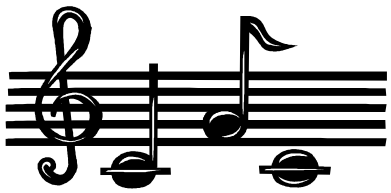
‘The Sound of Music’ Gone Digital!

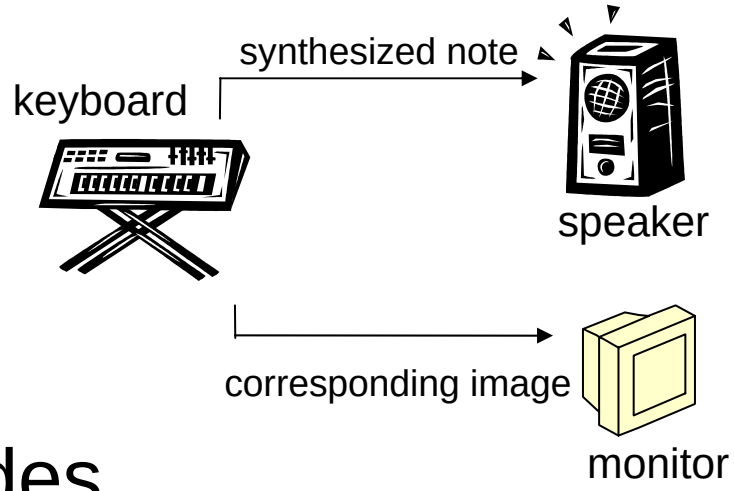


Sarah-Jean Cunningham

Anne Romeo

OUTLINE

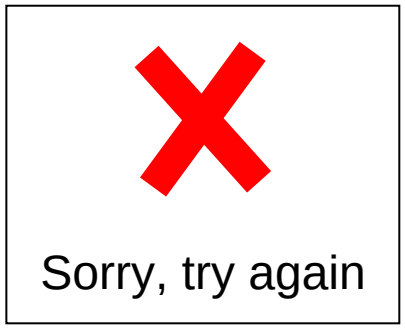
- Music tutorial guide
- Target user – 5 year olds



