

A SHORT COURSE IN
MUSIC THEORY

William Heney

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At the end of this course you are expected to be able to construct a major scale beginning on any note utilizing sharps and flats appropriately to create the proper intervals based on the structure 2-2-1-2-2-2-1. You should be able to create the basic triads on each note of the scale, assign correct roman numerals to each chord and describe each chord in terms of: the intervals involved; major, minor, or diminished tonality, and correctly identify which notes from the scale are added to the naturally occurring chords within the scale to create: sixths, sevenths, augmented and diminished fourths and fifths. You will be expected to correctly annotate roman numeral notation to express alterations of chords both those natural to the scale and borrowed chords as well.

Chord progressions will be covered and you will be expected to correctly identify those commonly used with an 80% accuracy.

APPROACH:

No structure can be built unless a proper foundation is created. The most recognized example is a house. No structural work can be done until the foundation has been set. Without that, the structure would settle, drift, and quickly fall apart. This concept applies equally to the building of a piece of machinery, an automobile, and also to music.

The foundation of music is the scale. To spend an inordinate amount of time on them results in a boring, tedious, and discouraging course of study. But the basic understanding is required.

This course is short consisting of some 6-8 lessons. It begins with the examination of scales with some written exercises. That is followed by the construction of natural chords, those naturally occurring within the construct of the scale, the explanation of tonality, and the introduction of the roman numeral system. These two first lessons must be understood thoroughly. Borrowed chords are covered along with a roman numeral annotation methodology.

This section will be expanded as the course materials are completed.

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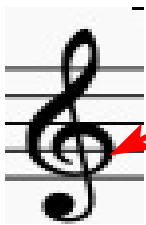
READING A MUSIC STAFF

This is pre-course material for the Music Theory course. If you do not know how to read a staff, this will provide a basis for that.

Basic: Each line and space represents one letter name note.

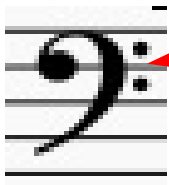
Quick history. Music scores did not appear overnight as we know them today. Before the year 1000, (yeah, that's old!) a composer would consider the range of his opus and draw as many lines as thought necessary to accommodate his music. Thus a score could have 12 lines or 30. To determine which line represented which note, a starting point had to be identified. It eventually became the convention to use a "G" to identify the line for that note. Since the lower voices never really got into the region of the music around the "G" line, another convention was to use an "F" to indicate the line for that note and that was, by nature of the voices (lower), set down somewhere on the page of many lines.

Of course the "G" and the "F" couldn't just be plain, they had to be dolled up so they came to look like this:



This little curly part is the "G" part. It says this line (the second one here) is the note "G".

And this is what the "F" became:



These dots bracket the "F" line.

So these two symbols occurred somewhere within the many lines scrawled across the page. Then some very clever person actually looked at the whole system and noted that if you identified the "G", then moved down the spaces and lines by note names you would eventually identify where the "F" had to be if any consistency between the two was to be observed. So that fixed the relationship, in terms of distance, between the "G" (now known as the Treble "clef" (French for Key)) and the "F" clef. Now it is certain there was much contention about establishing standards but several did get defined.

Five lines and four spaces seemed to be quite adequate for most music

If additional lines or spaces were needed it wasn't necessary to draw the complete line across the entire score, just use a piece of it and these became "ledger lines"

The positioning of the "G" and "F" clefs along with just using 5 lines for each staff meant that there was only one line, or ledger line, between them and that was "C". Since it was in the middle of the two staves, it was called "middle C". (OK, I made that part up but it could have happened!)

READING A MUSIC STAFF

So this all led to what we have today. Each staff has five lines each with a predetermined note name. “C is the ledger line between the two but that doesn’t prevent use of additional lines because it is convenient. Here (ignore all those “b” for now) is an example:

This second line is “G”

This fourth line is “F”

The “C” ledger line

So start on the “G” line in the treble clef and move down, each space and line getting a letter, as follows: G - F - E (the lowest line), D, C (the ledger line but there is no note on it). Then below C is B (notice this is all in alphabetic order). That “B” is the same as the space above the “F” staff. The next note will be on the first, highest, line of the F staff and that is A. Proceeding on from A to G (top space), the F second line and that is the line which the “F” clef says should be F so it all works. Notice that the line and space names are not the same between the two clefs. Why? Because the number of notes we use, before they repeat, is seven, an odd number

There are other features of the staff (a “Grand” staff is shown) such as the Key signature, indicating which scale was used (that is all the “b”s, the time signature (the 4/4 “fraction”)), and the metronome speed indicator. Everything else is either don’t play or play with all the little bars and lines indicating how to do all that. But this discussion was just about reading the staff, not the music.

Finally there are some memory, nemonic, devices to help remember what the lines and spaces are all from bottom to top:

Treble (G) clef: Lines: Every Good Boy Does Fine: E-G-B-D-F
Spaces: FACE: F-A-C-E

Bass (F) clef: Lines: Good Boys Do Fine Always: G-B-D-F-A
Spaces: All Cows Eat Grass or All Cars Eat Gas: A-C-E-G

You have to remember or figure out the names above and below the staves but remember that the first ledger line below the G clef and the first ledger line above the F clef represent the same note which is “C”, middle C to be exact.

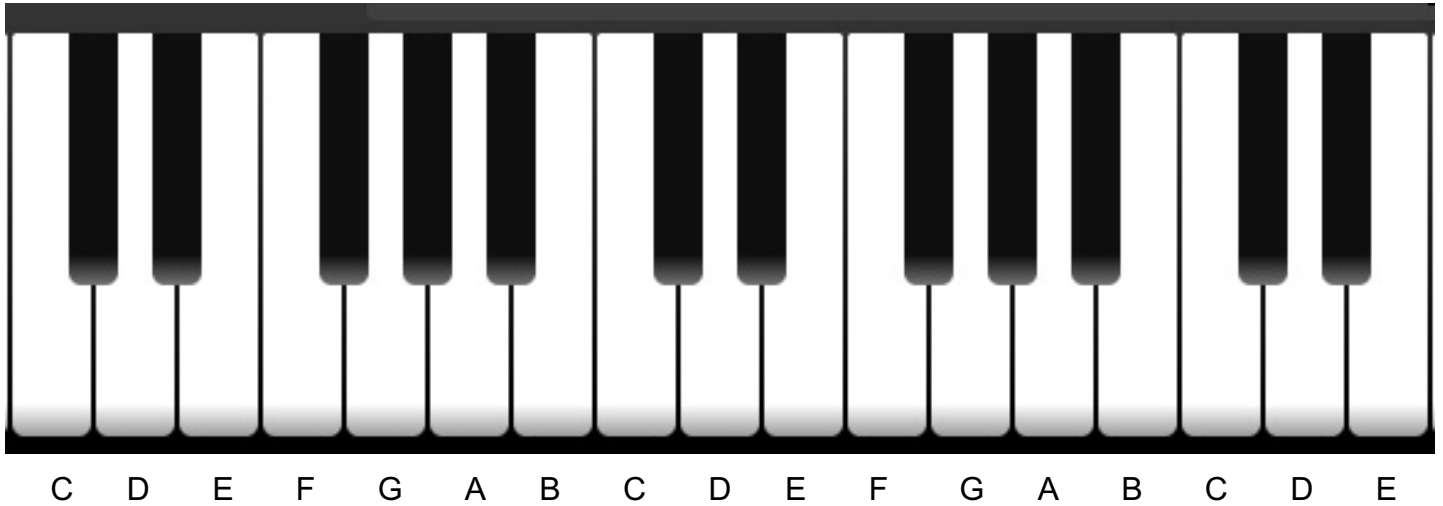
As usual, please ask questions.

SCALE AND CHORD WORKSHEET

Use the phone number: 2-2-1-2-2-2-1 to build scales using the piano keyboard for reference.

Once the scale is built, construct the 7 triads within the scale associating each chord with the appropriate roman numeral.

Finally, use the fret diagrams to determine the fingering for the chords.



Scale example: The "C" major scale consists of the notes: C-D-E-F-G-A-B-C which will be the 8 white keys beginning in the above figure on the far left and moving to the right as labeled.





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MAJOR SCALE

There is a phone number to remember: 2-2-1-2-2-1 Don't forget it!

OK, it isn't really a phone number but it represents the interval structure of a Major scale. This lesson refers to a piano keyboard and a picture of that is provided in a separate file.

