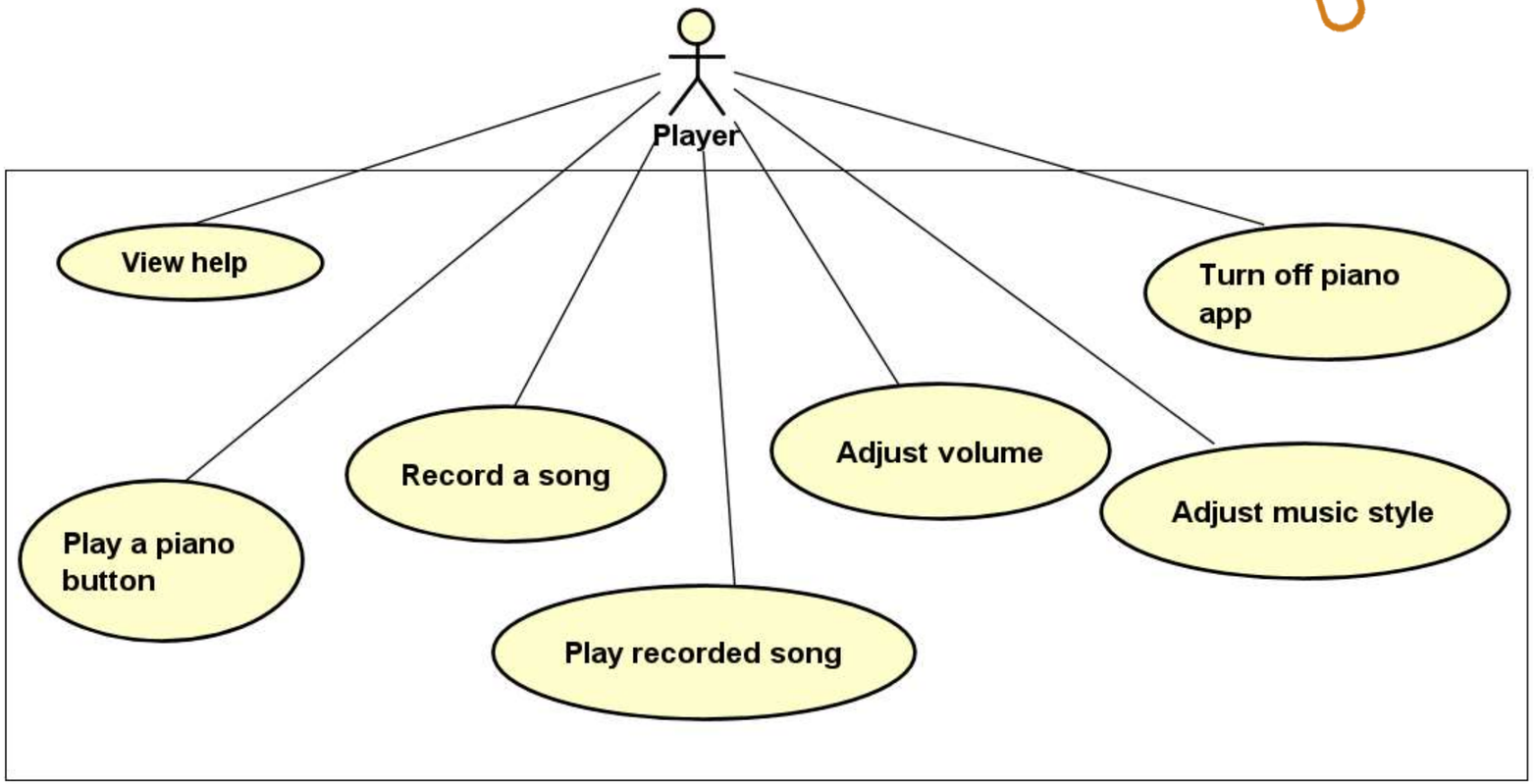
PROBLEM

Implement an application that provides GUI for the user to virtually play an electronic piano.

DESIGN

Design a UI with keyboard, volume, record, music style, ... that comfort users.

