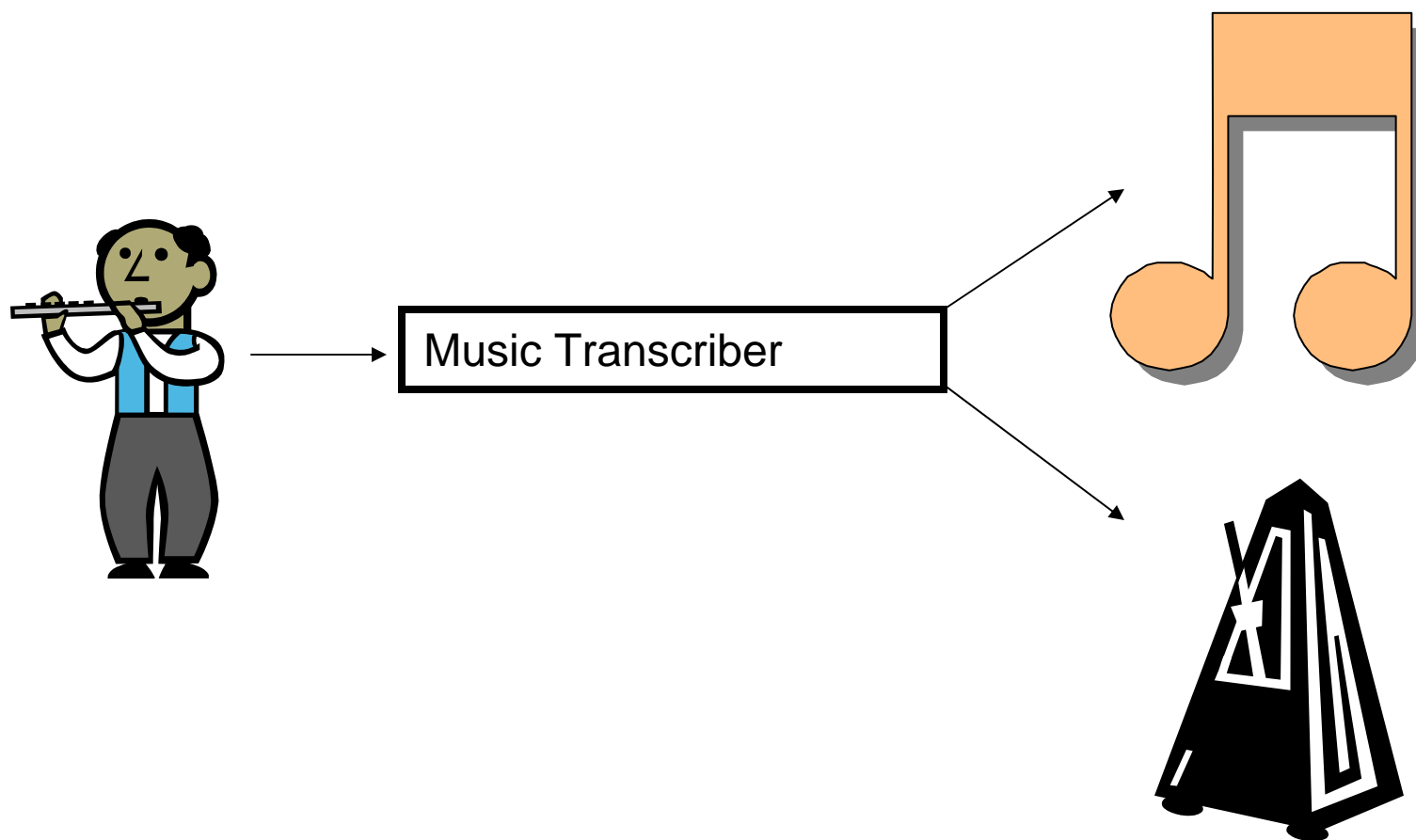