Fundamentals:

1. The unit of measure for music theory is the half step. To intermix "whole" and "half" introduces confusion so everything is measured by the number of half steps. Each fret on your Ukulele or Guitar is one half step.
2. All of the keys on a piano keyboard are one half step apart. Only the white keys have permanent name; the black keys are unnamed until they are used. Moving right or up: from "C" to the next key, which is black, is a half step. Starting three letters up from C: "E" to "F" is a half step and note that there is no black key between the E and F so they are a half step apart as are B and C.
3. Music only uses 7 notes: A through G. These are the white keys on the piano and are identified by the letters beneath them. The black keys do not have names until they are used and the name they get is determined by how one of the white keys next to it is altered. More on that later.
4. Intervals are identified by the number of named notes between and the beginning and ending notes are counted. For example: C to E is a third. Counting C as "1", D as "2", and E as "3". C to A is a 6th.

The C Major scale is a good starting point because it is only the white keys. Start with the C on the left of the keyboard and, moving right, simply play all the white keys up to the next C. This is C-D-E-F-G-A-B-C. Observe that when the music alphabet is exhausted, the letters repeat. After "G" comes "A" again.

Take a look at the intervals while moving to the right (up in tone):

Starting on C, there is a half step up to the (unnamed) black key and another half step up to D. That is the first "2" of the phone number. (Each fret is also a half step. Something to remember)

From D up to the black key and up to E is 2 half steps.

Note that there is no black key between E and F so they are 1 half step apart.

So far this is 2-2-1.

Continuing on F through C will complete the phone number: 2-2-2-1.

This phone number is used for all major scales of which there are 13. A scale can start on any of the 7 white keys or any of the 5 black keys but the structure, the intervals, are always the same.

Review this to make certain it is understood. In the next session, a different scale will be created using the "phone number" which will show how the black keys are used and named.

Questions are expected and welcomed and none are silly or dumb.

MAJOR SCALE

2-2-1-2-2-2-1 (Just a reminder)

Rules for scales:

1. You have to use all the note letters. If you start on “D”, you have to finish on “D” and use all the letters in between.
2. If you run out of letters, that is you get to “G” and haven’t use 8, start over with “A”.
3. A note letter may be used once and only once.
4. As you apply the phone number, you can only change the note to which you are going. You cannot change the current note. Consider that ripple effect.
5. If the note you are going to does not fit the prescribed interval, you must either lower it by assigning one or more flats or raise it by assigning one or more sharps. There are no other options. *[Note: While uncommon, it is not unusual to see double flats (bb) or sharps(x or ##) used. This comes about when obeying the origin letter of the note. For example, the tone you need is A but the actual chord note is B so you must use Bbb. Rather technical isn’t it.]*

Last time we looked at the C Major scale noting that by just using all the white piano keys, we had the scale correct. The C major scale has no sharps or flats so the “key signature” is nothing.

Take a look at a D scale.

1. List all the letters: D-E-F-G-A-B-C-D (8 notes, count them, yep, 8)
2. Take a look at the intervals:

Starting on D, there is a half step up to the (unnamed) black key and another half step up to E. That is the first 2 half step interval. So from D up to the black key and up to E is 2 half steps. So far, so good.

Note that there is no black key between E and F so they are 1 half step apart. That is a problem because the next interval is 2 half steps. Since the natural interval between E and F is only one half step, something must be done. Review rules 3, 4, and 5, particularly 5. I’ll wait.

(waiting)

OK, F won’t work, the interval is too small so it has to be enlarged by raising F one half step to F#. That is the Black key to the right of F and it now has a name: F#! But only for the key of D. In another key probably not.

So far: D-E-F# ... Now it is your turn. Continue applying the intervals. Also do scales for G, F, an B^b

Send me a message with the notes when you finish or if you have any questions.

THE MUSIC STAFF and some other stuff

Up to now, several elements, particularly the music “staff” have been used without explanation. The assumption has been that you already are familiar with a staff, particularly the “grand” staff more commonly known simply as piano music.

If you are not fully comfortable navigating around the staff, please review “Reading a music staff” in the file “theory reading the staffs.pdf”. The following is a very brief summary.

The treble and bass clefs consist of 5 lines and thus 4 spaces each assigned a specific note.

Treble clef lines are:	E-G-B-D-F,	spaces:	F-A-C-E.
Bass clef lines are:	G-B-D-F-A,	spaces:	A-C-E-G

The position of a note on the staff or on one or more ledger lines indicates the pitch or octave in which it is sounded. Technically there is only one ledger line between the treble and bass staff and that is “middle C” but it is common to use additional ledger lines below the treble staff or above the bass staff simply to avoid changing clefs within the score. That is done sometimes but it is a little unusual.

A stylized letter “G” is used in the treble clef to designate the second line as the “G” note. The curled part of the “G” is around the second line for this purpose. In a similar fashion, the two dots in the Bass clef designate the F line. Note that if you move either up from the F clef or down from the Treble clef through middle C that there is continuity of the note name and line positions. For example starting on the Bass clef top line which is A, the space above is B, then the ledger line C, above that the space is D which is the first space below the Treble clef. From D to E, F, and G on the second line of the Treble clef.

INTERVAL NAMES, DEFINITIONS, AND QUALIFIERS

Time for some interval nomenclature. Up to now the terms Third, Fifth, etc. have been used with casual abandon but there are strict definitions and these just have to be memorized.

There are two parts to the name of an interval, the letter count determines the “number”, i.e. third, fifth, second, etc, as counted from the starting note, then the qualifier.

The first part is easy, simply count the number of letters in the scale (don’t worry about # or b) between two notes and that is the “interval”. Because you are counting “things”, you count all of the notes. If you were to count all the apples in a bowl, you would count the first one you take out as well as all the others. Same with intervals.

Example: Starting on “C”, count up to “F”: C=1, D=2, E=3, and F=4 thus the interval between C and F is a fourth. Counting from C to F# or Fb is also a fourth because this is just a count of the LETTERS/notes. In a moment qualifiers will be added to account for the difference in sound.

The following chart shows the intervals which occur naturally in a Major scale when counting from the tonic.

Note: While “C” is used for illustrative purposes, the same type, half step and character qualities will be found when using any other Major key. Keep in mind that the two right columns are ONLY

applicable when the interval starts on the tonic. Should you “start” on another note within the scale, the “TYPE” will remain consistent as that is only a physical count of the notes involved but the other two columns will change according to the half steps involved.

NATURAL INTERVALS WITHIN A MAJOR SCALE using “C” as an example			
INTERVAL	TYPE	HALF STEPS	QUALIFIER
C-D	Second	2	Major
C-E	Third	4	Major
C-F	Forth	5	Perfect
C-G	Fifth	7	Perfect
C-A	Sixth	9	Major
C-B	Seventh	11	Major
C-C	Eighth	12	Octave

Since there are only 8 notes in a scale, one might assume there are only 8 intervals, or are there?

Yep, there are more. You don't have to stop at 8. These do occur particularly in Jazz where you will see 9th, 11th, and 13ths. Now starting with C a 9th will be D, not the D next to C where you started, but the one 9 letters higher. So what? Is not that the same as a second? Technically yes, but C and D played next to each other (second) are extremely dissonant; the sound is horrid, but when the D is an octave (8 notes) higher (ninth), well that is different. Sort of ethereal, floating, wandering.

So that's all there is to it. The number of an interval is simply the count of all notes between and including the starting and ending note.

But wait! There's more!

Qualifiers

How about all this Major, Minor, Perfect, Diminished stuff? Those are qualifiers and to make it very confusing these qualifiers precede the interval name as in Major third, Perfect fourth. minor seventh..

Today's music did not spring into being one lovely Saturday morning. One of the earliest discoveries was that a third played as C-E, four half steps, had a distinctively different tonality and “feeling” from a third played as C-Eb, three half steps. Both are thirds because there are three letters. Remember, the # or b doesn't matter for the interval which is just the letter count. Because the tonal character of these two thirds were so different the first was called a “Major third” and the second a “minor third”. This same major/minor concept was found to be equally applicable to 2nd, 6th and 7th intervals (along with the higher numbers) as well as they had the same tonal difference. This approach is based partly on the understanding that the presence of a Major implies the existence of a minor.

Fourths and fifths (they are inversions of each other, C-F is a fourth, F-C is a fifth) presented a different situation. Neither one, fourth nor fifth, has a tonal sense like other intervals. They are very open, not possessing a sense of either major or minor. (Fake “Oriental” music is often a series of fourths and fifths called parallel fourths or fifths.) Thus the intervals of a fourth and fifth were called Perfect. A Perfect Fourth and a Perfect Fifth.

