**Upper (MIDI 1 only) – Notes: Major – minor – 2^ - 4^ – 7^ – aug -– with “is\_pitch\_class\_held”**

$(is\_pitch\_class\_held([0,4,7] ,1) == 1? "CMajor":"")$(is\_pitch\_class\_held([0,3,7] ,1) == 1? "Cminor":"")$(is\_pitch\_class\_held([0,2,7] ,1) == 1? "CMajor sus2":"")$(is\_pitch\_class\_held([0,5,7] ,1) == 1? "CMajor sus4":"")$(is\_pitch\_class\_held([0,7,10] ,1) == 1? " 7":"")$(is\_pitch\_class\_held([0,4,8] ,1) == 1? "Caug":"")$(is\_pitch\_class\_held([1,5,8] ,1) == 1? "C#Major":"")$(is\_pitch\_class\_held([1,4,8] ,1) == 1? "C#minor":"")$(is\_pitch\_class\_held([1,3,8] ,1) == 1? "C#Major2":"")$(is\_pitch\_class\_held([1,6,8] ,1) == 1? "C# Major4":"")$(is\_pitch\_class\_held([1,8,11] ,1) == 1? "7":"")$(is\_pitch\_class\_held([1,5,9] ,1) == 1? "C#aug":"")$(is\_pitch\_class\_held([2,6,9] ,1) == 1? "DMajor":"")$(is\_pitch\_class\_held([2,5,9] ,1) == 1? "Dminor":"")$(is\_pitch\_class\_held([2,4,9] ,1) == 1? "DMajor2":"")$(is\_pitch\_class\_held([2,7,9] ,1) == 1? "DMajor4":"")$(is\_pitch\_class\_held([2,9,0] ,1) == 1? "7":"")$(is\_pitch\_class\_held([2,6,10] ,1) == 1? "Daug":"")$(is\_pitch\_class\_held([3,7,10] ,1) == 1? "D#Major":"")$(is\_pitch\_class\_held([3,6,10] ,1) == 1? "D#minor":"")$(is\_pitch\_class\_held([3,5,10] ,1) == 1? "D#Major2":"")$(is\_pitch\_class\_held([3,8,10] ,1) == 1? "D#Major4":"")$(is\_pitch\_class\_held([3,10,1] ,1) == 1? "7":"")$(is\_pitch\_class\_held([3,7,11] ,1) == 1? "D#aug":"")$(is\_pitch\_class\_held([4,8,11] ,1) == 1? "EMajor":"")$(is\_pitch\_class\_held([4,7,11] ,1) == 1? "Eminor":"")$(is\_pitch\_class\_held([4,6,11] ,1) == 1? "EMajor2":"")$(is\_pitch\_class\_held([4,9,11] ,1) == 1? "EMajor4":"")$(is\_pitch\_class\_held([4,11,2] ,1) == 1? "7":"")$(is\_pitch\_class\_held([4,8,0] ,1) == 1? "Eaug":"")$(is\_pitch\_class\_held([5,9,0] ,1) == 1? "FMajor":"")$(is\_pitch\_class\_held([5,8,0] ,1) == 1? "Fminor":"")$(is\_pitch\_class\_held([5,7,0] ,1) == 1? "FMajor2":"")$(is\_pitch\_class\_held([5,10,0] ,1) == 1? "FMajor4":"")$(is\_pitch\_class\_held([5,0,3] ,1) == 1? "7":"")$(is\_pitch\_class\_held([5,9,1] ,1) == 1? "Faug":"")$(is\_pitch\_class\_held([6,10,1] ,1) == 1? "F#Major":"")$(is\_pitch\_class\_held([6,9,1] ,1) == 1? "F#minor":"")$(is\_pitch\_class\_held([6,8,1] ,1) == 1? "F#Major2":"")$(is\_pitch\_class\_held([6,11,1] ,1) == 1? "F#Major4":"")$(is\_pitch\_class\_held([6,1,4] ,1) == 1? "7":"")$(is\_pitch\_class\_held([6,10,2] ,1) == 1? "F#aug":"")$(is\_pitch\_class\_held([7,11,2] ,1) == 1? "GMajor":"")$(is\_pitch\_class\_held([7,10,2] ,1) == 1? "Gminor":"")$(is\_pitch\_class\_held([7,9,2] ,1) == 1? "GMajor2":"")$(is\_pitch\_class\_held([7,0,2] ,1) == 1? "GMajor4":"")$(is\_pitch\_class\_held([7,2,5] ,1) == 1? " ":"")$(is\_pitch\_class\_held([7,11,3] ,1) == 1? "Gaug":"")$(is\_pitch\_class\_held([8,0,3] ,1) == 1? "G#Major":"")$(is\_pitch\_class\_held([8,11,3] ,1) == 1? "G#minor"")$(is\_pitch\_class\_held([8,10,3] ,1) == 1? "G#Major2":"")$(is\_pitch\_class\_held([8,1,3] ,1) == 1? "G#Major4":"")$(is\_pitch\_class\_held([8,3,6] ,1) == 1? "7":"")$(is\_pitch\_class\_held([8,0,4] ,1) == 1? "G#aug":"")$(is\_pitch\_class\_held([9,1,4] ,1) == 1? "AMajor":"")$(is\_pitch\_class\_held([9,0,4] ,1) == 1? "Aminor":"")$(is\_pitch\_class\_held([9,11,4] ,1) == 1? "AMajor2":"")$(is\_pitch\_class\_held([9,2,4] ,1) == 1? "AMajor4":"")$(is\_pitch\_class\_held([9,4,7] ,1) == 1? "7":"")$(is\_pitch\_class\_held([9,1,5] ,1) == 1? "Aaug":"")$(is\_pitch\_class\_held([10,2,5] ,1) == 1? "A#Major":"")$(is\_pitch\_class\_held([10,1,5] ,1) == 1? "A#minor":"")$(is\_pitch\_class\_held([10,0,5] ,1) == 1? "AMajor2":"")$(is\_pitch\_class\_held([10,3,5] ,1) == 1? "A#Major4":"")$(is\_pitch\_class\_held([10,5,8] ,1) == 1? "7":"")$(is\_pitch\_class\_held([10,2,6] ,1) == 1? "A#aug":"")$(is\_pitch\_class\_held([11,3,6] ,1) == 1? "BMajor":"")$(is\_pitch\_class\_held([11,2,6] ,1) == 1? "Bminor":"")$(is\_pitch\_class\_held([11,1,6] ,1) == 1? "BMajor2":"")$(is\_pitch\_class\_held([11,4,6] ,1) == 1? "BMajor4":"")$(is\_pitch\_class\_held([11,6,9] ,1) == 1? "7":"")$(is\_pitch\_class\_held([11,3,7] ,1) == 1? "Baug":"")

