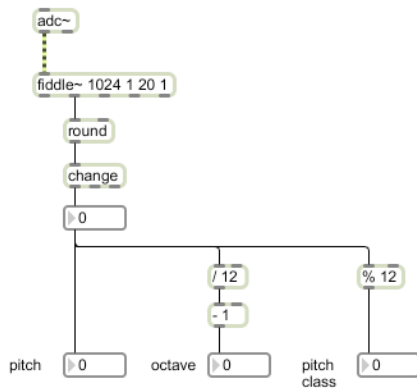


Composition: Electronic Media II
Spring 2009
Pitch Tracking

1. Max is capable of listening to a performer and identifying the notes being played. This pitch tracking can be used to trigger various electronic events.
2. The objects that are able to accomplish this are not built into Max/MSP. There are known as Max Externals. Externals are objects created by other users that can be shared and loaded into Max. They must be downloaded and installed before they can be used in Max. One of the largest collections of externals can be found at <http://www.maxobjects.com>.
3. The most commonly used object for pitch tracking is called **fiddle~**, which was created by Miller Puckette. This object receives a signal and outputs the pitch in MIDI values. The following patch shows a basic application of the **fiddle~** object:



- a. Any sound source can provide the input for **fiddle~**. To begin with, patch a signal from the **adc~** into the left inlet of **fiddle~**.
- b. Since **fiddle** outputs the pitch as a float number, use the **round** object to round to the nearest whole number.
- c. When long notes are played, **fiddle~** will likely output the same pitch multiple times in a row. To avoid duplicate pitches, use the **change** object, which will only output a value when it differs from the previous value.
- d. The resulting number is the pitch in MIDI format (e.g. 60 = C4).
- e. For further possibilities, the **%** object, which applies the **mod** operation, can be used to output the pitch class without regard for register. Also, the pitch can be divided by 12, which will give us register without regard for pitch.
- f. Another useful object for patches that use pitch tracking is the **match** object. This allows you to input a series of pitches, and the object will only send an output when it receives that exact series in succession. For example, the following patch plays a chromatic scale and triggers a sine wave when it hears Bb4 followed by B4:

