Theatre Lighting Board

Maura Cordial and Irene Zhang

6.111 Design Presentation
Fall 2006
lighting board console in a minute

- **Purpose:** program lighting cues for theatre performances
- **How do I use a lighting board?**
- **Terminology:** cue, show, dimmer, channel, intensity, “current cue”, live mode, blind mode, wait, link, follow, “look”, up time, down time
Design Overview

- For our lighting board we will be using the keyboard and computer screen for the console.
- The processor will be used to handle interactions between the user and the DMX module.
- The DMX module will be used to control the dimmer box which will control the lighting instruments.
Screen Module

Static Sprites
- Consists of the headings and labels on the screen
- Possibly buffered (currently just combinational logic)

Dynamic Sprites
- Obtains information from the registers
- Changes whenever the information changes
- Displayed using combinational logic
- Color tracking of data
### Screen Display

<table>
<thead>
<tr>
<th>Ch 1</th>
<th>Ch 2</th>
<th>Ch 3</th>
<th>Ch 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Ch 5</td>
<td>Ch 6</td>
<td>Ch 7</td>
<td>Ch 8</td>
</tr>
<tr>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cue Number: #</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Cue</th>
<th>Up time</th>
<th>Down time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(past)</td>
<td>(current)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(future)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wait: #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow: #</td>
</tr>
<tr>
<td>Link: #</td>
</tr>
</tbody>
</table>
Keyboard Module

- The user interface to program a show
- The keys will be given new assignments based on the functions needed to be performed by the processor
- Sends appropriate instructions to the processor depending on the user input
- Combining multiple keystrokes into a single instruction
Processor

- no instruction memory (instruction buffer and macros instead)
- reduced instruction set (no comparison or branch ops)
- 2 DMX control signals (load cue, update cue)
- registers used for sharing data between screen, DMX module, and cue memory
DMX Module

- Sends channels intensities to the dimmer box using DMX 512 protocol via the RS-232 serial port
- Holds channel intensities for the duration of a cue, changing a channel when edits are made in live mode
- Gradually changes channel intensities for bringing a cue up or down
Timeline

- Static Sprites - completed
- Dynamic Sprites – before Thanksgiving
- Keyboard Module – before Thanksgiving
- DMX Module – December 1st
- Processor – before Thanksgiving