Metropolitan State University

ICS 372 HW3 **Chord Finder**

Background

Most Western music is based on the chromatic scale: a series of 12 pitches, represented as notes, each a semitone apart. Notes are named with the letters A-G. Some notes are named just a letter, while some have a suffix called an "accidental" meaning a semitone above or below the note with the letter-name.

Starting from A, the 12 tones can be named

	0	1	2	3	4	5	6	7	8	9	10	11
With #'s	A	A#	B	C	C#	D	D#	E	F	F#	G	G#
With *b*'s	A	B*b*	B	C	D*b*	D	E*b*	E	F	G*b*	G	A*b*
Other names			C*b*	B#				F*b*	E#			

The difference between two successive notes is called a half-step. The order of notes is cyclic. That is, the note one half-step higher than G#/Ab is again A, and the note one halfstep lower than A is Ab/G#. Notes that are a multiple of 12 half-steps apart have the same name, and for our purposes we will consider them equivalent.

Assignment

Implement a class ChordFinder that takes as an input three strings representing notes and returns asset of Strings of recognized chord names they can represent, or an empty set if no chords are recognized.

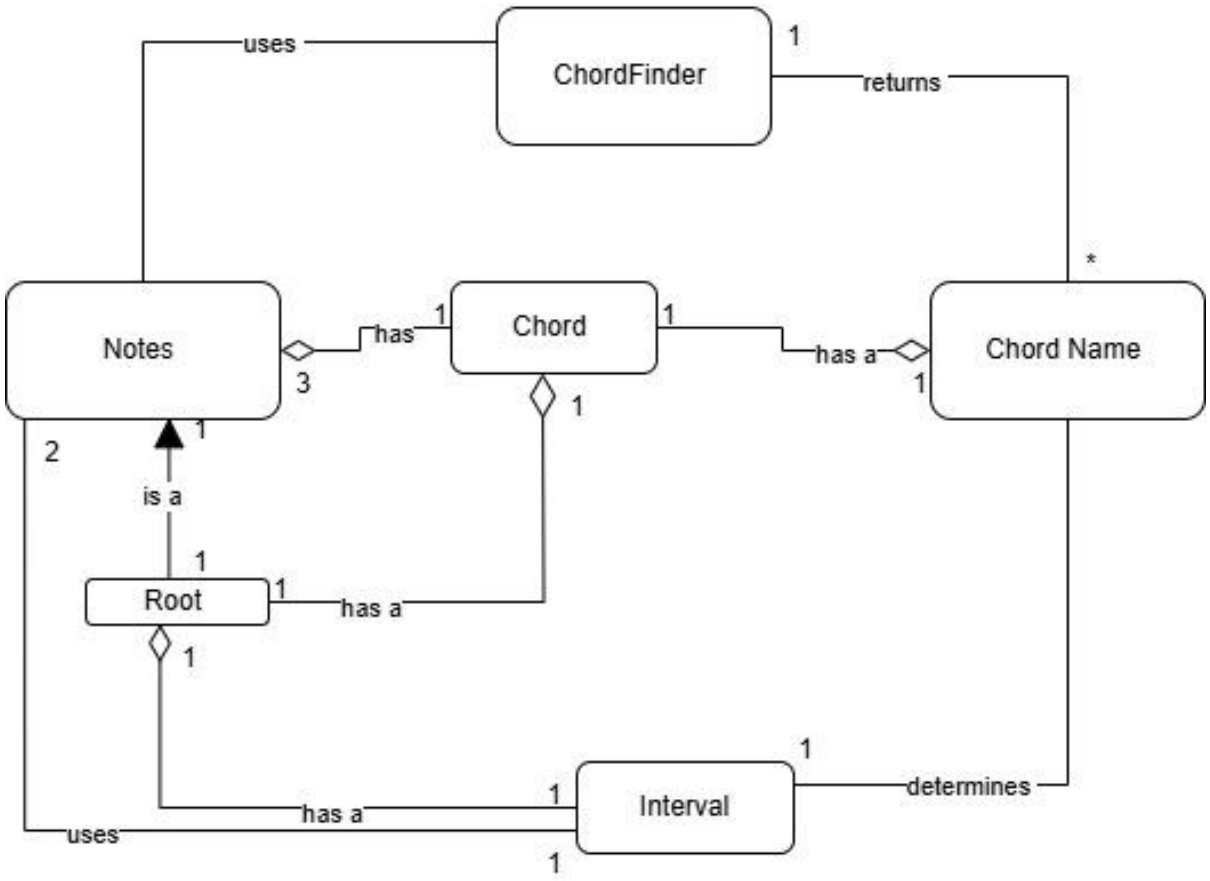
Group 4: Abbe Andrew, Lwanga Lawrence, Tusa Nur