Fourths and Fifths can be altered by the use of sharps or flats to expand or contract the sound of the interval just as was discussed above for the third. But as the original interval is called “Perfect”, using “Major” and “minor” doesn’t work as those are comparative terms and the presence of one implies the existence of the other. As the Fourth and Fifth are initially called “Perfect”, the Major and minor terms cannot be used. But there are other terms which work equally well, so a Fourth or Fifth which is lowered is called a Diminished and one which is raised is called Augmented.

Major intervals can be made minor by lowering the top note or raising the bottom note using either a flat: C-Db is a minor second, 1 half step, or a sharp: C#-D is also minor second, 1 half step. The perfect intervals are altered in the same fashion C-Fb, a diminished fourth, C-Gb, a diminished fifth. Raising by a half step: C-F# is an augmented fourth and C-G# is an augmented fifth.

The Major third: 4 half steps, and minor third: 3 half steps, are both of particular importance as they are referenced frequently, so the relationships should be memorized. The others are not to be ignored but can be figured out as needed.

It is important that you understand how to apply these in your analysis of a tune. You see a notation that says to add a 6th so you know to count 6 letters. Then, if it isn’t made clear by other notation, count the number of half steps to determine the nature of the interval. Notation will be discussed later.

Follow the rules

Rules almost always have odd consequences. Remember that the full name of an interval consists of both the letter count: the “third”, “sixth” part, AND the half step count. Thus it is possible to have a half step count of 8, which you would expect to be a 6th, C-A for example, but the notation is C-Bbb, B double flat, a Diminished seventh.

Convention for intervals

Refer back to the chart of intervals. The two right columns are relevant to the two left columns only as long as the intervals shown start from the tonic. Starting from E for example, the notes would be E-F#, E-G#, E-A, etc. Since the two right columns are thus consistent with any scale, those half step intervals have become standard definitions.

Thus any two note interval which involves 2 half steps is a Major Second. Three notes with 4 half steps is a Major third, four notes and 5 half steps is a Perfect fourth and so on.

It follows that an interval such as C-Db, is a second but only 1 half step. It isn’t Major so it must be minor.

CHORDS

Put your hand on a piano keyboard and press down. You just played a chord. An awful one, true, but it is a chord because that is just two or more notes played at the same time. Chords which are the most familiar generally have only three notes and are built following a formula. The following section discusses how the chords of a scale are built.

TRIAD CHORDS

The fundamental chord is a Triad, three notes consisting of two stacked thirds. These, like the intervals, have naturally occurring characteristics which are common to all major scales. This section should be studied closely as the material covered here will be used extensively in later lessons and in your playing.

Our favorite scale, C, will be used as an example. Since we know the structure of any major scale uses the same pattern then whatever is done in C can be easily and correctly applied to any other major scale.

First write out the scale then add a third on top of each note. This is easily done by just adding a note on the next line or space above the bottom (root or tonic) note.. Then add another third starting with the note just added. For example, from C add E then add G. C-E and E-G are the thirds. You will have a staff that looks like this:

1	2	3	4	5	6	7	8
I	II	III	IV	V	VI	VII	VIII
I	ii	iii	IV	V	vi	vii	VIII

These are the root forms of the chords. In practical use, the chords will usually not appear structured as this but in what is called an inversion. For example instead of C-E-G for I, it may be G-C-E but it is still a C Major triad and given that this is the C Major scale, it is still the I chord.

Natural and Borrowed Chords

These triad chords use only the notes within the scale. Other key signatures will have different chords but will also use just the notes within the key of the scale. Chords that use only the notes from the scale are “natural” to the key and are thus called the natural chords. You may already be familiar with tunes which use chords not natural to the key and those are called borrowed chords. How that is notated will be covered later. The distinction between natural and borrowed is when chord notation is used.

Chord numbering

This course has made reference to chord names but for general use, particularly for transcribing from one key to another, a more generic or universal means of identifying chords would be most beneficial. To this end several methods have been developed among which are Roman Numerals (all capitals), mixed case roman numerals, and just plain arabic numbers (1,2,3, etc). These will be described briefly then only one will be used. An additional form of notation will be discussed later but it has limited use in transcription, changing from one key to another.

Three rows of numbers have been placed under the triads.

The first row, arabic numbers, denotes the scale degree of the scale that is how far the note is above the tonic, the interval.

The second row, all Capital Roman Numerals, is used when referencing the triad build on the corresponding degree of the scale.

The third row is a commonly used alternative to the second with the lower case roman numerals denoting minor chords except for number viii which is diminished.

[Note this is a weakness of the lower case system. Lower case roman numerals are supposed to be minor chords but that doesn't work for viii. If an exception has to be made, then the system is flawed. More current versions of this system use a superscript "o" on VII as in VII^o to indicate it is diminished and that "o" is used elsewhere also.]

There is another system called "Nashville notation" which uses arabic numerals to identify the chord as well as the scale degree.

All of the systems are used to identify the chords (triads) build on the same degree of the scale. Thus the 3 chord is built on the 3rd note, the 5th chord is built on the 5th note and so on.

This course uses the more traditional upper case roman numerals which had its origins in the 17th century. A reference such as IV means the triad (in any order of notes) built on the fourth note of the scale. Common verbal names are Chord four, fourth chord, "the fourth", and when someone wants to be a stinker: Subdominate chord. Yes, all the notes have names not in common use but we will, for the most part, just use the roman numerals.

Tonality, Major or minor, and others

This section addresses chord modifiers: Major, minor, augmented, etc which apply to intervals other than just the third.

Examine the first interval of each chord and you will find they are either a Major third or a minor third. That tonality is determined by the number of half steps between the starting and ending note. When the third has four half steps such as C - E the tonal quality is bright, cheerful, rather uplifting and that has come to be called a Major third. On the other hand, if the interval consists of only three half steps, C - Eb, the quality becomes somewhat dismal, dark, brooding and that is called a minor third. This aural impact was found to have a great influence on the nature of triads but only for the first third in the triad.

It was discovered that ONLY the ***first interval in the triad determines the "major" or "minor"*** tonal characteristic of the triad.

That sentence was put all by itself for a reason; the bold italic parts are important!

"Major" and "minor" are used for other, but not all, intervals and those will be covered later. Right now the Triad is the main concern.

Thus, in the I chord, C-E is four half steps a major third so this is a major chord (C Major triad), the E-G is three half steps a minor third and that has no effect on tonality in this case but will be quite

important later. The first interval of the II chord is D-F which is three half steps, a minor third, thus this is a minor chord (d minor triad), the second interval F-A is major and again that second interval has no influence ... yet.

Applying the analysis of the first interval, the tonality for each of the first 6 chords in the C Major scale is as follows:

- I Major: C Major
- II minor: d minor
- III minor: e minor
- IV Major: F Major
- V Major: G Major
- VI minor: a minor

In ALL of these chords, while the first third determines Major or minor, the fifth interval (C-G, D-A, etc) is always the same 7 half steps and these are Perfect Fifths. Keep that in mind for another paragraph.

It is important to understand that the notes of all these chords come from the scale; there are no alterations. Since all Major scales are built following the same interval structure it follows that the triads built on scales starting on other notes than C will have the same characteristics.

The Black Sheep

Then there is the VII chord. The intervals are BOTH minor which makes the B-F interval, while it is a fifth, it is only 6 half steps, a half step lower than perfect which means it isn't perfect. So what is it called? Since we don't do major or minor for fourths and fifths and this is less than a perfect fifth it is called a diminished fifth. This gives the chord its character and name. The seventh chord is a Diminished chord being neither Major nor minor. Later this will be important.

Exercise:

Check the half step count of the first and second thirds of each triad to show the consistency of the assignment of Major or minor to the chord and note the tonal character of the second third. Also check the half steps from the first to the fifth. This can be done by annotation under the chord.

Then use the E Major scale to form the triads and check those characteristics: Major, minor and half step counts. Are they the same? Should they be? A yes or no will do for each question.

Send the results of the exercise for evaluation and comment.

This is a 6 page lesson and a lot of material was covered. As usual, if you have any questions at all, please do ask and also point out areas which are confusing so they can be improved

CHORD PROGRESSIONS I

To alleviate the drudgery of the prior technical terminology lesson, some basic chord progressions will be discussed. Then some more technical stuff will be covered.

The more interesting songs generally have a somewhat complex chord structure but this will start with simple and move in that direction.

Although a song can be composed using only one chord, that would be, and if there were such a song is, BORING! Harmonic complexity is generally found in the more popular songs or they use a tried and true progression.