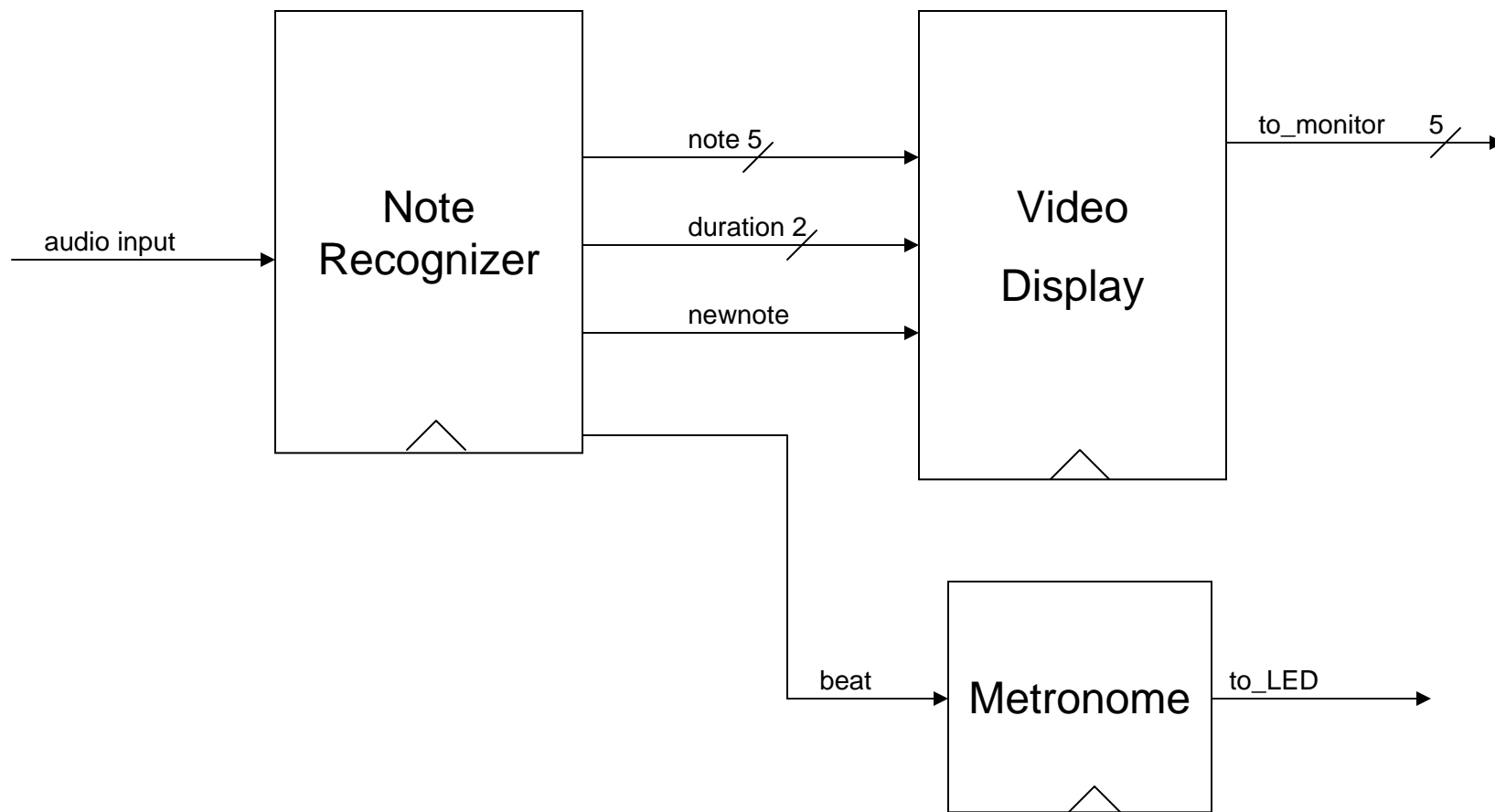