Notes

Group Name: Group*4*_HW3_ChordFinder

Project members: Abbe Andrew, Lwanga Lawrence, Tusa Nur

- Domain Model



- Use case diagram/scenario

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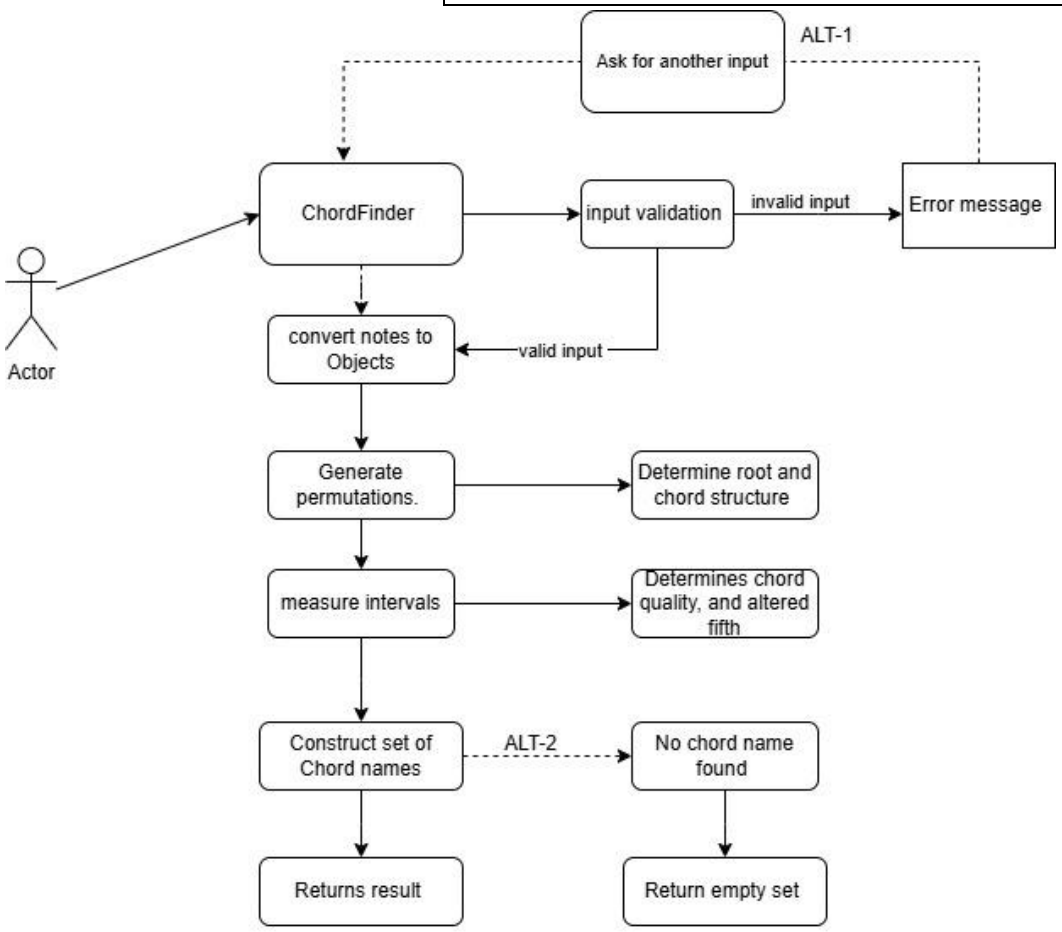

Identify a chord from a string of three notes	
1. User enters a string of 3 notes	2. System validates input 3. if input is invalid {ALT-1}
	4. System converts notes to objects
	5. System generates permutations 6. System determines the root and the chord structure
	7. System measures the intervals between root note and the other two notes 8. System determines chord quality and altered 5th
	9. System constructs a valid set of chord names 10. if there is no valid chord name {ALT-2} 11.System returns Set of chord names 12. END of usecase
ALT-1	60. System displays an error message 61. System asks user for another valid input 62. End of use case
ALT -2	63. System returns an empty set 64. End of Use Case

- Robustness Model.