A comment about the notation. The roman numerals by themselves represent the natural chords within a Key. "By themselves" means there are no changes indicated and all of the notes within the chord come from the key. Any chord introduced by changes to the roman numeral are "borrowed" chords. For example, in the key of C there is no G# note but the E major chord can be indicated as: III3# or sometimes III3+ both mean the same thing, raise the third above the root by a half step which will change E-G-B (e minor) to E-G#-B (E Major). As this notation is used, it will be explained and you'll become accustomed with it.

The simplest progression is: I - IV - V

Pick a key. I'll use the standard favorite: C. You already know, or can create, the triads/chords on the scale degrees and the Roman numerals simply represent those.

These are the chords for C: I = C, 4 = F, and V = G. Notes are: C-E-G, F-A-C, and G-B-D. You might want to take the blank fret diagrams and determine the fingering for these chords. You probably already know the fingering but the exercise in moving up by a half step (one fret) at a time to get to that fingering will be worthwhile.

These are the chords for E: I = E, 4 = A, and V = B. I'll leave the actual notes and the fingering for you to figure out.

Try playing those then write down the same progression for: G, D, F, and A and play them.

You'll note that they all sound very similar. Differences will be because some of the chords are not in root position, that is sounded as a triad. On the Baritone Ukulele, the C chord: 2-0-1-0 has E in the bass and the E is doubled sounding also on the first string. Since the instrument has four strings and the chord has only three notes it is expected that one note will be doubled. With the third of the chord in the bass and then doubling it, the chord is somewhat weak. Compare the C chord sequence with that of E. The E chord: 2-1-0-0, also has the note E in the bass and it is doubled on string 1 but it is in root position.

During the 50s through the middle 70s (roughly) and in some instances today, these progressions were immensely popular:

I - III - IV - V , I - VI - IV - V, and I - VI - II - V

CHORD PROGRESSIONS I

Note that all of these sequences begin with I and end with V. The V chord has a special relationship to the tonic which is so strong that it is referred to as “Dominant”. Each degree of the scale and its associated triad has a name. For reference these are: Root/Tonic, Supertonic, Mediant, Subdominant, Dominant, Submediant, and leading note.

No, these don’t make a lot of sense although there are explanations for each some of which are convoluted. The only one of real interest is the Dominant and that will be used ... a LOT. The 7th note is called the Leading Note because if you play a scale and stop on it there is a great unfinished sense as this 7th tone very strongly “leads” into the tonic. This is sometimes referred to as “resolution”.

If you have access to a piano, if not use the Uke which may take a few moments to figure out, play the C major scale. By now you should know that it begins on C and is simply all the white keys up to the next C, Eight notes away. Do that a few times then play it again and stop on B, the note before C. If you feel unfulfilled then you have a good sense for music, if not, well there is always poker. You should feel the unresolved nature of stopping on B, the seventh tone, and feel much better when the C is reached.

The Seventh tone of a scale is in the V chord as the 5th interval. This along with the natural tendency of the fifth tone of the scale to return to the scale tonic is why the V chord is referred to as the Dominant. This property will be discussed again in a later lesson.

If you know or in High School ever played *Heart and Soul* on the piano then the I - VI - IV - V progression should be familiar.

26 miles a.k.a. “*Santa Catalina*” by the Four Preps (See PDF) is a classic using I - VI - IV - V almost exclusively. (ignore the little “7” on some chords, that will be covered later).

Figure out the chords for each of these progressions, the fingering (even if you already know that), and play them. If you have the time, find the performances on youtube and play along. Yes there will be a few places where you won’t have the chords but that’s OK, all we are trying to address are the primary progressions; there are always alterations which make for great music.

Twenty-Six Miles

Four Preps (by Bruce Belland, Glenn Larson) late 1950s early 1960s. #2 on Billboard Hot 100

At the age of 15, the band's lead singer Bruce Belland broke his ankle and took up the ukulele to pass the time while recuperating. He learned four chords, which ended up becoming the song's opening music. Standard I, VI, IV, V⁷ progression with II^{#3,7} occurring in bridge. C: C, a, D⁷, G⁷.

G	e	C	D ⁷	G	e	C	D ⁷
C	a	F	G ⁷	C	a	F	G ⁷
I	VI	IV	V ⁷	I	VI	IV	V ⁷

1. Twenty- six miles a-cross the sea. Santa Cata-lina is a-waitin' for me
2. Twenty- six miles, so near yet far I'd swim with just some water-wings and my guitar
3. Forty kilometers in a leaky old boat. Any old thing that'll stay afloat

G	e	C	D ⁷	G	e	C	D ⁷
C	a	F	G ⁷	C	a	F	G ⁷
I	VI	IV	V ⁷	I	VI	IV	V ⁷

1. Santa Cata-lina, the island of ro-mance, ro-mance, ro-mance, ro-mance
2. I could leave the wings but I'll need the guitar for romance (4 times)
3. When we arrive we'll all promote romance, romance, romance, romance

G	e	C	D ⁷	G	e	C	D ⁷
C	a	F	G ⁷	C	a	F	G ⁷
I	VI	IV	V ⁷	I	VI	IV	V ⁷

1. Water all a-round it every-where, Tropical trees and the salty air
2. Twenty- six miles across the sea. Santa Catalina is a-waitin' for me
3. Twenty- six miles across the sea. Santa Catalina is a-waitin' for me

G	e	C	D ⁷	G	D ⁷	G ⁷
C	a	F	G ⁷	C	G ⁷	C ⁷
I	VI	IV	V ⁷	I	V ⁷	I ⁷

1. But for me the thing that's a-waitin' there is ro-mance
2. Santa Catalina, the island of romance (chord through 3 unsung "romance")
3. Santa Catalina, the island of romance, romance, romance, romance **[TO OUTRO]**

[BRIDGE]

a(C)	D	G	e	C	D	G	G ⁷
d(F)	G	C	a	F	G	C	C ⁷
II(IV)	V	I	VI	IV	V	I	I ⁷

1. It seems so distant, twenty-six miles away Restin' in the water se-rene
2. A tropical heaven out in the ocean. Covered with trees and girls

a(C)	D	G	e	A ⁷	D	D ⁷
d(F)	G	C	a	D ⁷	G	G ⁷
II(IV)	V	I	VI	II ^{#3,7}	V	V ⁷

1. I'd work for anyone, even the Navy Who would float me to my island dream
2. If I have to swim, I'll do it forever 'Till I'm gazin' on those island pearls

[OUTRO 3X]

G	e	C	D ⁷	G	e	C	D/D ⁷	D ⁷	G
C	a	F	G ⁷	C	a	F	G/G ⁷	G ⁷	C
I	VI	IV	V ⁷	I	VI	IV	V	V ⁷	I

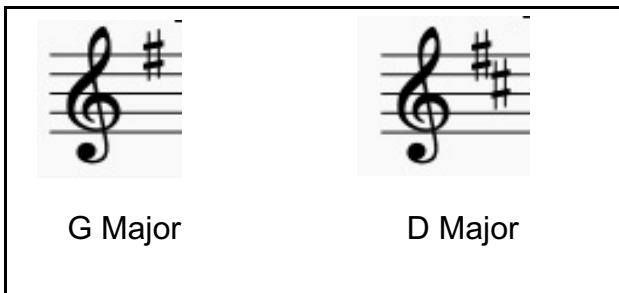
Twenty- six miles a-cross the sea. Santa Cata-lina is a-waitin' [1st] for me ... [2nd] for me!

MAJOR SCALE Key Signatures

By now you should be comfortable constructing a scale and creating the triads on each note within the scale, identifying each by their roman numeral, and describing the tonal structure of the chord (major, minor, diminished).

First item: A key signature is either nothing (C), or Sharps, or Flats. The latter two are never mixed so you will not see a key signature with a mix of # and b.

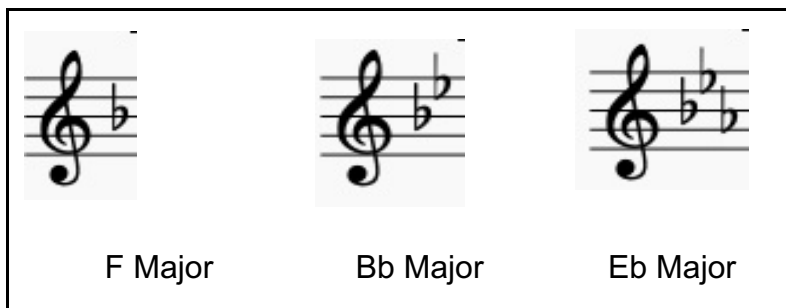
As you have written scales, you may have noticed that in all of the sharp scales, the 7th note is always sharp. Key signatures are always listed in order of increasing number of sharps or flats. For example, G has one sharp F#. D has two sharps, F# and C# and they are listed at the beginning of the score in that order. See the two figures below.



