**Level 0 Diagram**

A screenshot of a cell phone

Description automatically generated

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| *Module* | Hide and Seek Box |
| *Inputs* | Sound: Sound measured from the immediate environment around the box  Power: 9V Battery |
| *Outputs* | Face: An LED matrix that displays a smiling/frowning face |
| *Functionality* | When the sound in an environment exceeds a volume magnitude threshold, a smiling face will transition into a frowning face. |

**Level 1 Diagram**

A screenshot of a social media post

Description automatically generated

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| *Module* | Volume Sensor Module |
| *Inputs* | Sound: Sound measured from the immediate environment around the box  Power: 5VDC Power Supply |
| *Outputs* | Threshold Binary Output: A potentiometer-set threshold will determine a real-time binary output. |
| *Functionality* | When the sound in the immediate environment of the module exceeds a preset threshold, it will output 5V. Otherwise, it will output 0V. |

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| *Module* | Power Supply |
| *Inputs* | Power: 9VDC Battery |
| *Outputs* | Power: 5VDC |
| *Functionality* | The power supply will regulate a 9V battery to 5V with capacitors to provide a steady voltage level. |

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| *Module* | Microcontroller |
| *Inputs* | Volume Threshold Binary: Binary value from the Volume Sensor Module  Power: 5VDC Power Supply |
| *Outputs* | I2C: Control signal to the LED Dot Matrix Driver Module |
| *Functionality* | The Microcontroller will determine when to change the state of the LED Dot Matrix based on the average threshold value read from the Volume Sensor Module. |

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| *Module* | LED Dot Matrix Driver |
| *Inputs* | I2C: Control signals from Microcontroller change the state of the dot matrix  Power: 5VDC Power Supply |
| *Outputs* | Face Reaction: The LED Dot Matrix will display a smiling or frowning face |
| *Functionality* | The LED Dot Matrix Driver will receive control bytes from the microcontroller via an I2C bus that will cause the dot matrix to display a face in the form of a smiling or frowning face. |