Quartal Engine - Dummies Guide

What is the Quartal Engine?

The Quartal Engine is a powerful tool that generates **quartal harmony** (chords built in fourths) for guitar. Instead of traditional triads (built in thirds), quartal harmony creates a modern, open sound perfect for jazz, fusion, and contemporary music.

Key Features

- Generates 3-note and 4-note quartal chords
- Supports all major modes (major, minor, dorian, mixolydian, lydian, phrygian, locrian)
- Works with any root note (C, C#, D, Eb, E, F, F#, G, Ab, A, Bb, B)
- Multiple note durations (half, quarter, eighth, sixteenth notes)
- Guitar-friendly voicings (playable positions, 5-fret max reach)
- Outputs MusicXML files that open directly in Sibelius, Finale, Guitar Pro 8, MuseScore, and Cubase

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Basic Command Structure

```
Generate [ROOT] [SCALE] quartals, [BARS] bars, [DURATION]
```

Example:

```
Generate C major quartals, 4 bars, quarter notes
```

20+ Command Examples

3-Note Quartals (Triads)

Quarter Notes (Standard Tempo)

1. **C Major - 4 Bars**

   ```
   Generate C major quartals, 4 bars, quarter notes
   ```

   Result: 4 bars, 12 notes (3-note quartal stacks)

2. **D Dorian - 8 Bars**

   ```
   Generate D dorian quartals, 8 bars, quarter notes
   ```

   Result: 8 bars, 24 notes

3. **E Minor - Full Scale (7 Bars)**

   ```
   Generate a musicxml of the E minor scale harmonised as quartals
   ```

   Result: 7 bars, 21 notes (one quartal per scale degree)

4. **F Lydian - 4 Bars**

```
Generate F lydian quartals, 4 bars, quarter notes
```

Result: 4 bars, 12 notes

5. **G Mixolydian - 6 Bars**

```
Generate G mixolydian quartals, 6 bars, quarter notes
```

Result: 6 bars, 18 notes

Half Notes (Slow, Sustained)

6. **A Minor - 4 Bars**

```
Generate A minor quartals, 4 bars, half notes
```

Result: 4 bars, 12 notes, half-note duration (slow, sustained)

7. **Bb Major - Full Scale**

```
Generate a musicxml of the Bb major scale harmonised as quartals, half notes
```

Result: 7 bars, 21 notes, half-note duration

8. **C# Locrian - 4 Bars**

```
Generate C# locrian quartals, 4 bars, half notes
```

Result: 4 bars, 12 notes, half-note duration

Eighth Notes (Fast, Rhythmic)

9. **D Dorian - 8 Bars**

```
Generate D dorian quartals, 8 bars, eighth notes
```

Result: 8 bars, 24 notes, eighth-note duration (fast, rhythmic)

10. **E Phrygian - 4 Bars**

```
Generate E phrygian quartals, 4 bars, eighth notes
```

Result: 4 bars, 12 notes, eighth-note duration

11. **F# Lydian - 12 Bars**

```
Generate F# lydian quartals, 12 bars, eighth notes
```

Result: 12 bars, 36 notes, eighth-note duration

Sixteenth Notes (Very Fast, Dense)

12. **G Mixolydian - 4 Bars**

```
Generate G mixolydian quartals, 4 bars, sixteenth notes
```

Result: 4 bars, 12 notes, sixteenth-note duration (very fast, dense)

13. **A Minor - 8 Bars**

```
Generate A minor quartals, 8 bars, 16th notes
```

Result: 8 bars, 24 notes, sixteenth-note duration

4-Note Quartals (Extended Chords)

Quarter Notes

14. **C Major - 4 Bars**

```
Generate C major 4-note quartals, 4 bars, quarter notes
```

Result: 4 bars, 16 notes (4-note quartal stacks)

15. **D Dorian - Full Scale**

```
Generate a musicxml of the D dorian scale harmonised as 4-note quartals
```

Result: 7 bars, 28 notes (one 4-note quartal per scale degree)

16. **E Minor - 8 Bars**

```
Generate E minor 4-note quartals, 8 bars, quarter notes
```

Result: 8 bars, 32 notes

Half Notes

17. **F Lydian - 4 Bars**

```
Generate F lydian 4-note quartals, 4 bars, half notes
```