The image shows two musical staves. The first staff has a treble clef and a sharp sign (#) on the F line, representing G Major. The second staff has a treble clef and sharp signs (#) on the F line and the C line, representing D Major.

The signature for A would add G#. Now note that the Key signature Name is just the next half step up from the last sharp. This is consistent across all sharp key signatures. Once you know the order of the sharps, then you can determine the full key signature by going through them until you arrive at the sharp before the key name and you have the key signature.

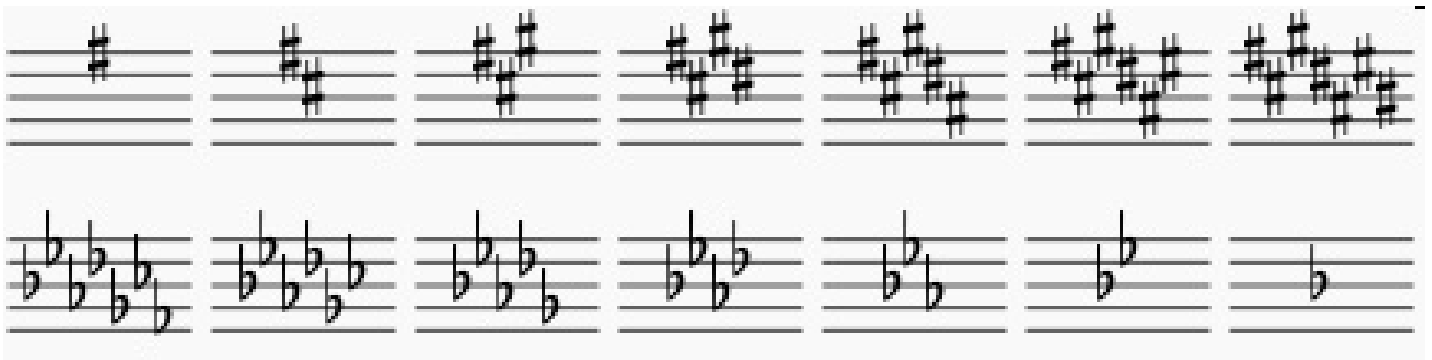
Flats work in a similar manner, similar but different. Just as you have to “know” that C has no sharps or flats, you have to “know” that F has one flat, Bb. After that it becomes easy. As with sharps, the flats are also written in the order of increasing number. So, look at the figure below:



The image shows three musical staves. The first staff has a treble clef and a flat sign (b) on the B line, representing F Major. The second staff has a treble clef and flat signs (b) on the B line and the E line, representing Bb Major. The third staff has a treble clef and flat signs (b) on the B line, the E line, and the A line, representing Eb Major.

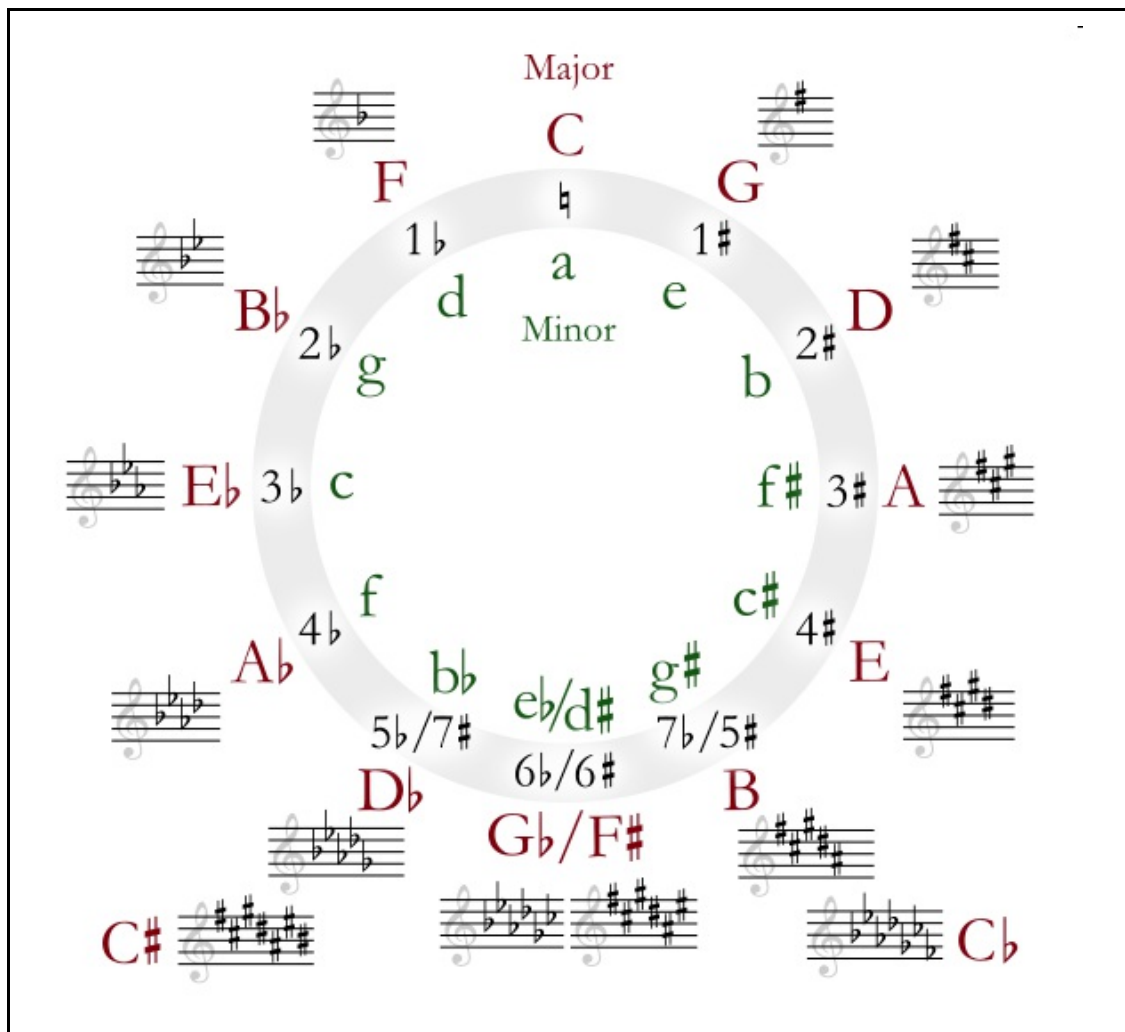
Notice that with more than one flat, the key name is the next to last flat. If Ab major were shown, it would have Bb, Eb, Ab, Db. The next to last flat is Ab, the name of the key.

It is the convention that sharps and flats are always shown in the key signature in order of increasing number by key that is G has only one sharp: F#, D has two, F#, C#. The following figure shows the accepted standard for key signatures. Remember the rules for determining Key in sharps and flats and you should be able to name the key for each signature shown. Note that the sharps are shown increasing in number from left to right but the flats are backward. This figure comes from Musescore 3 and there is a possible reason for this odd display and that is directly related to the next topic.



The Circle of Fifths

You may have heard of this. This is a diagram, a tool, used to display the relationships that exist among the 12 keys. This diagram looks complicated but we'll talk about it piece by piece.



Note that the sharps on the right are in increasing number (left to right in the Muse figure), and the flats on the left are in increasing number (right to left in the Muse figure). Perhaps the programmer who did the Muse key signature diagram was trying to stay consistent with the circle. I don't know, but it certainly sounds good!

So what does the Circle tell us?

All of the Key names, the capital letters.

The keys names are a PERFECT Fifth apart going up, sharps, and going down, flats.

The key signatures for each key and the order of placement of sharps and flats

The relative minors

We will start with C at the top (C is usually a good place to start, no key signature.)

Move to the right to the first letter: G (up the keyboard a fifth): C-D-E-F-G. Create the scale it will be found that there is one sharp: F#.

Moving to the next letter, another fifth to D. Create the scale and find two sharps: F# and C#.

This continues down to the bottom. Those bottom three will be discussed in a minute.

Starting again from C, moving to the left a fifth, down the keyboard to F: one flat - Bb.

Then another fifth (careful to make it PERFECT, 7 half steps) to Bb: two flats - Bb, Eb

On this particular diagram, on the circle just inside the Key letters, the number of sharps and flats is shown.

