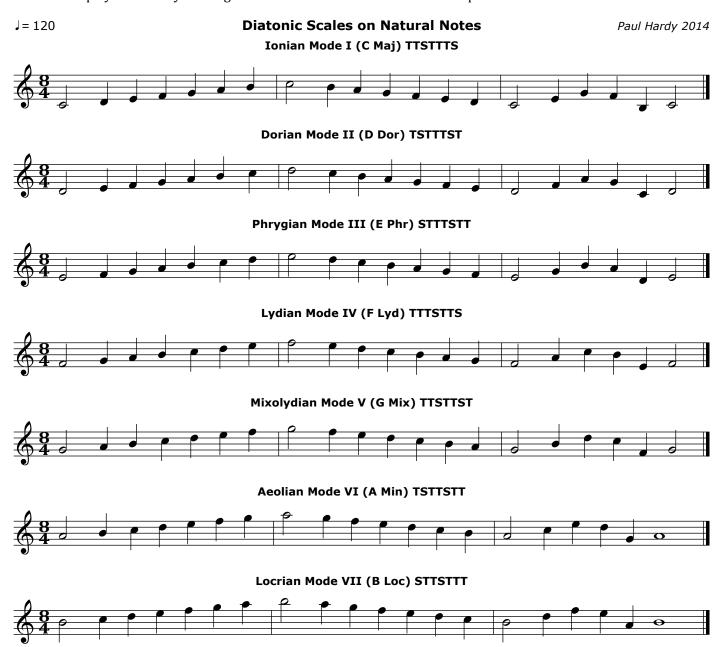
Notes, Octaves, Scales and Modes

The interval we call an octave is a simple mathematical relationship – the higher note is vibrating twice as fast as the lower. So in modern concert pitch, the A above middle C is 440Hz, the A an octave above that is 880Hz, the A below middle C is 220Hz.

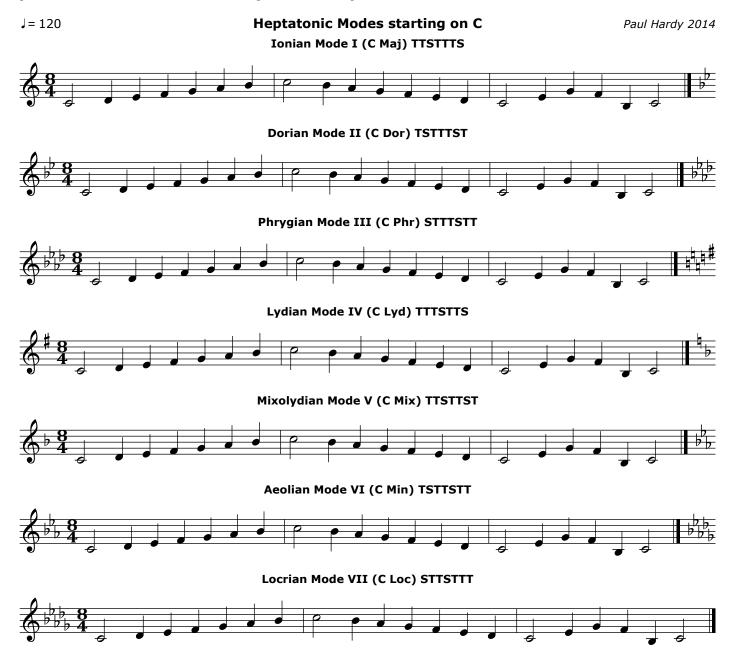
In modern western music, we divide an octave into 12 equal intervals we call semitones. So, each semitone is "the twelfth root of two" or 1.059463 times faster frequency than the one below. We chose 12 because several of them are very close to simple mathematical ratios with the base note and hence sound nice. The ratio of a "Fifth" (7 semitones) is 3:2, so the upper note makes three vibrations in the same amount of time that the lower note makes two. The pitch ratio of a "Fourth" (5 semitones) is 4:3, and of a 'Major Third' (4 semitones) is 5:4.



Western music then choses 7 notes out of the 12 to make an octave scale of five tones and two semitones. One common example is the major scale which goes TTSTTTS (T=whole tone, S=semitone). This and the other possible harmonious choices are called the seven heptatonic modes. It is easiest to play them all by starting on each of the seven white notes of the piano.



Here are the seven modes again, this time, starting on the same note (C). You can see how the different positions of the two semitone intervals gives more sharps or flats.



I chose C as the start note for simplicity, but you can create the seven modes starting on any of the 12 notes of the semitone scale (e.g. F#Maj, F#Dor, F#Mix, etc).

Only four of the modes are used commonly in British Isles folk music – Ionian (Major), Dorian, Mixolydian, and Aeolian (minor). Here are the four common modes again, firstly in one sharp and then in two sharps.



Here are examples of a typical tune in each common mode, all with one sharp:



Although all four tunes have the same key signature, each has a definite 'home' note (the first/last note of the scale) and usually finishes on it. The 'A' part of folk tunes may end on the home note, but if not, it often pauses a fifth above (e.g. D if key is GMaj), as this leads on to the 'B' part, as in Amazing Grace above.

That's enough for now!