Result: 4 bars, 16 notes, half-note duration

18. **G Mixolydian - Full Scale**

```
Generate a musicxml of the G mixolydian scale harmonised as 4-note quartals, half notes
```

Result: 7 bars, 28 notes, half-note duration

Eighth Notes

19. **A Minor - 4 Bars**

```
Generate A minor 4-note quartals, 4 bars, eighth notes
```

Result: 4 bars, 16 notes, eighth-note duration

20. **Bb Major - 8 Bars**

```
Generate Bb major 4-note quartals, 8 bars, eighth notes
```

Result: 8 bars, 32 notes, eighth-note duration

Sixteenth Notes

21. **C# Locrian - 4 Bars**

    ```
    Generate C# locrian 4-note quartals, 4 bars, 16th notes
    ```

    Result: 4 bars, 16 notes, sixteenth-note duration

22. **D Dorian - 8 Bars**

    ```
    Generate D dorian 4-note quartals, 8 bars, sixteenth notes
    ```

    Result: 8 bars, 32 notes, sixteenth-note duration

Understanding the Output

File Naming

Files are automatically named with descriptive information:

- Format: `{root}-{scale}-quartal-{stackType}-{bars}bars{fullscale}-{timestamp}.MusicXML`
- Example: `D-dorian-quartal-3note-4bars-1234567890.MusicXML`

What You Get

Each generated file contains:

- **Voice 1** (top voice) = Highest note - can be used as melody
- **Voice 2, 3, 4** = Lower harmony voices (quartal support)
- All notes play **simultaneously as chords** (not arpeggios)
- Guitar-friendly voicings (playable positions)

Opening the Files

The `.MusicXML` files open directly in:

- Sibelius
- Finale
- Guitar Pro 8
- MuseScore
- Cubase
- Any MusicXML-compatible software

Practical Application: Creating a 3-Chorus Solo

Overview

A **3-chorus solo** is a common jazz structure where you play three complete cycles (choruses) over a chord progression, each with increasing intensity and complexity.

Step-by-Step Workflow

Chorus 1: Establish the Harmony

Goal: Create a foundation with clear quartal harmony

1. **Generate the base progression**

```
Generate D dorian quartals, 4 bars, half notes
```

   - Slow, sustained chords
   - Establishes the harmonic foundation
   - Use Voice 1 (top voice) as your starting melody line

2. **Copy to your DAW/notation software**

   - Import the MusicXML into Sibelius/Finale
   - This becomes your first chorus foundation

Chorus 2: Add Movement

Goal: Increase rhythmic activity while maintaining harmony

3. **Generate faster harmonic rhythm**

```
Generate D dorian quartals, 4 bars, quarter notes
```

   - Medium tempo
   - More movement than Chorus 1
   - Develop melodic ideas using Voice 1

4. **Optional: Add 4-note quartals for richness**

```
Generate D dorian 4-note quartals, 4 bars, quarter notes
```

   - Richer harmonic texture
   - More notes to work with melodically

Chorus 3: Maximum Intensity

Goal: Fast, dense, complex harmonic rhythm

5. **Generate fast harmonic rhythm**

```
Generate D dorian quartals, 4 bars, eighth notes
```

   - Fast, rhythmic
   - Creates intensity and forward motion

6. **Or use sixteenth notes for maximum density**

```
Generate D dorian quartals, 4 bars, sixteenth notes
```

   - Very fast, dense texture
   - Maximum intensity

Complete 3-Chorus Solo Example

Song: "So What" (D Dorian)

Chorus 1 (Establishment):

```
Generate D dorian quartals, 8 bars, half notes
```

- Slow, sustained
- Clear harmonic foundation
- Use top voice as melody guide

Chorus 2 (Development):

```
Generate D dorian quartals, 8 bars, quarter notes
```

- Medium tempo
- More rhythmic activity
- Develop melodic ideas

Chorus 3 (Climax):

```
Generate D dorian quartals, 8 bars, eighth notes
```

- Fast, intense
- Maximum rhythmic density
- Build to climax

Advanced: Mixing 3-Note and 4-Note Quartals

Chorus 1:

```
Generate D dorian quartals, 8 bars, half notes
```

(3-note quartals - open, clear)

Chorus 2:

```
Generate D dorian 4-note quartals, 8 bars, quarter notes
```

(4-note quartals - richer texture)

Chorus 3:

```
Generate D dorian quartals, 8 bars, eighth notes
```

(3-note quartals - fast, clear)