**Lower (MIDI 2 only) – Notes: Major – minor – 2^ - 4^ – 7^ – aug -– with “is\_pitch\_class\_held”**

$(is\_pitch\_class\_held([0,4,7] ,2) == 1? "CMajor":"")$(is\_pitch\_class\_held([0,3,7] ,2) == 1? "Cminor":"")$(is\_pitch\_class\_held([0,2,7] ,2) == 1? "CMajor sus2":"")$(is\_pitch\_class\_held([0,5,7] ,2) == 1? "CMajor sus4":"")$(is\_pitch\_class\_held([0,7,10] ,1) == 1? " 7":"")$(is\_pitch\_class\_held([0,4,8] ,1) == 1? "Caug":"")$(is\_pitch\_class\_held([1,5,8] ,2) == 1? "C#Major":"")$(is\_pitch\_class\_held([1,4,8] ,2) == 1? "C#minor":"")$(is\_pitch\_class\_held([1,3,8] ,2) == 1? "C#Major2":"")$(is\_pitch\_class\_held([1,6,8] ,2) == 1? "C# Major4":"")$(is\_pitch\_class\_held([1,8,11] ,2) == 1? "7":"")$(is\_pitch\_class\_held([1,5,9] ,2) == 1? "C#aug":"")$(is\_pitch\_class\_held([2,6,9] ,2) == 1? "DMajor":"")$(is\_pitch\_class\_held([2,5,9] ,2) == 1? "Dminor":"")$(is\_pitch\_class\_held([2,4,9] ,2) == 1? "DMajor2":"")$(is\_pitch\_class\_held([2,7,9] ,2) == 1? "DMajor4":"")$(is\_pitch\_class\_held([2,9,0] ,2) == 1? "7":"")$(is\_pitch\_class\_held([2,6,10] ,2) == 1? "Daug":"")$(is\_pitch\_class\_held([3,7,10] ,2) == 1? "D#Major":"")$(is\_pitch\_class\_held([3,6,10] ,2) == 1? "D#minor":"")$(is\_pitch\_class\_held([3,5,10] ,2) == 1? "D#Major2":"")$(is\_pitch\_class\_held([3,8,10] ,2) == 1? "D#Major4":"")$(is\_pitch\_class\_held([3,10,1] ,2) == 1? "7":"")$(is\_pitch\_class\_held([3,7,11] ,2) == 1? "D#aug":"")$(is\_pitch\_class\_held([4,8,11] ,2) == 1? "EMajor":"")$(is\_pitch\_class\_held([4,7,11] ,2) == 1? "Eminor":"")$(is\_pitch\_class\_held([4,6,11] ,2) == 1? "EMajor2":"")$(is\_pitch\_class\_held([4,9,11] ,2) == 1? "EMajor4":"")$(is\_pitch\_class\_held([4,11,2] ,2) == 1? "7":"")$(is\_pitch\_class\_held([4,8,0] ,2) == 1? "Eaug":"")$(is\_pitch\_class\_held([5,9,0] ,2) == 1? "FMajor":"")$(is\_pitch\_class\_held([5,8,0] ,2) == 1? "Fminor":"")$(is\_pitch\_class\_held([5,7,0] ,2) == 1? "FMajor2":"")$(is\_pitch\_class\_held([5,10,0] ,2) == 1? "FMajor4":"")$(is\_pitch\_class\_held([5,0,3] ,2) == 