Music Transcriber



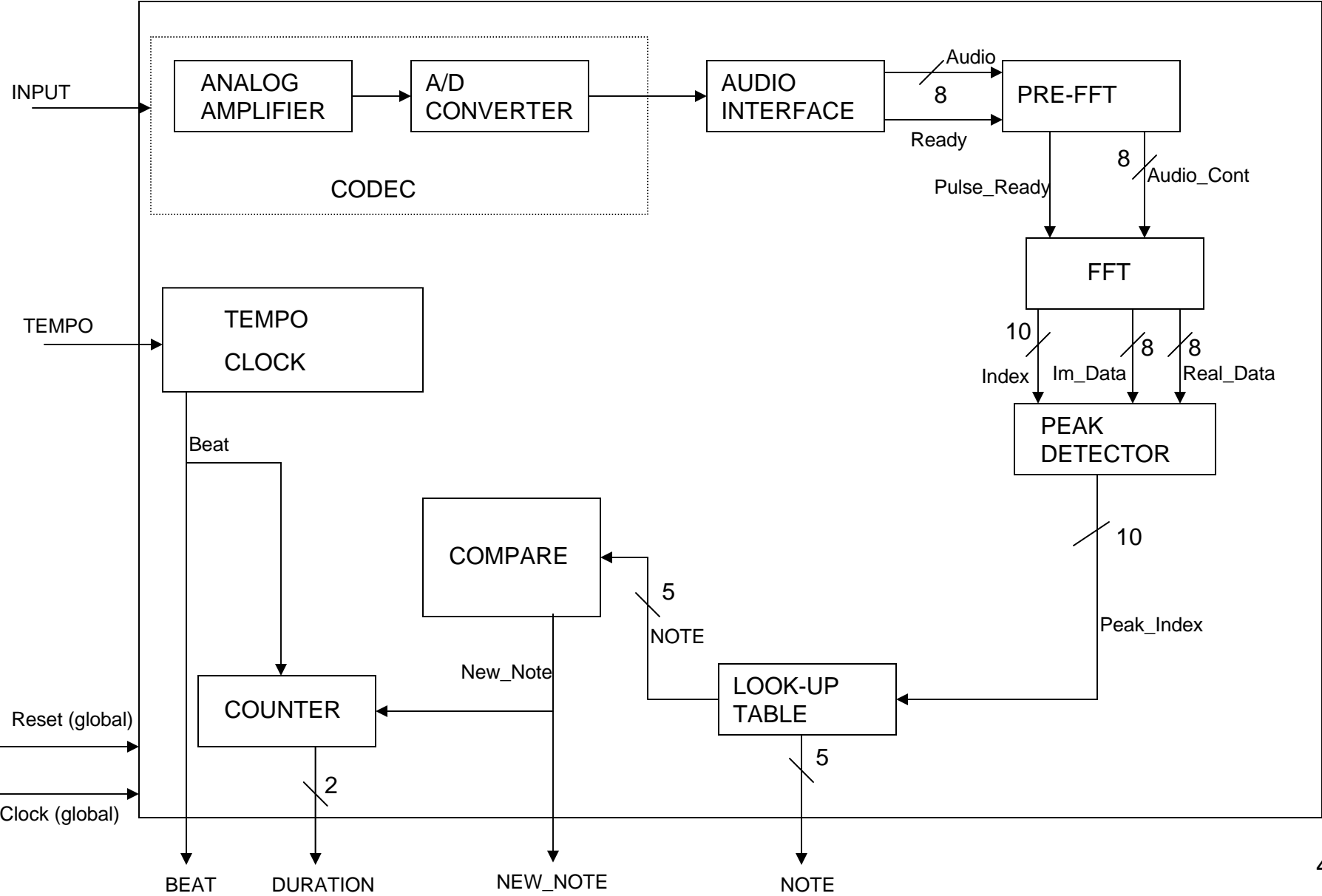
Overall Block Diagram



Note Recognition Module

- Use *Codec* to amplify the analog audio signal and convert it to a digital signal.
- Obtain a frequency spectrum of the audio sample using FFT.
- Detect the peak frequency of the spectrum.
- Convert this into a recognizable frequency in Hertz.
- Use a look-up table to relate the peak frequency to a musical note.
- Use a counter to measure the duration of a note as the number of *beats* between a note change. The frequency of *beats* depends on a user defined tempo.