USE CASE DIAGRAM



User can start to play by clicking, pressing or editing the song themself

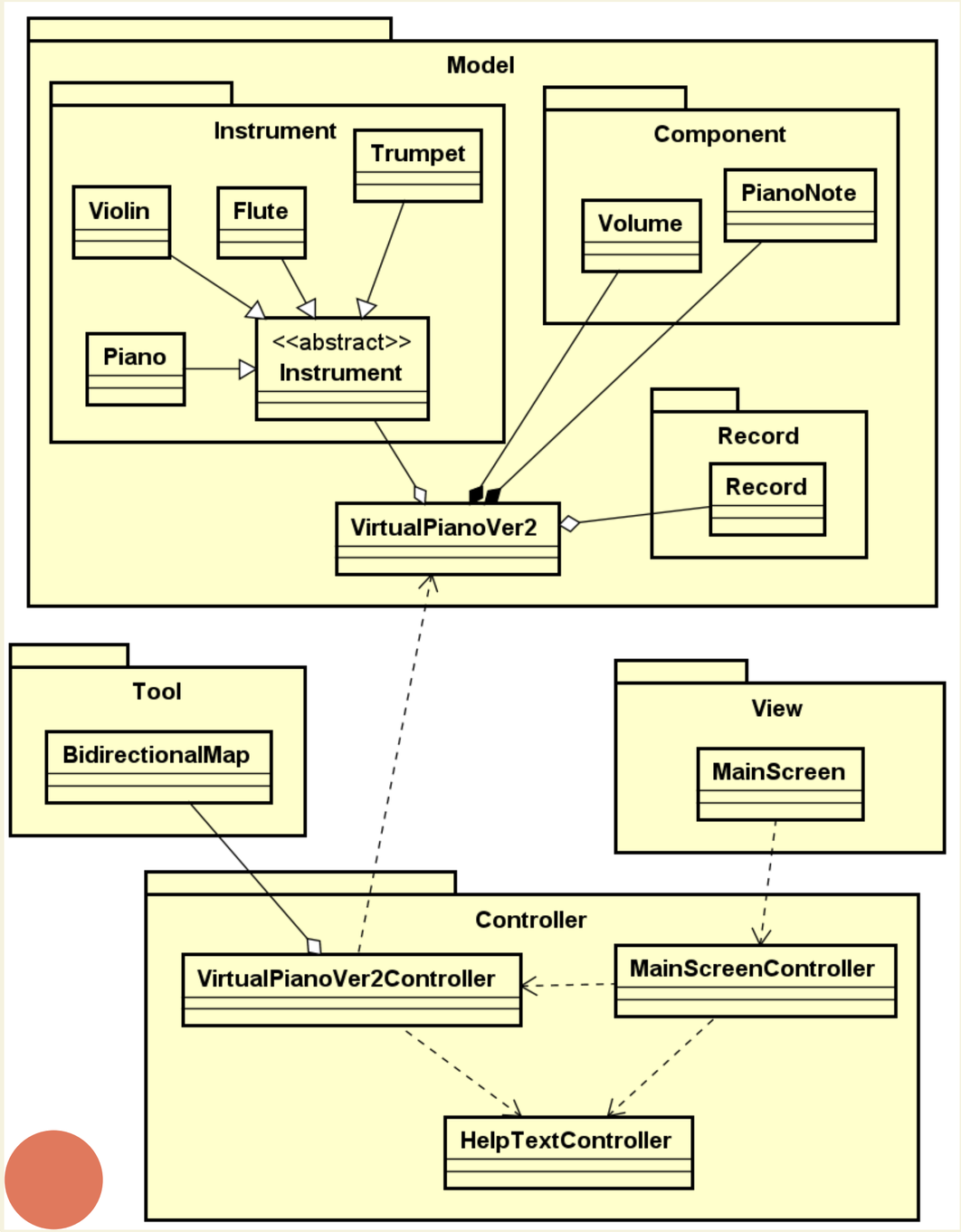
- Play a note whenever user touches.
- Notice the user if a key on keyboard cannot play.
- Replay everything we've just played.
- Adjust volume, music style for different experiences.