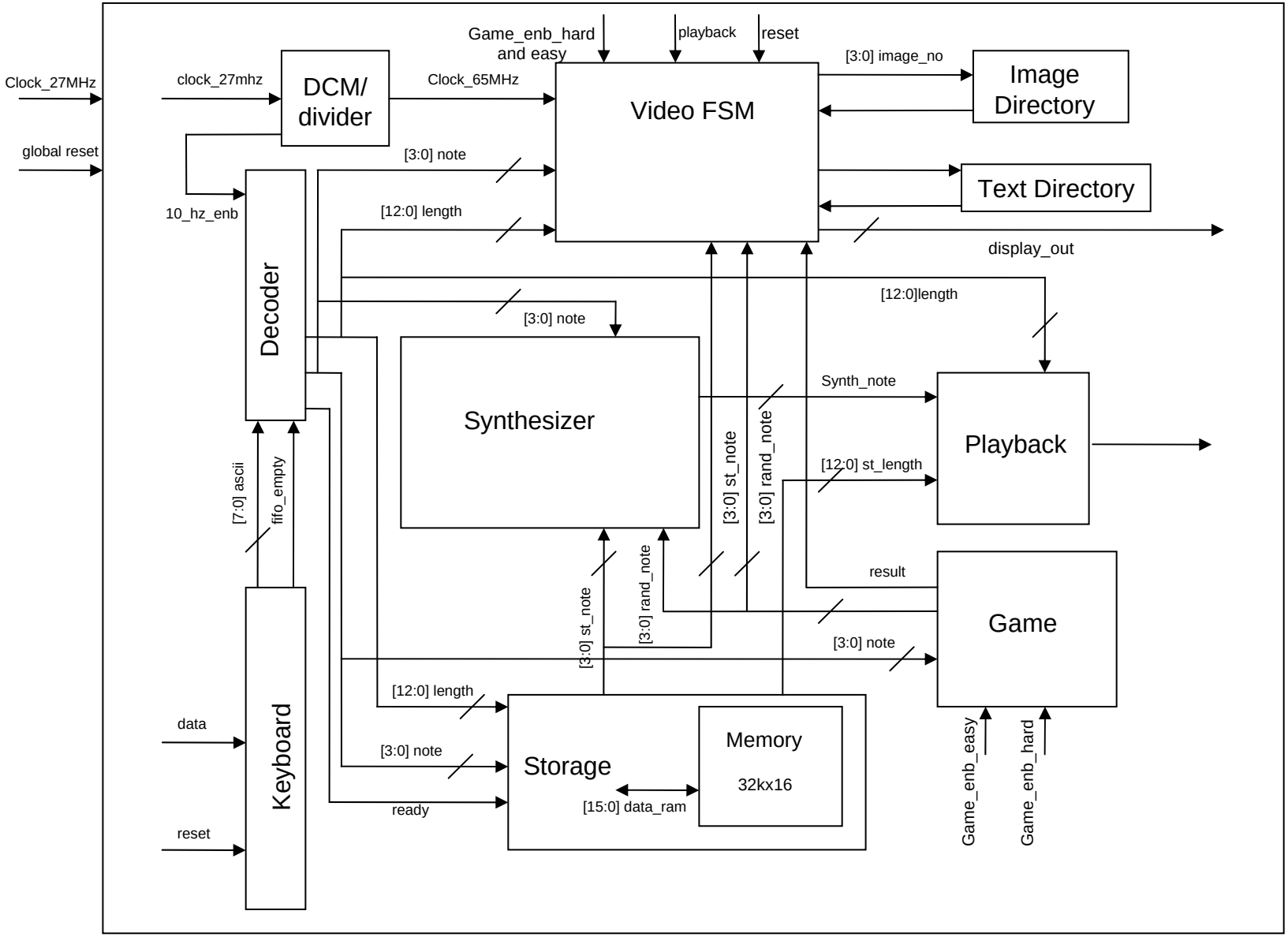
- Three modes

Modes

1. Instant Playback
2. Recorded Playback
3. Game – 2 difficulty levels



BLOCK DIAGRAM



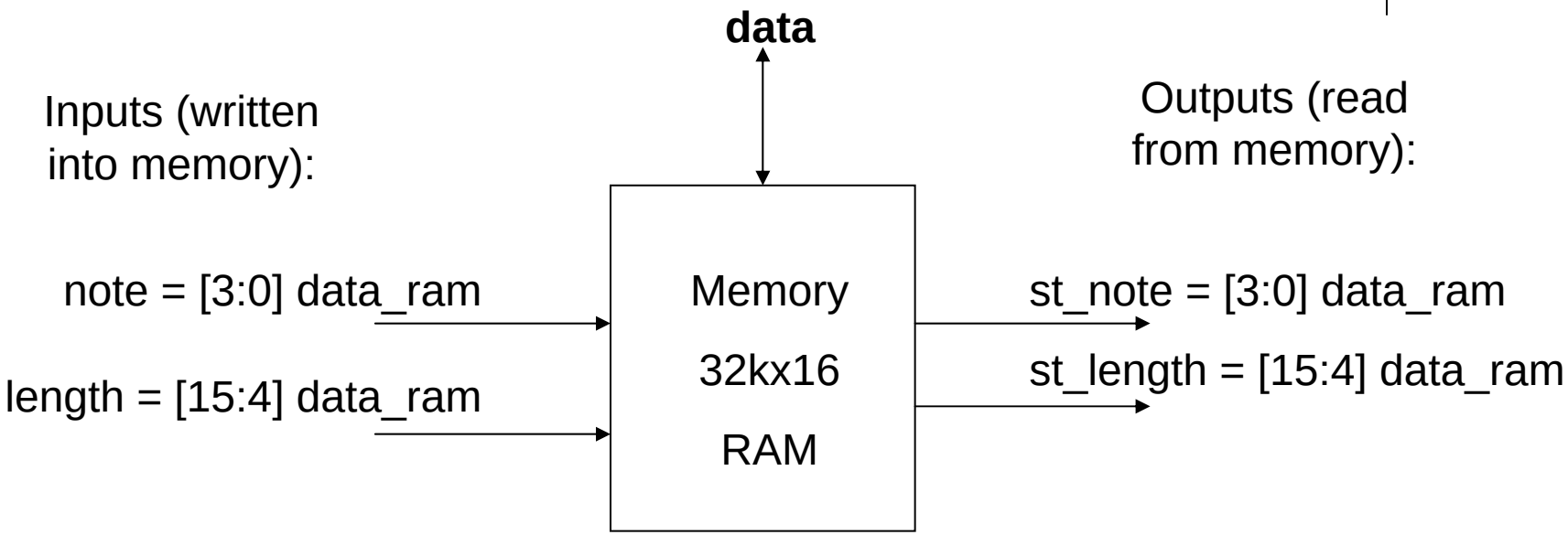
DECODER

- Assignment of keys to notes and signals

Key	ASCII	signal
Enter	8’h0D	record = high
Spacebar	8’h20	playback = high
Backspace	8’h08	reset = high
Plus	8’h3D	Diff_mode
Minus	8’h2D	easy_mode
E	8’h45	C (26.626 Hz)
R	8’h52	D (293.665 Hz)
T	8’h54	E (329.626 Hz)