Note Recognizer



Video Display

Produces music stave video output from note values and durations

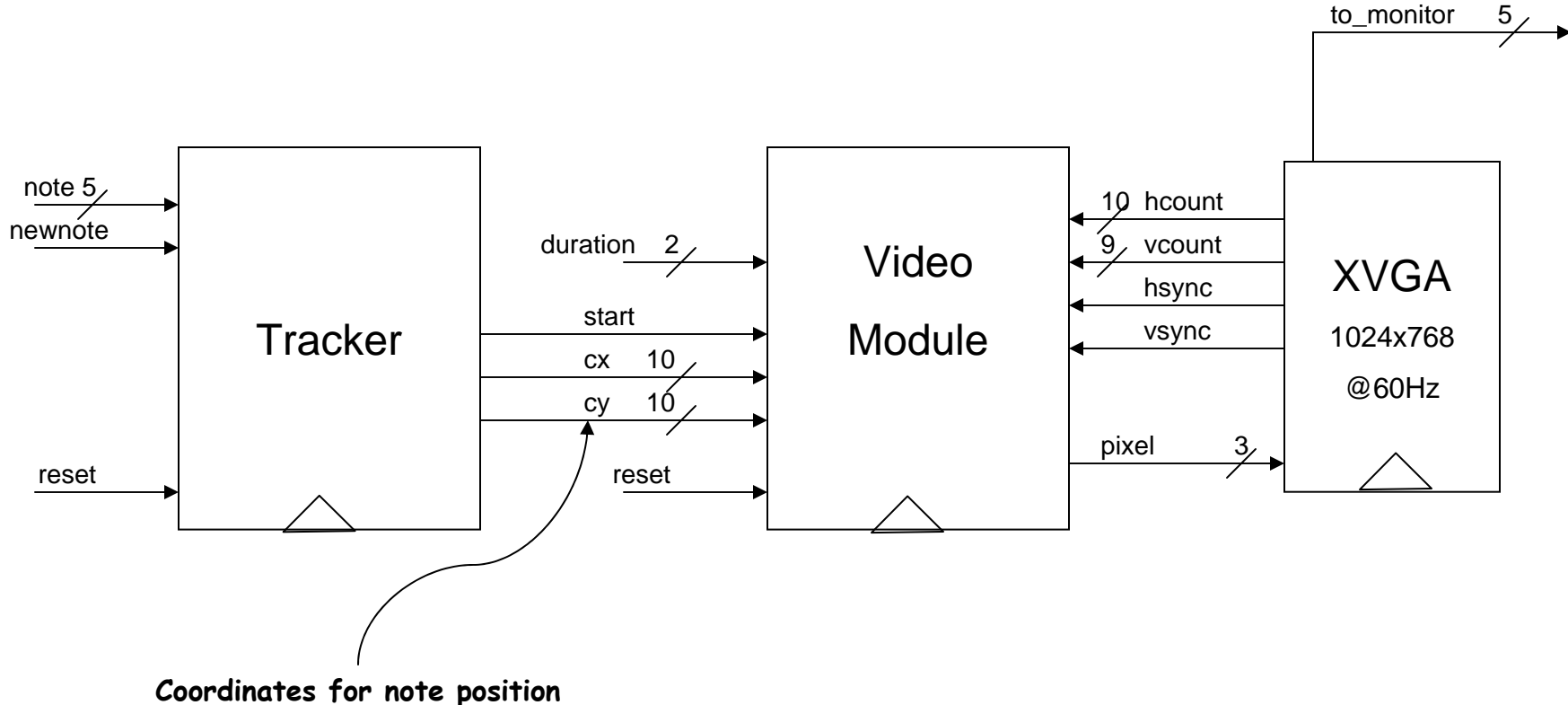
Tracker

- Follows the writing on the stave, translates the note value into its correct position on the screen.
- Tells the Video where to display the next note.