1? "7":"")$(is\_pitch\_class\_held([5,9,1] ,2) == 1? "Faug":"")$(is\_pitch\_class\_held([6,10,1] ,2) == 1? "F#Major":"")$(is\_pitch\_class\_held([6,9,1] ,2) == 1? "F#minor":"")$(is\_pitch\_class\_held([6,8,1] ,2) == 1? "F#Major2":"")$(is\_pitch\_class\_held([6,11,1] ,2) == 1? "F#Major4":"")$(is\_pitch\_class\_held([6,1,4] ,2) == 1? "7":"")$(is\_pitch\_class\_held([6,10,2] ,2) == 1? "F#aug":"")$(is\_pitch\_class\_held([7,11,2] ,2) == 1? "GMajor":"")$(is\_pitch\_class\_held([7,10,2] ,2) == 1? "Gminor":"")$(is\_pitch\_class\_held([7,9,2] ,2) == 1? "GMajor2":"")$(is\_pitch\_class\_held([7,0,2] ,2) == 1? "GMajor4":"")$(is\_pitch\_class\_held([7,2,5] ,2) == 1? " ":"")$(is\_pitch\_class\_held([7,11,3] ,2) == 1? "Gaug":"")$(is\_pitch\_class\_held([8,0,3] ,2) == 1? "G#Major":"")$(is\_pitch\_class\_held([8,11,3] ,2) == 1? "G#minor"")$(is\_pitch\_class\_held([8,10,3] ,2) == 1? "G#Major2":"")$(is\_pitch\_class\_held([8,1,3] ,2) == 1? "G#Major4":"")$(is\_pitch\_class\_held([8,3,6] ,2) == 1? "7":"")$(is\_pitch\_class\_held([8,0,4] ,2) == 1? "G#aug":"")$(is\_pitch\_class\_held([9,1,4] ,2) == 1? "AMajor":"")$(is\_pitch\_class\_held([9,0,4] ,2) == 1? "Aminor":"")$(is\_pitch\_class\_held([9,11,4] ,2) == 1? "AMajor2":"")$(is\_pitch\_class\_held([9,2,4] ,2) == 1? "AMajor4":"")$(is\_pitch\_class\_held([9,4,7] ,2) == 1? "7":"")$(is\_pitch\_class\_held([9,1,5] ,2) == 1? "Aaug":"")$(is\_pitch\_class\_held([10,2,5] ,2) == 1? "A#Major":"")$(is\_pitch\_class\_held([10,1,5] ,2) == 1? "A#minor":"")$(is\_pitch\_class\_held([10,0,5] ,2) == 1? "AMajor2":"")$(is\_pitch\_class\_held([10,3,5] ,2) == 1? "A#Major4":"")$(is\_pitch\_class\_held([10,5,8] ,2) == 1? "7":"")$(is\_pitch\_class\_held([10,2,6] ,2) == 1? "A#aug":"")$(is\_pitch\_class\_held([11,3,6] ,2) == 1? "BMajor":"")$(is\_pitch\_class\_held([11,2,6] ,2) == 1? "Bminor":"")$(is\_pitch\_class\_held([11,1,6] ,2) == 1? "BMajor2":"")$(is\_pitch\_class\_held([11,4,6] ,2) == 1? "BMajor4":"")$(is\_pitch\_class\_held([11,6,9] ,2) == 1? "7":"")$(is\_pitch\_class\_held([11,3,7] ,2) == 1? "Baug":"")