The three keys at the bottom all have two names. That is because Db and C# are exactly the same on the piano keyboard. Same for Gb/F# and B and Cb. Just different names. The term for this commonality is "enharmonic"

Listed in order the first four flats spell a word: B-E-A-D (flats) and note that they are a fifth apart going DOWN the keyboard.

The sharps don't spell a word: F-C-G-D-A, but a mnemonic such as **F**ast **C**ars **G**o **D**uring **A**cceleration. (It's all I could think of!)

Just to review: The key signature is determined as follows:

When sharps are used the Key name is one half step up from the last listed sharp.

When flats are used the Key name is the next to last listed flat.

Key signatures NEVER MIX SHARPS AND FLATS. Either none or one or the other.

Minor keys: The circle introduces minor keys so this will be a good time to talk a little about them.

Minor keys do not own a key signature. Make a mental note of that.

A minor key takes the key signature of the Major Key which is a minor third above the root. That is referred to as the relative Major. Sometimes when speaking of a Major key the term relative minor will be used particularly if there is a modulation to it. The terms are simply based on the starting point.

Take the root or tonic of the minor key, for example “a” minor and count up a third and insure it is a minor third. This will put you on C therefore that key signature is used by “a minor” which means a piece with no key signature could be in C or a minor; there is not specific indication of which, you have to look at the chords. Frequently, but not always, the opening chord is either the Tonic or Dominate of the Key. Almost always the final chord is the tonic of the key. Thus you see a score with no key signature and the last chord/tonality is “a” minor, that piece is written in “a” minor.

Using “g” minor count up a MINOR third from the note G and find Bb thus the relative major and key signature of “g” minor is taken from Bb Major in this case two flats: Bb and Eb.

The roman numerals will be used in a minor key just as they are for a Major but the default tonality is not the same. Where the I chord in a Major key is also a Major chord, in a minor key the I is a minor chord. So in a minor key, I, IV, and V are minor, II is diminished, III, and VI are major. You should be aware of these differences rather than trying to memorize them. Chord names: Tonic, Dominate, etc. do remain the same.

So within the inner ring of the circle are listed the minor keys opposite their related Majors.

There is no assignment for this lesson. Constructing the circle when it is already provided and a topic of discussion is literally reinventing the wheel. It would be worth while to look at the key signature figure and identify what each one is by applying the appropriate sharp or flat rule.

Questions, however, should be asked.

CHORDS OF A MAJOR SCALE

Inversions, Natural, Borrowed

This lesson talks about inversions of chords, those which are not in their “triad” configuration, explains Natural and Borrowed chords, and expands the Roman numeral notation.

Chords are not always played in their root positions in fact that is rather uncommon particularly on a Ukulele. There are also only three notes in the basic triads. This means that on a 4 string Ukulele, some notes will be doubled.

You may want to have a piece of staff paper for scratch work.

Inversions:

When the chord is played in the triad or stacked third configuration, that is for C: C-E-G that is called the Root position. But many times the chord may be played as: E-G-C or G-C-E which are the first and second inversions. It doesn't change the name of the chord, if the notes can be arranged into a triad, then the bottom note determines the chord name, in this case: C, C Major to be precise because the first third: C-E is 4 half steps, a Major third.

This becomes evident if you analyze chord fingerings. Most do not have the root on the bass string. On a G tuned Uke (Baritone) a C chord is fingered: 2-0-1-0. As the open 4th string is D, this puts E in the bass. On a C tuned Uke (any treble), C is fingered 0-0-0-3 which puts G in the bass.

Tonality is strongest when the tonic is in the bass thus you will find that a tune played in one key may sound different when played in another key. That “different” may be better, sometimes worse.

To see what a collection of notes, that is a “chord”, really is, arrange the notes into triad form and the easiest way to do that is to put the notes in alphabetic order. Most of the time this will become a triad or triad plus added notes. If not, you will have to move notes around to get the answer and sometimes that is only close to a triad. Then you have to look at triad alterations such as suspended thirds which will be covered later.

Natural Chords:

Thus far you have constructed triads, chords, on each note of a scale. Reflect for a moment that all of the notes in each chord came from the notes of the scale. sharps or flats were used only when in the key signature. These chords occur naturally within the scale and are called “Natural” chords. The Roman numbers associated with these chords are just I, II, III, IV, V, VI, and VII.

Natural chords can be augmented by adding additional notes. This is accomplished simply by adding a number representing the degree above the tonic that is to be added. Example: C6 means add the sixth note above C to the C chord: C-E-G-A. If you notice something odd about this chord, relax, that will be discussed later.

Borrowed Chords:

Often a chord is used which is not natural to the key. These are called “Borrowed” chords because they don't occur within the key signature and are only represented with the roman numerals by altered notes, that is, the addition of sharps, flats, or naturals.

CHORDS OF A MAJOR SCALE

Inversions, Natural, Borrowed

There is nothing wrong with this and it is so common that it should be expected. In annotation, a borrowed chord is ALWAYS based on a natural chord in that the natural chord is altered to produce the borrowed chord. This is necessary because we only have seven roman numerals and they are already used for the natural chords. So if the tune is in C and a G# chord is needed, do I use G and sharp it or A and use flats. No real rule for this just guidelines: If the key is a sharp key, use G and sharp it. If the key is a flat key, use A and flat it. If the key is C you get to take your pick. Does it make any difference to the player? Only if they don't know that G# and Ab are equivalent and fingered exactly the same. This equivalent quality is technically known as "enharmonic", two names for the same sound. The term applies to single notes as well. "A" and "Bbb" are the same white key on the piano but in notation the latter is sometimes required in order to follow the interval naming rules something which happens frequently in diminished seventh chords.

Chord Annotation:

The following discussion on annotation will not distinguish between Natural and Borrowed chords as both will be discussed in terms of annotation. The Natural and Borrowed distinction is of lesser importance than the actual notation. Prior to this lesson and continuing here, lower case letters indicate minor chords and UPPER CASE letters represent MAJOR chords.

It is important to understand that with the Roman Numeral annotation unaltered added tones are always taken from within the key of the composition. Thus all numbers indicating added notes are from the scale of the key and are counted from the root of the chord in question. If it is necessary to raise or lower the tone, a sharp or flat will be used. This is done by indicating the degree of the note within the chord and how it is to be changed.

[In the following examples you need to remember that there are only 12 half steps in a major scale, also that a Major seventh is 11 half steps, minor 7th 10, a diminished 7th 9 half steps. Hint, consider C major. The major 7th is B, a half step below tonic, thus any major 7th is a half step below the starting note but do remember it has to be the seventh tone which may need a sharp.]

Examples in the key of C:

1. The II chord is d (D minor, Dm by other notation schemes), but lets add a seventh. Counting seven tones up from D (and heeding the scale) this means add a C and this would be annotated simply as II7 (Dm7 or d7 in other notations). This is still a "natural" chord within the key of C as all of the notes come from the scale. Pay attention that this seventh has 10 half steps so it is a minor seventh and it is still a "natural" chord as all notes came from the scale.
2. The composer needs to use an A Major chord: A-C#-G. This is based on the VI chord which is "a" ("A minor") and we need a C# which does not exist in C Major The notation would be: II3# indicating that within the number six (VI) chord, the third, which is C, is to be raised a half step to C#: A-C#-G which is A. This is a borrowed chord because A isn't natural to the key of C.
3. For emphasis on the Dominate, a minor seventh is added to the V (dominate) chord. Counting to the seventh, this is: D-E-F-G-A-B-C so the "C" is to be added. This is written V7, also D7, and is called a "Dominate Seventh" form as the structure is so commonly used. Please note that this seventh is a **minor seventh as it is 10 half steps**, not 11. *This is also a natural chord **IN C**.*

CHORDS OF A MAJOR SCALE Inversions, Natural, Borrowed

4. For emphasis on the transition to the IV chord. C to F, counting up is a fourth, but it is also a Fifth counting down. Thus C (I) functions as a Dominant for the F (IV). By adding a minor seventh to C, it takes the Dominant Seventh form thus functions in that role by resolving a fifth down to the F. C is C-E-G, adding the 7th is C-E-G-B but that is a Major seventh so it has to be lowered a half step thus: C-E-G-B \flat is the chord. The annotation is: I 7^b (I 7^b) also C 7^b . So for a moment, this “C” chord is a “borrowed” chord.

