Progressive Music and Beyond

A discussion with Ivan Bertolla

Chord Families And Their Formulas

E	A	D	G	B	E
F	A#Bb	D#Eb	G#Ab	C	F
F#Gb	B	E	A	C#Db	F#Gb
G	C	F	A#Bb	D	G
G#Ab	C#Db	F#Gb	B	D#Eb	G#Ab
A	D	G	C	E	A
A#Bb	D#Eb	G#Ab	C#Db	F	A#Bb
B	E	A	D	F#Gb	B
C	F	A#Bb	D#Eb	G	C
C#Db	F#Gb	B	E	G#Ab	C#Db
D	G	C	F	A	D

The above diagram is a good way for guitarists to start understanding how to find intervals and scale degrees which make up a chord. In other words using a reference point (the major scale) to determine the intervals which construct the chord . As you can see I have circled the notes that make up the main chord families.

You will notice that unlike piano players when using 7th chords in these shapes we have to use the 3rd an octave above because the tonic of the chord is already used by our 1st finger on the A string. The point of all this is that using the major scale patterns I showed you in a previous article facilitates working out more complex chords like altered chords

Lets look at some of the main chords in relevant families and their makeup

Major

1 3 5 = Major
1 3 5 7 = Major 7th
1 3 5 7 9 = Major 9th
1 3 5 7 9 11 = Major 11th
1 3 5 7 9 11 13 = Major 13th

Dominant 7th

1 3 5 b7 = Seventh
1 3 5 b7 9 = Ninth
1 3 5 b7 9 11 = Eleventh
1 3 5 b7 9 11 13 = Thirteenth
1 3 5 b7 #9 =Seventh sharp Ninth

Minor

1 b3 5 = Minor
1 b3 5 7 = Minor Major 7th
1 b3 5 b7 = Minor 7th
1 b3 5 b7 9 =Minor 9th
1 b3 5 b7 9 11 = Minor 11th

E	A	D	G	B	E
F	A#Bb	D#Eb	G#Ab	C	F
F#Gb	B	E	A	C#Db	F#Gb
G	C	F	A#Bb	D	G
G#Ab	C#Db	F#Gb	B	D#Eb	G#Ab
A	D	G	C	E	A
A#Bb	D#Eb	G#Ab	C#Db	F	A#Bb
B	E	A	D	F#Gb	B
C	F	A#Bb	D#Eb	G	C
C#Db	F#Gb	B	E	G#Ab	C#Db
D	G	C	F	A	D

Major 7

E	A	D	G	B	E
F	A#Bb	D#Eb	G#Ab	C	F
F#Gb	B	E	A	C#Db	F#Gb
G	C	F	A#Bb	D	G
G#Ab	C#Db	F#Gb	B	D#Eb	G#Ab
A	D	G	C	E	A
A#Bb	D#Eb	G#Ab	C#Db	F	A#Bb
B	E	A	D	F#Gb	B
C	F	A#Bb	D#Eb	G	C
C#Db	F#Gb	B	E	G#Ab	C#Db
D	G	C	F	A	D

Minor 9th

E	A	D	G	B	E
F	A#Bb	D#Eb	G#Ab	C	F
F#Gb	B	E	A	C#Db	F#Gb
G	C	F	A#Bb	D	G
G#Ab	C#Db	F#Gb	B	D#Eb	G#Ab
A	D	G	C	E	A
A#Bb	D#Eb	G#Ab	C#Db	F	A#Bb
B	E	A	D	F#Gb	B
C	F	A#Bb	D#Eb	G	C
C#Db	F#Gb	B	E	G#Ab	C#Db
D	G	C	F	A	D

Sharp Nine Chord

As you can see from the diagrams on the left, we are using the major scale diagram to work out chords. The notes with a box around them are the notes which make up the chord. You will notice that note "E" is played up an octave.

Because guitarist have limitations on how many notes they are able to play at any given time we sometimes have to omit certain notes. Here is a perfect example . The G is the most obvious note to omit. Here is an altered 9th chord. Notice that the note "G" has been left out again . The tonic gravitates to the 5th so it is less noticeable . Other voicings of this chord in say 8th position add the 5th back in.

Next month I will return with more advanced exercises and techniques to get you moving on the guitar.

Until next month ..Have fun with this. Stay progressive!

Ivan Bertolla is a Melbourne based composer/producer/guitar instructor who has released his debut CD worldwide of cinematic music "Beyond The Skies Eternity". He runs Mastermind Productions and Macleod Guitar School and can be contacted at his web site www.bertolla.com

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Techbytes

by The Propeller Head

Chip Wars - Episode II: Return of the Paper Launch Pimps!