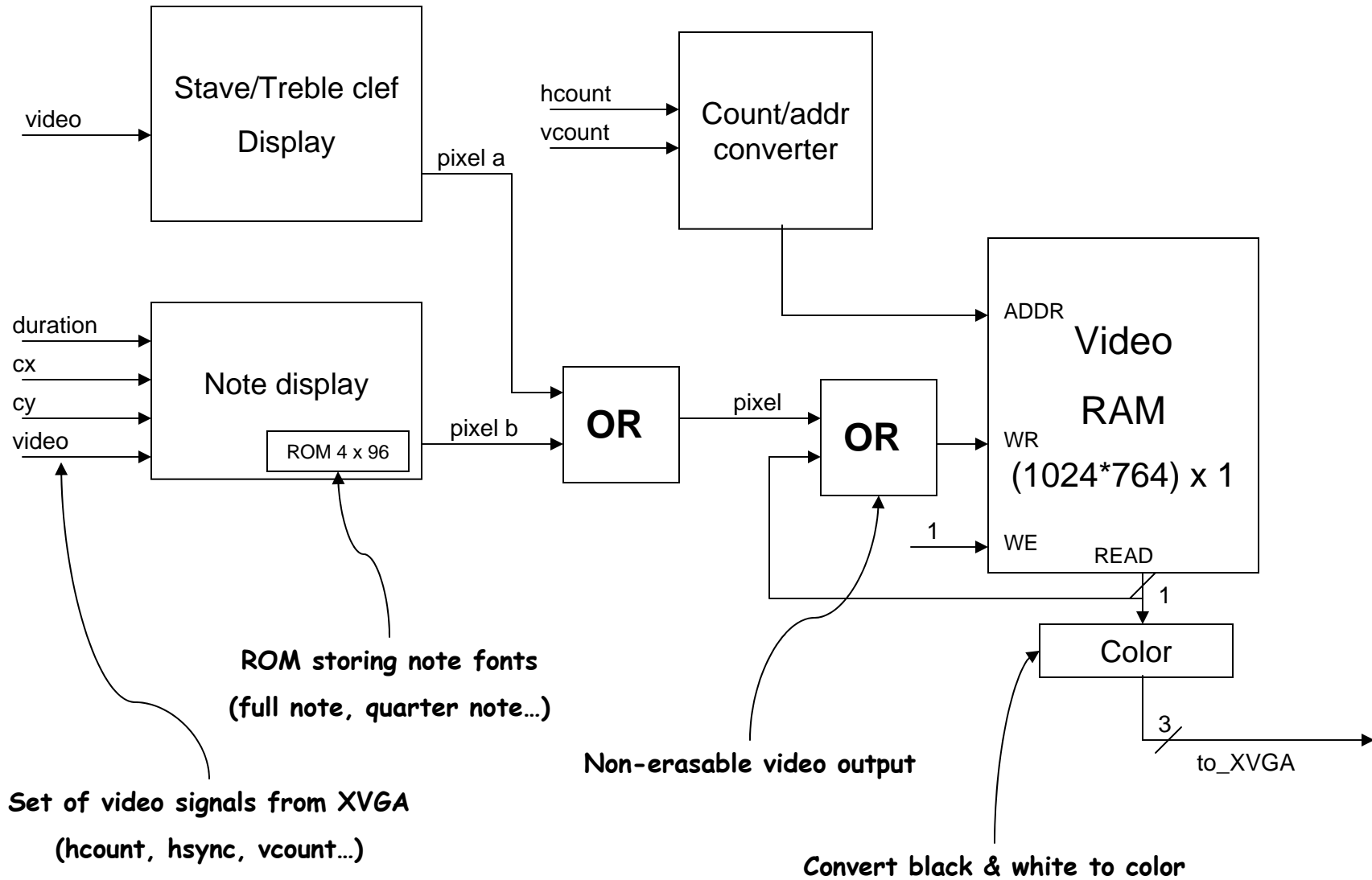
Video

- Uses sprites to display background staves and clefs.
- Uses a moveable sprite to display a new note at a given position
- The “note” sprite reads different note fonts from a ROM, so as to display the different shapes.
- The shape of the note is given by its duration.

Video Display



Video Module



Additional Features

- **Rythmical complexity**
 - **Bars**
 - **Odd rythms**
 - **Tied notes**

- **Musical Vocabulary**
 - **Higher timing precision**
 - **Larger note span**

- **Complex Metronome**