You can try these chords in these progressions. Key signature stated first although any key may be used. Space is left so you can write in the chord names if you wish:

1. C: First I - VI - II - V - I Then: I - VI - II 7 - V - I

2. G: First: I - VI - II - V - I Then: I - VI - II $^{3\#}$ - V - I

3. C: First: I - VI - II - V - I Then: I - VI - II - V 7 - I

4. C: First: I - IV - V - I Then: I - I 7 - IV - V 7 - I

The modifications of the Roman numerals are usually in superscript, which is a little hard to read, but the notation for the D chord would be: II $^{3\#}$ Additional notations would be separated by a comma. Example: II $^{3\#,6}$ Make d a D and add the 6th (B). Usual notation: II $^{3\#,6}$

The reason for superscript is that in advanced theory notation (which is rarely if ever seen), subscript numbers are used to indicate the bass tone and particular placement of tones (inversion structure) within the chord. That’s “nice to know” and the last you will hear of it in this course.

Most if not all annotations which introduce sharps or flats (there can be more than one and they can be mixed) will represent a Borrowed chord. Nice to know.

The importance of this is not so much the distinction between natural and borrowed but that there is an annotation required to document the proper structure of the chord.

Added Notes:

Sixth chords

The phrase “sixth chords” is common when referring to the added notes to a triad. This does not mean the sixth chord in a scale it means any triad with a fourth note added that is a sixth above the tonic. This applies to 7ths, 9ths, 11ths, etc.

CHORDS OF A MAJOR SCALE Inversions, Natural, Borrowed

By now it should be clear that not all chords are just triads. Additional notes are often included to create a specific effect such as the added 6th and minor 7ths illustrated above. Adding a 6th to a triad weakens the chord but the effect is somewhat ethereal, light, and airy and there is a good reason for that. 6th chords are “Janus” chords, they are two faced.

[Janus is a Roman God depicted as having two faces representing beginning and end, War and peace, etc, representing two sides of a situation. During the discussion of 6th chords you will see how they are “two-faced”]

Adding the sixth does not necessarily mean a major or minor sixth. It means six notes up from tonic within the scale. Thus in C the C6 would be C-E-G-A, 9 half steps to the A, a major 6th, but e6 is E-G-B-C only 8 half steps from E to the C which is a minor sixth.

The following discussion assumes the key of C.

Example: C Major: C-E-G, C Major added 6th: C-E-G-A Notation: I6 or I⁶

To play this on the Baritone: C: 2-0-1-0 which is E-G-C-E C6: 2-2-1-3 E-A-C-G

Note that C6 can also be played 2-2-1-0 E-A-C-E which is frequently used.

BUT we lost the G in the first example so added it back on the first string but didn't add it back on the second example. So if you rearrange the notes in the second example (not the fingering) this becomes “a” minor!

What? What happened to the C?

Tonality usually relies on context just like conversation. Playing the a/C6 by itself generates a somewhat weak sound. As played the tonic (fundamental some say) is not in the bass and the third, or fifth depending on your argument for the chord name, is not only in the bass but it is doubled!

This contradiction will occur in many chords of more than three notes.

There is also a problem with the second fingering of the C6: 2-2-1-3 example. Sure, all the notes are there but this can be rearranged to be A-C-E-G which is a7, “a” minor with an added 7th!

So, which is this “thing”, C6 or a or, based on fingering, a7? That would be determined by the Key, the chord progression, the context within which it is played, the position on the fretboard thus affecting the tone in the bass. The effective tonality will be influenced by where it shows up.

Janus.

Dominate Seventh

One added tone is so common and has such a profound impact that it has its own name: Dominate Seventh. Recall that the fifth degree of a scale and the V chord built on it are both called Dominate. Adding a minor 7th strengthens this propensity to “dominate” the key and creates a dissonance which is almost always resolved to the scale tonic. Part of this dominance is caused by

CHORDS OF A MAJOR SCALE Inversions, Natural, Borrowed

the presence of the leading tone (number 7 in the scale) as the third of the V chord. You can try this by playing C - G - C. You will observe that the first chord establishes the tonal environment, the second contains an unbalance and starts a movement and the final chord provides the tonal resolution of that tension. The second part that causes the need for resolution is that the second have of the dominant seventh is a diminished chord. Quick example: V7 in C is G-B-D-F and you should recognize the B-D-F part as two stacked minor thirds, the VII or diminished chord in the C major scale. Adding the minor seventh to the V chord combines the natural Dominate tonality of V with the inherent instability of the VII both contributing to the dissonance which cries for resolution.

The notation is V7. It is structurally a Major chord with a minor 7th. Example: G-B-D is V in the key of C and V7 is G-B-D-F, the F being the seventh tone *in key* counting from the G. But this is not a Major seventh (refer back to the chart), it is minor seventh. Look at the “chord” starting on B and you will find: B-D-F, which is the seventh chord, a “diminished” chord and these have a natural instability demanding resolution. The combination of the two tonalities as a result of the added 7th is a very strong demand to resolve down a perfect fifth. To illustrate this feeling play: C - G7 - C - G7 and stop. This should create an unsettled, incomplete, unfinished feeling.

An example of how this is done will be better than several pages of discussion. “Santa Catalina” or “26 Miles” was a popular tune in the late 1950s early 1960s by the Four Preps. It can be found on Youtube.

G	e⁷	C (a⁷)	D⁷	G	e⁷	C (a⁷)	D⁷
C	a⁷	F (d⁷)	G⁷	C	a⁷	F (d⁷)	G⁷
I	VI ⁷	IV(II ⁷)	V ⁷	I	VI ⁷	IV(II ⁷)	V ⁷

1. Twenty- six miles a-cross the sea. Santa Cata-lina is a-waitin' for me

There are two chord lines shown above the Roman numbers. It is correct to assume that the first chord over the I represents the key so chording for C and G are shown. The first chord: “I” is simply the Tonic triad. Immediately following is an altered VI chord (a) which has an added 7th. This will be G, seven notes up from A and it is again a minor 7th. There is no need to show that it is minor with this notation. There are other notations which will be discussed later that do attempt to indicate that (but don’t succeed very well).

Then IV, with an alternative chording shown in parenthesis, the II with added seventh. In this case, this is d. Seven notes up from D is C for D-F-A-C, a d minor seventh: d7.

V7 is the Dominate Seventh: G-B-D-F which resolves back to I and the sequence repeats.

CHORDS OF A MAJOR SCALE Inversions, Natural, Borrowed

In tunes with complex harmonies the notation gets busier. Stevie Wonder's lovely tune "You are the Sunshine of my life" is a good example. The first section is shown for analysis.

[CHORUS 1]

C	F ⁶	e ⁷	Bbdim	d ⁷	G ⁷	C	d ⁷	G ⁷
I	IV ⁶	III ⁷	VII ^{1b,3b,5b}	II ⁷	V ⁷	I	II ⁷	V ⁷
1. You are the sunshine of my life				That's why I'll always be a-round				

The key is C and the first chord is easy. Then it blows up!

IV6 - add the sixth tone: F-A-C-D (remember the discussion of 6ths? This *can* be d7 but with F in the bass, it behaves more like F6). 3-2-3-1 F is doubled and yes, this is really d: F-A-D-F but with the F in the bass (and doubled), it behaves more like F6 than d. Try playing both: 3-2-3-1 then 0-2-3-1.

III7 - add the seventh tone above 3: E-G-B-D (Yes it is a minor seventh)

And next. Bb is NOT in the C scale and this one is diminished! Now it isn't really all that bad because the VII chord in C is Bdim so we just have to flat ... everything: VII1b,3b,5b! Why did I use B instead of A as a starting point and sharp everything? Two reasons: the key is C, B is already a diminished chord. The relationship is clearer than using "a" which is minor and a1#,3# (a^{1#,3#}) although correct and enharmonic is less clear. The other reason? In music sources, including the score, it is identified as a Bbdim.

On the Baritone this is fingered: 2-3-2-0 Very nice sound. Because there are only three notes here, it is a triad, the Fb (E) is doubled and it is NOT a diminished seventh!

The remainder of the chords should be easily understood.

This is a lengthy module and there is a lot of information. All the fingering patterns provided can be played on a treble but they will be a perfect fourth higher than as shown. For example, 2-0-1-0 is C on the Baritone, but F on a treble.

Assignment: For C, G and F scales, on each note of the scale:

1. Construct triads with added major and minor 6th
2. Construct triads with added major and minor 7th
3. Show the notes for each of the above, i.e. C-E-G-A/Ab (Ok, I did the first one for you)
4. Show fingering relevant to your Uke (identify what kind) for each chord.
5. Mark the chords as either natural or borrowed.

#4 will be tricky and please feel free to use any application which shows you fingerings just check out what you get to be certain it is accurate.

As usual, please ask questions.

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This is the final lesson in this Music Theory course.