Using Different Scales for Variation

Chorus 1: D Dorian

```
Generate D dorian quartals, 8 bars, half notes
```

Chorus 2: D Minor (Aeolian)

```
Generate D minor quartals, 8 bars, quarter notes
```

(Slight harmonic variation)

Chorus 3: D Dorian (Return)

```
Generate D dorian quartals, 8 bars, eighth notes
```

(Return to original, but faster)

Tips for Using Quartal Harmony in Solos

1. Use the Top Voice as Melody

- **Voice 1** (highest note) naturally serves as a melody line
- Develop melodic phrases from these top notes
- The quartal harmony below provides modern, open support

2. Mix Durations for Interest

- Start slow (half notes) → Build to fast (eighth/sixteenth notes)
- Creates natural intensity curve
- Mimics how real solos develop

3. Combine 3-Note and 4-Note Quartals

- 3-note quartals = Open, clear, less dense
- 4-note quartals = Richer, more complex, denser
- Use 3-note for clarity, 4-note for richness

4. Use Full Scale Harmonization

- Command: `Generate a musicxml of the [ROOT] [SCALE] scale harmonised as quartals`
- Gets all 7 scale degrees
- Perfect for exploring the entire scale harmonically

5. Experiment with Different Modes

- Same root, different mode = Different harmonic color
- D Dorian vs D Minor = Subtle but important differences
- Great for creating variation in multi-chorus solos

Common Use Cases

1. Chord Progressions for Practice

Generate quartal harmony for any scale/mode to practice:

```
Generate C major quartals, 4 bars, quarter notes
```

2. Composition Foundation

Use quartal harmony as a starting point for compositions:

```
Generate a musicxml of the E minor scale harmonised as quartals
```

3. Jazz Solo Preparation

Create harmonic frameworks for improvisation:

```
Generate G mixolydian quartals, 8 bars, quarter notes
```

4. Modern Sound Exploration

Experiment with quartal harmony's unique sound:

```
Generate F# lydian 4-note quartals, 4 bars, half notes
```

Quick Reference

Duration Keywords

- `half` or `half notes` = Slow, sustained
- `quarter` or `quarter notes` = Standard tempo (default)
- `eighth`, `8th`, `eighth notes`, `8th notes` = Fast, rhythmic
- `sixteenth`, `16th`, `sixteenth notes`, `16th notes` = Very fast, dense

Stack Types

- **3-note quartals** = Default (just say "quartals")
- **4-note quartals** = Say "4-note quartals" or "4-note stacks"

Full Scale Harmonization

- Add: `Generate a musicxml of the [ROOT] [SCALE] scale harmonised as quartals`
- Automatically generates 7 bars (one per scale degree)

Supported Scales/Modes

- Major (Ionian)
- Minor (Aeolian)
- Dorian
- Mixolydian
- Lydian
- Phrygian
- Locrian

Supported Roots

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

Troubleshooting

Notes Playing as Arpeggios Instead of Chords?

Fixed! The engine now generates proper chord notation. All notes are in voice 1 with `<chord/>` tags, so they play simultaneously.

File Won't Open?

- Ensure the file has `.MusicXML` extension
- Try opening in MuseScore (free, excellent MusicXML support)
- Check that your software supports MusicXML 3.1

Wrong Scale/Mode?

- Check spelling: "dorian" not "dorian mode"
- Root note must come before scale name: "D dorian" not "dorian D"
- Use: `Generate [ROOT] [SCALE] quartals, [BARS] bars`

Summary

The Quartal Engine is a powerful tool for generating modern quartal harmony. With 20+ command examples covering different durations, stack types, and scales, you can create harmonic foundations for:

- Practice exercises
- Composition
- Jazz solo preparation
- Modern harmony exploration
- **3-chorus solo development** (slow → medium → fast)

Remember: The top voice (Voice 1) is your melody guide, and the quartal harmony below provides modern, open-sounding support. Experiment with different durations, stack types, and scales to find the perfect sound for your music!

Getting Started

1. Open the Quartal Engine CLI: `node quartal-cli.js`
2. Type a command: `Generate D dorian quartals, 4 bars, quarter notes`
3. Open the generated `.MusicXML` file in your notation software
4. Use Voice 1 as melody, Voices 2-4 as harmony
5. Experiment and create!

Happy quartal harmonizing!