**Upper (MIDI 1 only)**  **-– with “is\_pitch\_class\_held”**

$(is\_pitch\_class\_held([0] ,1) == 1? "C":"")$(is\_pitch\_class\_held([1] ,1) == 1? "C#":"")$(is\_pitch\_class\_held([2] ,1) == 1? "D":"")$(is\_pitch\_class\_held([3] ,1) == 1? "D#":"")$(is\_pitch\_class\_held([4] ,1) == 1? "E":"")$(is\_pitch\_class\_held([5] ,1) == 1? "F":"")$(is\_pitch\_class\_held([6] ,1) == 1? "F#":"")$(is\_pitch\_class\_held([7] ,1) == 1? "G":"")$(is\_pitch\_class\_held([8] ,1) == 1? "G#":"")$(is\_pitch\_class\_held([9] ,1) == 1? "A":"")$(is\_pitch\_class\_held([10] ,1) == 1? "A#":"")$(is\_pitch\_class\_held([11] ,1) == 1? "B":"")

**Lower (MIDI 2 only) -– with “is\_pitch\_class\_held”**

$(is\_pitch\_class\_held([0] ,2) == 1? "C":"")$(is\_pitch\_class\_held([1] ,2) == 1? "C#":"")$(is\_pitch\_class\_held([2] ,2) == 1? "D":"")$(is\_pitch\_class\_held([3] ,2) == 1? "D#":"")$(is\_pitch\_class\_held([4] ,2) == 1? "E":"")$(is\_pitch\_class\_held([5] ,2) == 1? "F":"")$(is\_pitch\_class\_held([6] ,2) == 1? "F#":"")$(is\_pitch\_class\_held([7] ,2) == 1? "G":"")$(is\_pitch\_class\_held([8] ,2) == 1? "G#":"")$(is\_pitch\_class\_held([9] ,2) == 1? "A":"")$(is\_pitch\_class\_held([10] ,2) == 1? "A#":"")$(is\_pitch\_class\_held([11] ,2) == 1? "B":"")