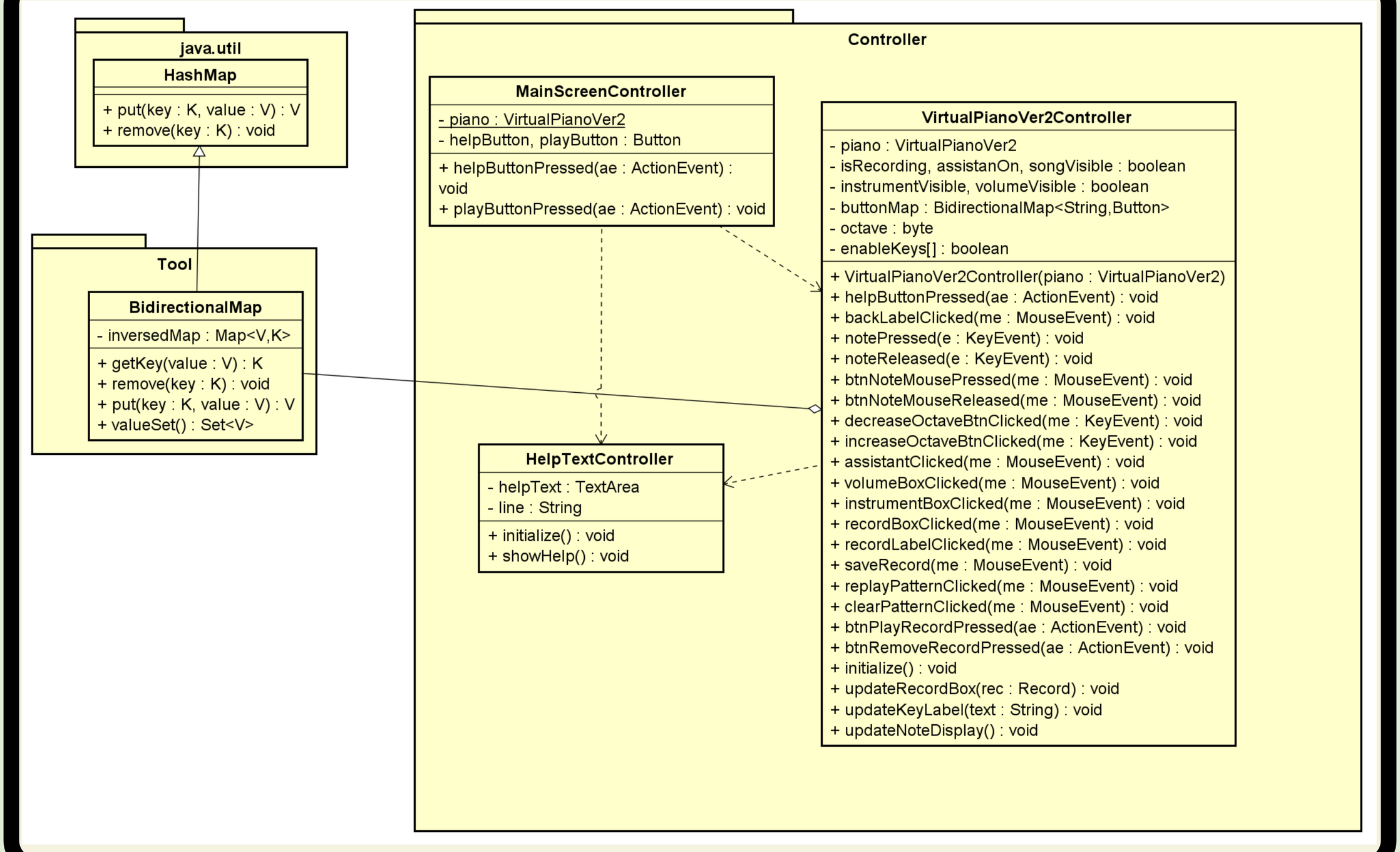
User can view help menu.

