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A) Objectives (Requirements document from the Lab for which you selected to layout the PCB)
B) Hardware Design

One page description of the battery (printout from the web) (Preparation 2)

https://www.amazon.com/dp/B005X1Y7I2/ref=sxnav_sxwds-bovbp_1_1?pf_rd_m=ATVPDKIKX0DER&pf_rd_p=3514142302&pd_rd_wg=dwiMr&pf_rd_r=QSD9CKVY1G3A790KA0FZ&pf_rd_s=desktop-sx-nav&pf_rd_t=301&pd_rd_i=B005X1Y7I2&pd_rd_w=xaT9A&pf_rd_i=anker+portable+charger&pd_rd_r=cd3a494a-1e50-42e4-a26a-32f23dfb078f&ie=UTF8&qid=1520573113&sr=1

3350mAh, 5V, 1A max current draw phone-charging battery
$15

Product Dimensions	3.7 x 0.9 x 0.9 inches
Item Weight	2.24 ounces
Shipping Weight	2.24 ounces (View shipping rates and policies)
ASIN	B005X1Y7I2
Item model number	AK-A1104011
Batteries	1 Lithium ion batteries required.

Connects to the JTAG port with a micro USB plug

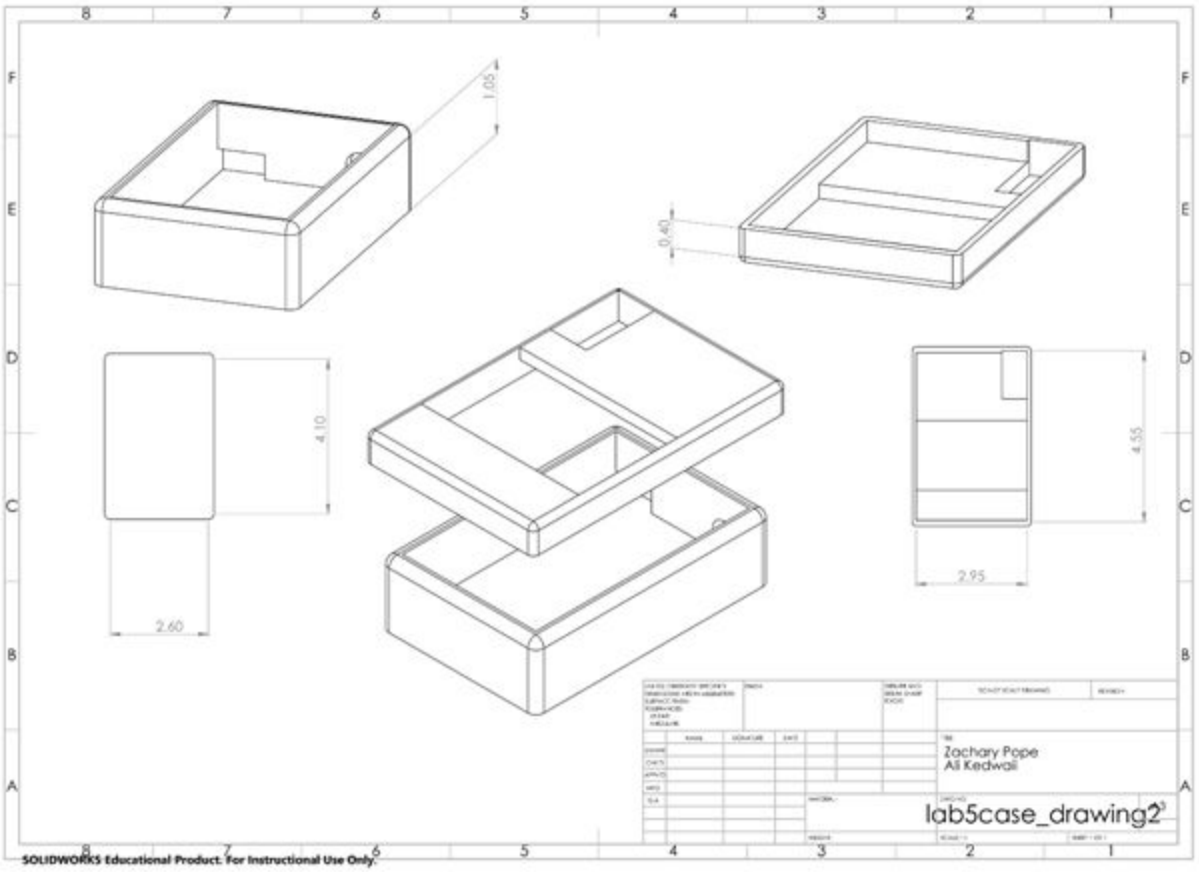
One page description of the box (like Figure 6.2, Preparation 3)

The box is wide enough to fit the board with some wiggle room, and it has an area cut out of the lid to view the screen and press buttons. The JTAG port is also open at the top left of the case, as well as a hole for the speaker wires to come through. As it can be 3D printed, the costs are nothing to negligible. The lid slides off for easy access to the board.

Three pages showing the new component you created and its usefulness (Procedure 3), and an example PCB using it

We used a TI part rather than Ennovation Controls.

Two mechanical drawings (Procedure 9)



Final circuit diagram of the embedded system, SCH file

Uploaded on Canvas

Cardboard mockup of the PCB layout (with top copper/silk on top and bottom copper/silk on bottom)

Showed printouts during demo

C) Software Design none

D) Measurement Data

Bill of Materials (quantity, package type, cost, and supply current) (Procedure 2)

Uploaded to Canvas

Explain how you chose the battery (Preparation 2)

The battery was chosen by considering the amperage needed by the board at maximum current draw (while music is playing). We chose a 3350mAh battery from Amazon because it is relatively cheap, has a max current draw of 1A, and has a lifespan that will allow the circuit to continuously play music for ~28 hours. The size of the battery was also taken into consideration, so we chose a small, portable battery that can be easily attached to the case with adhesive Velcro.

E) Analysis and Discussion (1/2 page maximum)

Explain the testing procedure you would suggest for the system (Procedure 1)

Channel 0: To view the data being sent from the TM4C123 to the TLV5618 DAC, connect a logic analyzer pin to J3.16

Channel 1: To view the analog signal output from the TLV5618 DAC, connect an oscilloscope probe to J3.15
Channel 2: To view the Fss data from the TM4C123, connect a logic analyzer pin to J3.14
Channel 3: To view the reference voltage being applied to the TLV5618 DAC, connect an oscilloscope or DMM probe to J3.13
Channel 4: To view the amplified signal from the TPA731 amplifier, connect an oscilloscope probe to J3.12
Channel 5: To view the SSI clock signal, connect a logic analyzer pin to J3.11
Channel 6: To view the SW1 status, connect a logic analyzer pin to J3.10
Channel 7: To view the SW2 status, connect a logic analyzer pin to J3.09