Assignment 2

Lab Today

- Bring headphones to the lab today.
Structuring Music

jMusic

- We will begin working with jMusic. To use jMusic, you must do the following:
  - Download jMusic from iLearn > Resources > Downloads
  - Add the following files/folders to your classpath:
    - .../java-source
    - .../jmusic/jMusic1.6.4.jar
    - .../jmusic/inst
  - Set the paths to be correct for your machine.

Learning Goals

- Using JMusic
  - With multiple Parts and Phrases
- Creating music objects for exploring composition
  - How do we organize Notes, Parts, etc.?

JMusic: Java Music library

- JMusic knows about WAV files and many other formats, too (e.g., QuickTime)
- We’ll use it for manipulating MIDI
  - Musical Instrument Digital Interface, an industry-standard interface used on electronic musical keyboards and PCs for computer control of musical instruments and devices.
  - MIDI is about recording music, not sound.
Creating Notes

Welcome to DrJava.

```java
import jm.music.data.*;
import jm.JMC;
import jm.util.*;

Note n = new Note(JMC.C4, JMC.QUARTER_NOTE);
n.jMusic NOTE: [Pitch = 60][RhythmValue = 1.0][Dynamic = 85][Pan = 0.5][Duration = 0.9]
JMC = JMUSIC Constants
Makes code easier to read from a music perspective

Note n2 = new Note(64, 2.0);
n2.jMusic NOTE: [Pitch = 64][RhythmValue = 2.0][Dynamic = 85][Pan = 0.5][Duration = 1.8]
```

Creating Phrases

```java
Phrase phr = new Phrase();
phr.addNote(n);
phr.addNote(n2);

double [] notes1 = {67, 0.25, 64, 0.5, 60, 1.0};
phr.addNoteList(notes1);

double [] notes2 = {JMC.G4, JMC.QN, JMC.E4, JMC.EN, JMC.C4, JMC.WN};
phr.addNoteList(notes2);
```

Viewing Phrases

```java
View.notate(phr)
```

From Viewer: Manipulate and MIDI

- Can save or open MIDI files
- Can change key or time signature.
- Other tools allow changing other characteristics, like tempo.
Different ways of creating Phrases

`Phrase phr2 = new Phrase("Phrase 2", 4.0, JMC.GLUTE);`

> phr2.addNoteList(notes2)

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**ICLICKER QUESTION**

Which is the correct way to create a note?

A. `n = Note(60, 0.5)`
B. `Note n = Note(60, 0.5)`
C. `Note new n = Note(60, 0.5)`
D. `Note n = new Note(60, 0.5)`
E. `new n = Note(60, 0.5)`

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**jMusic JavaDoc**

- [http://cs.vassar.edu/~carle/jmusic/doc/](http://cs.vassar.edu/~carle/jmusic/doc/)
- Click on Documentation
A Phrase that starts later

```java
> Phrase phr2 = new Phrase("Phrase 2", 4.0, JMC.FLUTE);
> phr2.addNoteList(notes2)
> View.notate(phr2)
```

Adding parts into phrases (Wrong way first)

```java
> Part part1 = new Part();
> part1.addPhrase(phr);
> part1.addPhrase(phr2);
> View.notate(part1);
```

Building Parts and Scores

```java
> Part partA = new Part("Part A", JMC.PIANO, 1)
> partA.addPhrase(phr);
> Part partB = new Part("Part B", JMC.SAX, 2)
> partB.addPhrase(phr2);
> Score score1 = new Score("My Two Part Score");
> score1.addPart(partA);
> score1.addPart(partB);
```

Viewing the Score

```java
> View.notate(score1);
```