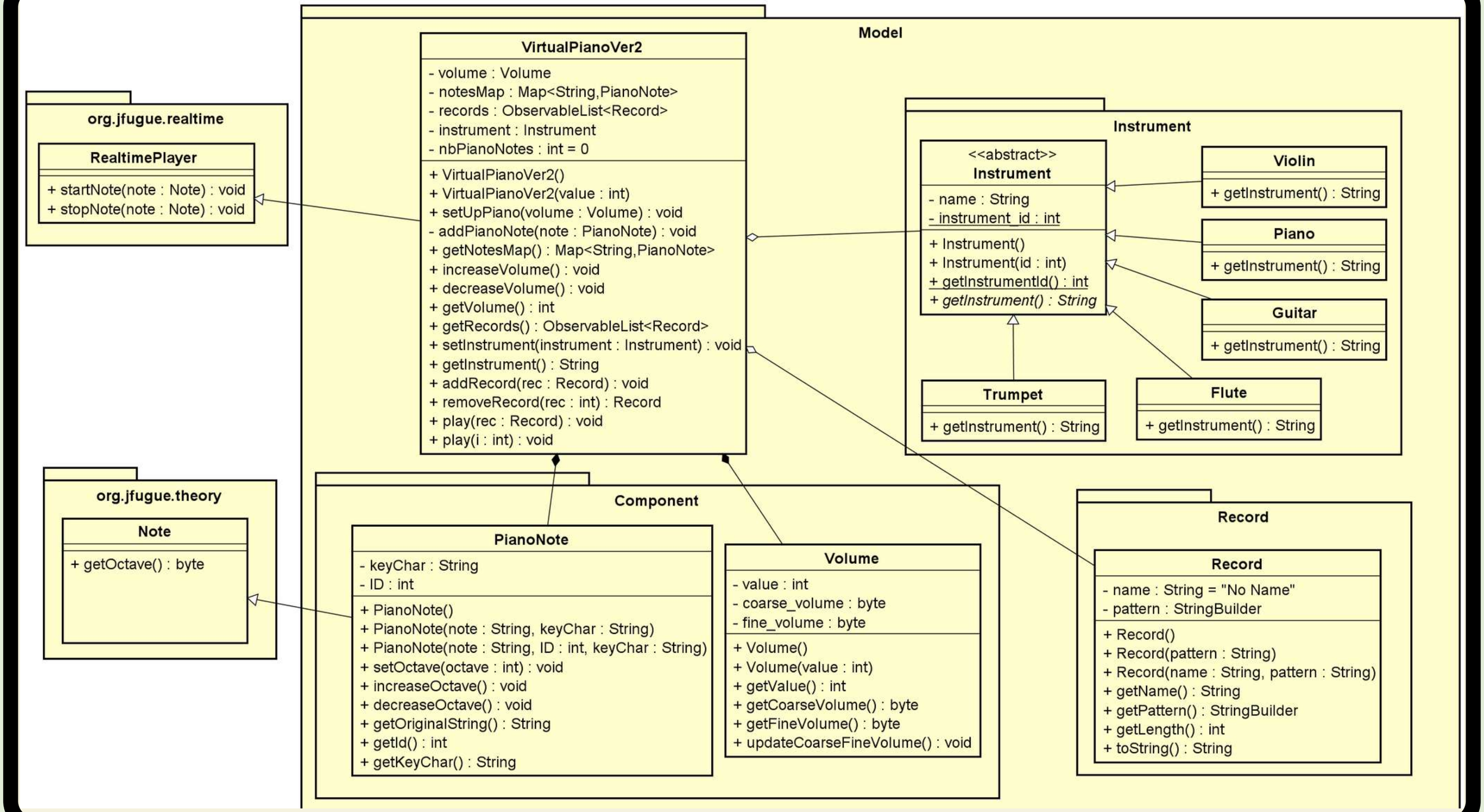
User can confirm to exit from the program.

CLASS DIAGRAM

- Package “Model”: store a complete piano
- Package “Controllers”: store all the screen controllers.
- Package “View”: store the “MainScreen” class of the application.
- Package “Tool”: store key character and corresponding piano note,