Welcome Back,
Taking a leaf out of AMDs book, Intel finally paper launched the .09 Micron Prescott Series of PIV on February 1st. Well lets just say that after all of the hoopla that the tech community had stirred up, I can only say a collective yawn was all that most of us could muster. Sparking memories of the first Williamette PIV's, Prescott is proving slower, and hotter than the current Northwood PIV's (and minus the rumoured 64 Bit extensions) Snore!! It looked like Chipzilla had struck out, big time. but alas, all was not as it seemed. On Feb 16 Intel officially announced their CT (Clakamass Technology, sorry, what was that, " Crack In My Ass "?) 64 bit extensions for both the new Series of Xeon and Prescott PIV ranges. What About Cheapzilla? Well despite having the performance advantage for the last 3-4 months, AMD have idled their way thru the New Year without really being able to consolidate the momentum that they had garnered with the 64-bit Athlon 64/ Opteron range. Not to be out done, our old favourite Fruitzilla (Apple) have also been feverishly banging the 64bit drum, mind you, without really having anything to show for all of the noise they have been making.
Now with the Evil Empire also on the 64 bit desktop wagon, it's going to be very interesting to see what spin the 3 Tribes are going to try on the unsuspecting public
Ah Yes, the Circus is definitely back, .. Buckle Up…
Intel Prescott: Is It Getting Hot In Here?
Is been a long road for the PIV from the Dog .18 nm "Williamette " Series to the latest revision .09 Prescott. Many thought the transition to the latest offering would be the typical scenario of a die shrink, pumping the cache, and bumping up the clock speed. This in the past has netted Chipzilla with a smaller, cooler and faster chip than the predecessor. Well, not this time.

So what did we get? On Paper Launch Day, Prescott was released at speeds of 2.8 to 3.4 Ghz, along side 3.4 GHz Northwood versions, both Standard and Extreme Editions. The last of the line! In regards to Prescott, Intel promised next to nothing with this chip, and on the surface, it looks like they managed to deliver. Sure we've got the die shrink from .13 to, 09 nm, we have double the L1 and L2 cache, and 13 new instructions (whhooo-eee SSE3 .. Yawn), improved branch prediction, etc, All good I hear you say, unfortunately we also have an Instruction pipeline that has increased from an already huge 20 stages, to an elaphantile (is that even a word?) 31 stages. Say What!! Man that's going to do wonders to the IPC (Instruction Per Clock), that coupled with increased latency in the caches, and a thermal heat dissipation over 103 Watts, and we have on our sleeves a possible tail wagger of the highest order. Yep this puppy is slower clock for clock than the current Northwood, and runs a good 5 –10 degrees hotter, whoooa, hold me back, Not really much to entice the tech community to hop aboard… Something isn't quite right here though. Despite the 50% extra pipeline length, performance is not that far behind the Northwood, thermal performance aside. The other interesting thing is that as the clock speed goes up, the clock for clock performance delta decreases. There is definitely some technical wizardry hiding under the surface, and as the clock frequency passes the Northwood's 3.4 Ghz, we will see Prescott draw away dramatically. There is a bit of " smoke and mirrors" surrounding this chip at the moment. The current 478 pin paper launch pimp is going to have the shortest life span of any chip Intel have ever released, with the 775 pin LGA socket version expected in about 2-3 months. Why was this dog even let out of its cage?
Its obvious that for Intel to keep scaling their Processor lines to the expected 5 Ghz + that some

major architectural changes would have to be made, but these clock speeds are planned for the next series of processor (Tejas), and what are all of those millions of extra transistors that have been crammed into the new die, that mysteriously don't seem to be doing anything at the moment. Hmmmm. And by the way, where the hell are those rumoured 64-bit extension? Hold the phone. Bling !!!! Intel is obviously testing the water with some newer technologies that they plan on introducing as they see fit. Lets not forget Hyperthreading was implemented all along, but was dormant until almost 18 months into the PIV's life cycle. All of the extra transistors I'd suggest are being used by the 64 bit extensions that are hibernating at present, but will see the light of day later this year.
And Then There Where 3:
Enter CT, Clakamass Technology, formally known as

Yamill, Intel's 64 bit extensions for the X86 platform. On Feb 16th Intel finally confirmed that they were introducing 64 bit extensions on the new series of Xeon (Nacona) processors that are due next quarter, with the Prescott getting the instructions shortly after. This coincides with the introduction of the 775 pin LGA version of the chip and the new Grantsdale and Alderswood chipsets. Surprise!! The question is still raging whether the instructions are 100 % compatible with AMD's " AMD64 " instructions, with Intel being pretty coy whether they have actually used the core x86-64 code developed by AMD, or whether they have an extended code that is at least somewhat compatible. Most analysts agree that the CT code is in most respects identical to AMD's, but due to an agreement signed years ago by the 2 companies to share technologies, Intel has no obligation to admit or announce that they are in fact using the competitors code, which frustratingly for Cheapzilla, isn't allowing them to gain any brownie points in the hype department. In the end, all that is important is that the 2 technologies are compatible with Windows XP-64/2003 -64, which from all reports, they are.
I covered the 64 Bit scenario last month, so I won't repeat myself here, suffice to say that by the time. a 64 bit O.S, driver support and applications are considered mainstream, all of these shenanigans will be a distant memory. We are still talking years, not months, so all of this 64-bit nonsense is little more than posturing for the foreseeable future. Hopefully Chipzilla can reign in the thermal problems they are having with the current Dog 478 Prescott, and relaunch the 775 LGA version with some decent clock speeds and thermal spec's, or we could be seeing our future systems doubling as microwaves.

Till next time :-)
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