Criterion A: PLANNING

Client: Clement Gandossi (18M), Amature Musician and Student.

Problem Statement

The client has found that it is difficult to understand relationships between notes when attempting to compose harmony. They do not currently have a tool to aid them.

Defining the Problem

The Client is a music student who is involved in small semi-professional projects. Despite having experience in the field, they are still learning as a music student and struggle to understand harmony from the perspective of traditional western practice. Being based on the physical phenomenon of the harmonic series said harmonic practice eludes intuitive understanding by the client. The client has found that it is difficult to connect chord voicings, methods of arranging the notes of a chord, with its sonic identity that is the mixture of overtones resulting from such an arrangement. Having greater comprehension of this phenomenon would eliminate an obstacle hindering the client's study of music.

After some thought, the client concludes that their understanding would be greatly enhanced given a practical visualisation of the harmonic series. As a fellow musician with the knowledge to create such a visualisation, I am able to combine this knowledge with my skills in computer science to realize this concept.

Success Criteria

- Chords can be observed in a display interface similar to that of an equalizer in a DAW (Digital Audio Workstation). The client has requested this due to his familiarity with such interfaces while working with DAWs.
  - The client would like the program to have similarities to DAW equalizers.
- Client is able to enter musical notes to build chords
  - If possible, the client would like to input notes through the MIDI information protocol.
- Client is able to load chords from a database and compare them to see their similarities and differences. The client requested as it aids to understand harmonic function, as defined by traditional western practice, and harmonic similarity.
- Client is able to hear shown chord(s)
  - The client has expressed that "it would be a bother" if he had to play chords himself if he wants to sample what they sound like.

Rationale

The use of a computer program is an effective solution as it effectively organises complex structures like musical chords. C# is suitable for this application for a few reasons:

- OOP (Object Oriented Programming) allows me to apply inheritance, encapsulation, and polymorphism to develop an efficient and readable program.
- Multi-Platform
- VisualStudio IDE (Integrated Development Environment)
  - Ease of integration with graphics plotting libraries and the .NET framework allowing for a web-based solution
  - Built-in debugger

Being web-based allows the application to be readily used by anyone with a browser. With a quick online registration, harmonic analysis can be shared.

Visual Studio is a suitable development environment for this application as it is a versatile IDE with tools for management and installation of packages, such as AntDesign, for use in functions of the application like drawing graphs. The structure of the program is based on the common MVC framework.

Word Count: 483