java.util
HashMap
+ put(key : K, value : V) : V
+ remove(key : K) : void
Tool
BidirectionalMap
- inversedMap : Map<V,K>
+ getKey(value : V) : K
+ remove(key : K) : void
+ put(key : K, value : V) : V
+ valueSet() : Set<V>
Controller
MainScreenController
- piano : VirtualPianoVer2
- helpButton, playButton : Button
+ helpButtonPressed(ae : ActionEvent) : void
+ playButtonPressed(ae : ActionEvent) : void
VirtualPianoVer2Controller
- piano : VirtualPianoVer2
- isRecording, assistanOn, songVisible : boolean
- instrumentVisible, volumeVisible : boolean
- buttonMap : BidirectionalMap<String,Button>
- octave : byte
- enableKeys[] : boolean
+ VirtualPianoVer2Controller(piano : VirtualPianoVer2)
+ helpButtonPressed(ae : ActionEvent) : void
+ backLabelClicked(me : MouseEvent) : void
+ notePressed(e : KeyEvent) : void
+ noteReleased(e : KeyEvent) : void
+ btnNoteMousePressed(me : MouseEvent) : void
+ btnNoteMouseReleased(me : MouseEvent) : void
+ decreaseOctaveBtnClicked(me : KeyEvent) : void
+ increaseOctaveBtnClicked(me : KeyEvent) : void
+ assistantClicked(me : MouseEvent) : void
+ volumeBoxClicked(me : MouseEvent) : void
+ instrumentBoxClicked(me : MouseEvent) : void
+ recordBoxClicked(me : MouseEvent) : void
+ recordLabelClicked(me : MouseEvent) : void
+ saveRecord(me : MouseEvent) : void
+ replayPatternClicked(me : MouseEvent) : void
+ clearPatternClicked(me : MouseEvent) : void
+ btnPlayRecordPressed(ae : ActionEvent) : void
+ btnRemoveRecordPressed(ae : ActionEvent) : void
+ initialize() : void
+ updateRecordBox(rec : Record) : void
+ updateKeyLabel(text : String) : void
+ updateNoteDisplay() : void
HelpTextController
- helpText : TextArea
- line : String
+ initialize() : void
+ showHelp() : void

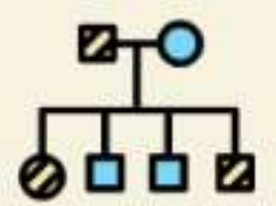

Model
VirtualPianoVer2
- volume : Volume
- notesMap : Map<String,PianoNote>
- records : ObservableList<Record>
- instrument : Instrument
- nbPianoNotes : int = 0
+ VirtualPianoVer2()
+ VirtualPianoVer2(value : int)
+ setUpPiano(volume : Volume) : void
- addPianoNote(note : PianoNote) : void
+ getNotesMap() : Map<String,PianoNote>
+ increaseVolume() : void
+ decreaseVolume() : void
+ getVolume() : int
+ getRecords() : ObservableList<Record>
+ setInstrument(instrument : Instrument) : void
+ getInstrument() : String
+ addRecord(rec : Record) : void
+ removeRecord(rec : int) : Record
+ play(rec : Record) : void
+ play(i : int) : void
org.jfugue.realtime
RealtimePlayer
+ startNote(note : Note) : void
+ stopNote(note : Note) : void
Instrument
<<abstract>>
Instrument
- name : String
- instrument_id : int
+ Instrument()
+ Instrument(id : int)
+ getInstrumentId() : int
+ getInstrument() : String
Violin
+ getInstrument() : String
Piano
+ getInstrument() : String
Guitar
+ getInstrument() : String
Trumpet
+ getInstrument() : String
Flute
+ getInstrument() : String
org.jfugue.theory
Note
+ getOctave() : byte
Component
PianoNote
- keyChar : String
- ID : int
+ PianoNote()
+ PianoNote(note : String, keyChar : String)
+ PianoNote(note : String, ID : int, keyChar : String)
+ setOctave(octave : int) : void
+ increaseOctave() : void
+ decreaseOctave() : void
+ getOriginalString() : String
+ getId() : int
+ getKeyChar() : String
Volume
- value : int
- coarse_volume : byte
- fine_volume : byte
+ Volume()
+ Volume(value : int)
+ getValue() : int
+ getCoarseVolume() : byte
+ getFineVolume() : byte
+ updateCoarseFineVolume() : void
Record
Record
- name : String = "No Name"
- pattern : StringBuilder
+ Record()
+ Record(pattern : String)
+ Record(name : String, pattern : String)
+ getName() : String
+ getPattern() : StringBuilder
+ getLength() : int
+ toString() : String

Encapsulation

- Package Model, class VirtualPianoVer2
- Package Controller, class VirtualPianoVer2Controller use instance of BidirectionalMap

Abstraction

- Package Instrument in package model, 5 class implement abstract method from abstract class Instrument



Inheritance

- Package Tool, BidirectionalMap class inherits from HashMap and implements all of the abstract methods.

Polymorphism

- All type of instruments (piano, violin, flute, ...) are upcasting to Instrument class.


Help
Play