So far the following have been addressed:

1. Major scale structure
2. Triads of the major scale
3. Roman numeral notation
4. Natural and Borrowed chords and notational distinction
5. Some common progressions
6. Added tones
7. Other stuff

Additional points have been interjected during coverage of these major points such as the existence of minor keys and their relationship to major keys, “Janus” chords, and a few valid but rarely used terms. *[Note: “Janus” is my term and not in common use but many will understand if you use it.]*

Emphasis has been placed on the Roman Numeral method of notation. It is an accurate method of abstracting the harmonic structure of a composition. The benefit of this abstraction is that it is static remaining the same regardless of the chosen key. Thus a rendering of a tune with Roman Numerals will allow rapid transposition to any other key simply by using the chords within that key as specified by the Roman numerals.

But there are other types of notation in more common use.

While initially easier to read and implement than the Roman Numeral notation there are drawbacks to every method. Most of the alternative methods make assumptions which are not obvious and, unlike the Roman numeral system, transposition can be quite difficult.

Chord letters with numbers:

There are many sites which provide lyrics and chords for music. These almost universally use Letters and numbers for chords.

C F6 Em **Bbdim** Dm7 G7 C Dm7 G7

1. You are the sunshine of my life That's why I'll always be a-round

Generally all capital letters are used and chords are assumed to be Major. Minor or Diminished are specified as “m or min” or “dim”. Added tones are usually indicated by the numbers. Superscription is rarely, if ever, used.

Normally this system is sufficient but there are problems as you have to “know” what is meant.

Added tones are assumed to be of a certain type and *DO NOT NECESSARILY COME FROM THE KEY SCALE.*

The “F6” - F major chord with added MAJOR 6th, i.e. in F-A-C-D (*Janus: also Dmin7*)

Em - E minor: E-G-B (“E”, E Major, would be E-G#-B)

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Bbdim - Bb diminished: Bb-Db-Fb. While in a group playing this, a comment was made that this is NOT a diminished seventh (nothing about a seventh shown) but the person who obtained the annotated chart from another organization said that in that group the “dim” *always means dim7!*

So you have to “know”? It does work, but the Bbdim (not 7th) sounds better.

Cmin7 - Does the “min” (minor) apply to the “C” or to the “7”? Unfortunately the answer is not a universal one.

USUALLY it means C minor with a 7th but the type of 7th isn't clear; it could be a Major 7th or a minor 7th. You have to know that conventionally it means a minor 7th so the chord would be: C-Eb-G-Bb. To be perfectly clear the notation should be Cminmin7, So it seems that as Cmin7, the “min” does double duty affecting both the Chord and the added interval. But that isn't always true.

Bmadd4 - B minor, add the fourth: B-D-F#, add E (But not a minor 4th, no such thing!)

This is inconsistent notation as other chords with added tones: F6, C7 simply add the number so why not Bm4? No answer for that.

Quirky notation:

Sometimes notation such as this will be seen: D7/F#

This does not mean play a D7 then and F# major. It almost always means play D7 with F# as the bottom (Bass) tone. Buutt sometimes is means play the D7 with a quick shift to F#.

“X7”

A prior lesson covered the “Dominate Seventh” structure. This is so commonly used that it is quite universally accepted to simply use any chord letter in place of the “X” and the assumption is that the Dominate Seventh structure applies *REGARDLESS OF THE KEY*. Thus the “7” is *always a minor seventh*.

C7 - C-E-G-Bb even if you are playing in D#, E, or any key, this means a C Dominate Seventh form.

E7 - E-G#-B-D again without consideration of the key.

Ab7 - Ab-C-Eb-G ditto.

G7 - G-B-D-F even in G or D both which use F# and on and on.

Nashville Notation:

This system uses arabic numerals (1,2,3,4,5,6,7) for the chords but is almost identical to the Roman Numeral system. There are sources available on the internet which explain it. It makes sense when speaking is considered since the pronunciation of a roman numeral is indistinguishable from that of the arabic numeral. Saying “Three” conveys the concept, but the listener doesn't know if the speaker is referencing arabic or roman numerals. It is a bit of a niche system not in widespread use.

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Summary:

The Roman numeral notation system provides the greatest degree of accuracy to abstract the harmony of a composition. Letter and number systems are easier to read but more challenging to transcribe to another key. Nashville notation is similar to Roman numerals but is not in widespread use. In the letter notation provided in the examples of this course, Major and minor have been indicated by Capital and lower case letters but even that approach is weak when used for diminished chords. So each system has weaknesses.

Suspended chord: sus

The original concept of "suspension" has changed. In early compositions the melody was rather rigorously supported by the underlying harmony that is to say one did not sing a note not in the chord. Of course, that didn't last.

As an example, suppose the composer had the melody on F in one measure and held that F over into the following measure BUT the harmony changes from D minor, which has F in it, to C which does not have F in it. To avoid the obvious and unharmonious clash of the E-F-G notes sounded together (E and G from C), the composer would omit or "suspend" the Third: the E, allowing the F to take it's place thus the suspended effect.

Fast forward a few hundred years. The dissonance of such a suspension is effective. It is used extensively in the Beatles "Ticket to Ride" as shown:

C										d G ⁷		
A										b E ⁷		
	sus ⁴		sus ⁴		sus ⁴			sus ⁴		sus ⁴		V ⁷
1. I think I'm gonna be sad, I think it's to-day, yeah! The girl that's driving me mad is going a-way.												

The letter chords aren't all shown. Assuming the time signature is 4/4, the suspended chord occurs on beats 3-4 of every measure. Baritone fingering C- Csus4: 2-0-1-0, 3-0-1-1

As shown in the above example, the abbreviation is "sus" plus the tone to be added. These are limited to either 2 or 4. Consider that the 3 is suspended; 1 and 5 are already there, so only 2 and 4 are left. Adding any number over 5 is already a convention and there is no need to suspend the third for those. Sometime only "sus" is used and that almost always means sus4. But do ask.

So the present convention differs from the original definition that the "four" or "two" is suspended or carried over from a prior measure to now mean that the "three" is omitted (suspended) and the "four" or "two" played in place of the "three". Quite a change!

The notation is X sus y where X is the Chord letter and y is the interval to be added. The third is *ALWAYS OMITTED!*

Examples: C^{sus4} - C-F-G, C^{sus2} - C-D-G [NO THIRD, NO "E"]
 A^{sus4} - A-D-E, A^{sus2} - A-B-E

Remember, the THIRD IS ALWAYS OMITTED! and Csus assumes (usually) Csus4

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Remember the “Janus” chords discussion?

Write the notes for Esus4 and Asus2.

(waiting)

OK, here is what you should have:

E = E-G#-B, Esus4 = E-A-B

and

A = A-C#-E, Asus2 = A-B-E

Any difference?

Janus!

Augmented and diminished fourth/fifth

Recall that the intervals of the fourth and fifth are not defined as either Major or minor because of their particularly clear tonality rather they are considered “Perfect”. Since Major/minor are comparative terms, the one implying the existence of the other, they aren’t used with these perfect intervals. But since they can be changed by using a sharp or flat, there must be some terms which apply and those are “Augmented” and “Diminished”.

Common notations, with bold indicating the most common, are:

Augmented (fifth as example)

X5# **Xaug5** X5+ or X+5 XA5 **X^o**

Diminished:

X5b **Xdim5** X5- or X-5 XD5 X^o (that’s an “Ö”) or X[∅] (a “Ø”)

Where would you use this?

The augmented fifth is a great transition chord, one which exists only for a moment sometimes called a “passing” chord or harmony and is frequently not annotated; you just have to hear it.

“Go where you wanna go” Mamas and Papas in the Bridge (some show as last part of the chorus):

G Em
You don't un-der-stand
 C Am D | D7 (note: the “|” is a measure mark)
That a girl like me can love just one man.

Listen to this and there is a very strong bass line over the last part of “un-der” as the chords change

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from the G to e. This bass line moves from D (on the G chord) then D# (augmented 5th for G) to E (for the e minor).

To play on the Baritone: 0-0-0-3, 1-0-0-3, 2-0-0-0 where the 1-0-0-3 is Gaug5: D#-G-B-G

fine (Not “fine” as in great, but “fee-nay” Italian for “finished”, “done” or “You can stop now”.)

You’re done. Congratulations!

I hope you’ve not only enjoyed the course but have learned something. Please keep in mind that this course is designed to give you a working knowledge of Music Theory most likely to be applicable in every day usage thus it isn’t comprehensive enough to move onto a Master’s Thesis or Doctoral Dissertation. But it’s a good start!