21M.359

Lecture 4: MIDI, Clocks, Scheduling

MIDI

- 16 State Machines
- Each State Machine is a "Channel"
- A Channel manages note playing:
  - Keeps track of multiple active (sounding) notes
  - Controls behavior / sound quality of notes

MIDI Channel Messages

- Basic Channel Commands:
  - NoteOn (channel, pitch, velocity)
  - NoteOff (channel, pitch)
  - Control Change (channel, cc, value)
  - Pitch Bend (channel, value)
  - Program Change (channel, value)

General MIDI

- An agreed-upon specification of MIDI instruments (programs) such as:
  - 0 Acoustic Grand Piano
  - 1 Bright Acoustic Piano
  - 2 Electric Grand Piano
  - 3 Honky-tonk Piano
  - 4 Electric Piano 1
  - 5 Electric Piano 2
  - 6 Harpsichord
  - 7 Clavinet
  - 8 Celesta
  - 9 Glockenspiel
  - 10 Music Box
  - 11 Vibraphone
  - 12 Marimba
  - 13 Xylophone
  - 14 Tubular Bells
  - 15 Dulcimer

General MIDI

- For a full list, see:

http://en.wikipedia.org/wiki/General_MIDI

General Petraeus

Control Change Messages

- 1 Modulation wheel (usually vibrato)
- 7 Volume
- 10 Pan
- 64 Sustain pedal
- 93 Reverb

Pitch Bend Messages

- PitchBend(chan, bend):
  - bend range = [-8192, 8191]
  - Provides: [-2 semitones, +2 semitones]
  - Range change be changed to [-12, +12] using "RPN" control change messages.
    - More details at http://www.midikits.net/midi_analyser/pitch_bend.htm