- Counts the length of time the key has been played for

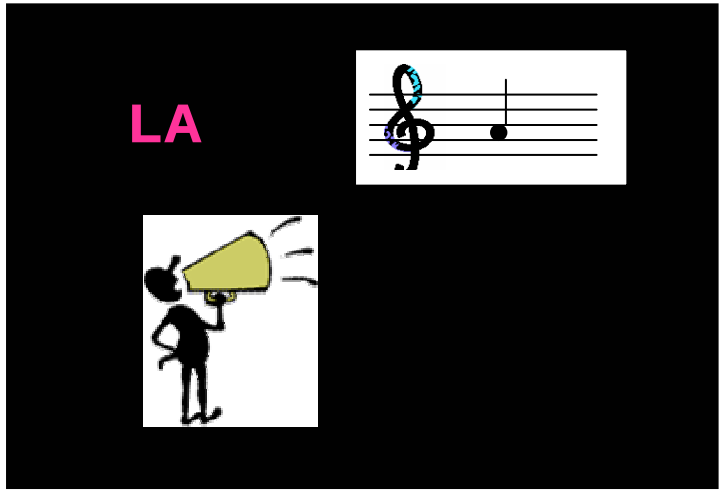
STORAGE



- Address updates on *ready* signal (when key released)
- *note* and *length* are stored in the same memory address
- On-chip RAM memory

VIDEO MODULE

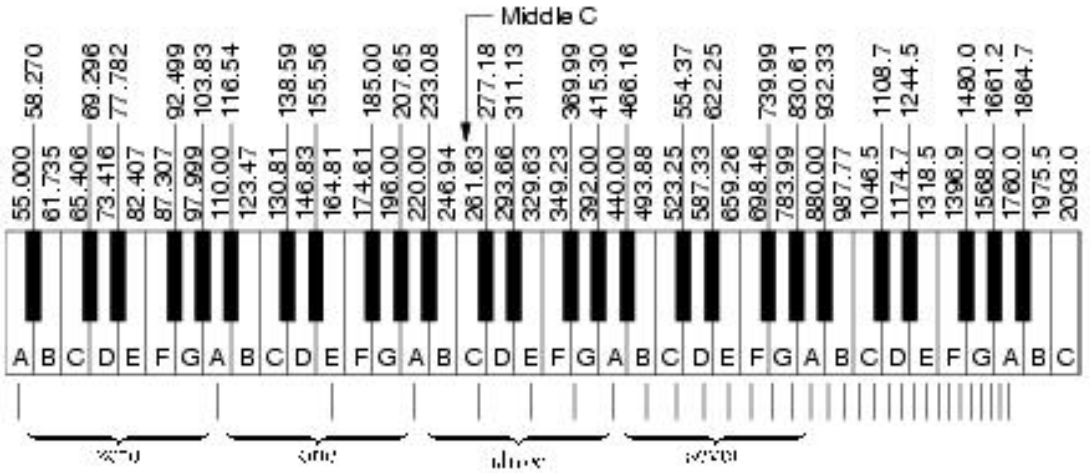
- *Image directory:* scans through ‘real’ images and stores their pixel contents into a ROM
- *Text directory:* creates strings of characters (note name and general messages)
- *Main:* example, for note A/La:



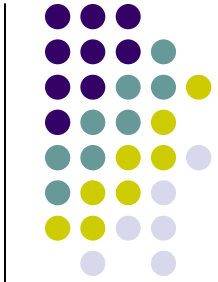
- Welcome and Reset screens

SYNTHESIZER

- Synthesizes a musical note from its fundamental frequency and its main harmonics.
- Look-up table for each note (from A to G). The signal for one note will be sampled at twice the frequency to get the signal for the same note an octave higher.
- Will start by synthesizing beeping sounds only, and then include the harmonics.



IMPROVEMENTS



- More notes, including half tones (i.e. sharps and flats) and other octaves.
- More elaborate display, animations during transitions between notes.
- Richer sound.
- Image compression.