**2. Requirements Analysis** – **Data and Operations**

* **Motifs**

A motif is the smallest musical element. It is a short pattern of rhythmic and/or tonal elements.

**Operations**

* + - select\_random\_motif(): Chooses and returns a random motif from the motif table.
    - create\_motif(): Allows developers (maybe users) to add a motif to the database.
    - select\_motif(style): Returns a motif that matches the style argument.
    - generate\_random\_motif(): Creates a random motif and adds it to the database.
* **Notes**

This is a collection of all possible musical notes within the range of the standard, 88 key piano. This includes all accidentals.

**Operations**

* add\_to\_motif(note): Adds the argument note to the set of notes in an existing motif.
* remove\_from\_motif(note): Removes the specified note from an existing motif.
* get\_notes\_for\_scale(scale): Returns a list of all notes in the specified scale.
* up\_octave(note): Returns the given note, raised one octave.
* down\_octive(note): Returns the given note, lowered one octave.
* stepwise\_note(note): Returns a note for a stepwise sequence.
* **Tempo**

This is a collection of all available tempos, along with ranges for the classical names (Allegro, etc.). We will allow 40 bpm to 240 bpm.

**Operations**

* + increase\_tempo(bpm): Increments the current tempo by bpm.
  + decrease\_temp(bpm): Decrements the current tempo by bpm.
  + set\_tempo(bpm): Sets the tempo to bpm.
* **Instruments**

Collection of all instruments we’ll allow, along with their range, and any associated MIDI information.

**Operations**

* add\_instrument(inst): Adds the specified instrument to a composition
* remove\_intrument(inst): Removes the specified instrument to a composition.
* chorus(instr): Creates a chorus effect for the specified instrument.
* solo(instr): Creates a solo instrument sound.
  + - * **Rhythms**

Holds rhythmic patterns that can be used for motifs or styles. These will typically be just a couple measures long or shorter.

**Operations**