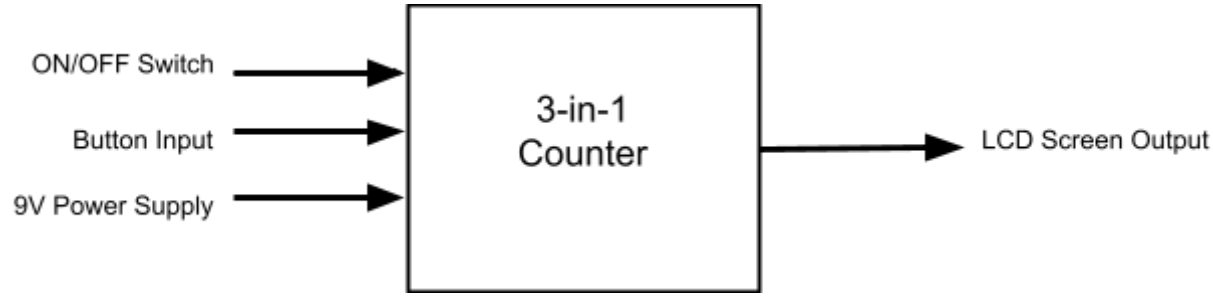
Week 7: Functional Decomposition

Team 3: Celina Wong, Alex Kim, Huibo Yu, Dmytro Prystupa

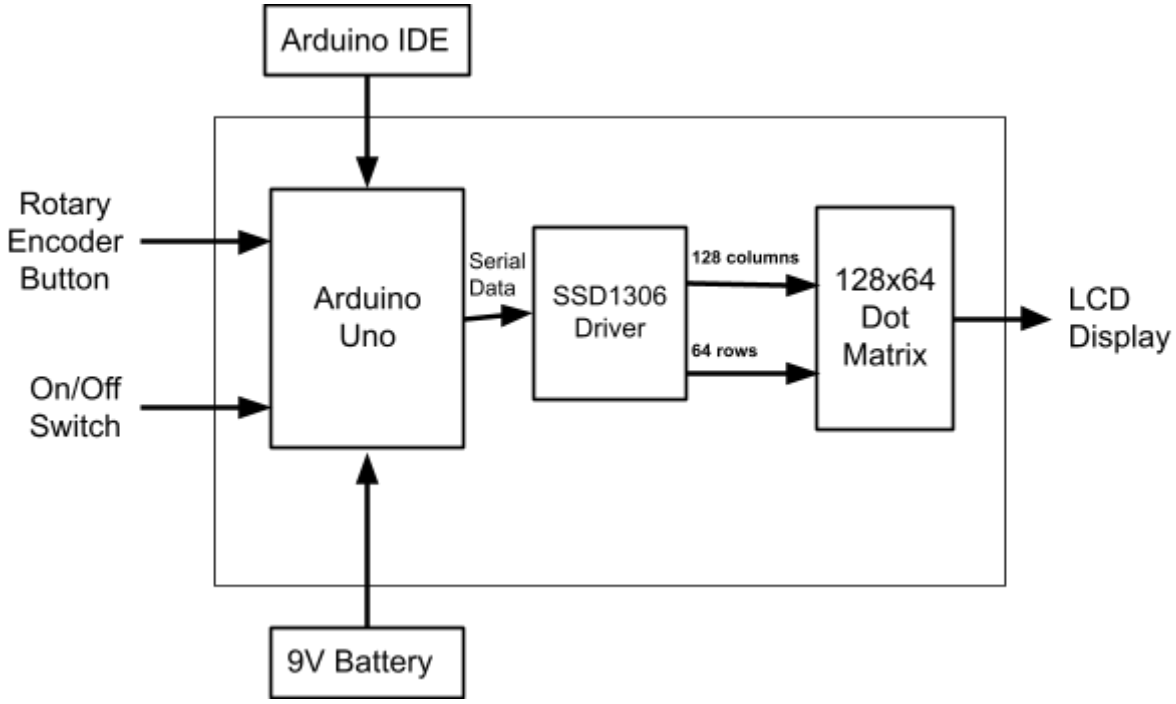
L0 Decomposition



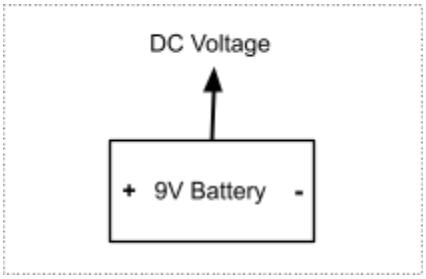
Module	3-in-1 Counter
Inputs	On/Off Switch Button: when pressed power on/off device Button: when pressed, the button will Run/Stop toggle signal 9V Power Supply
Outputs	LCD Screen
Functionality	Device is capable of acting as a counter, stopwatch, and a flappy bird game mode. It will be able to count the number of times the button is pushed and can be cleared to zero. The stopwatch counts the number of seconds after the button is pressed and will stop counting when pushed again (will be able to clear to zero also). Finally, our device will also have a flappy bird game mode for user entertainment.

(continued)

L1 Decomposition

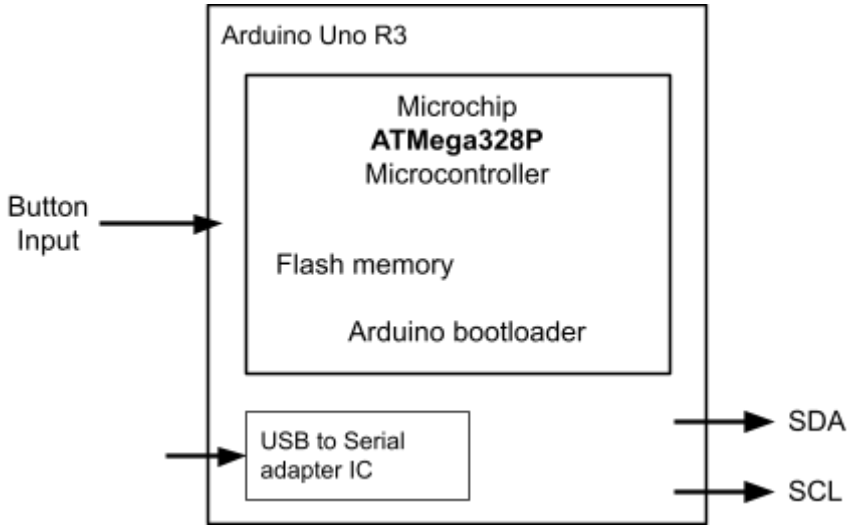


9V Battery: Level 1



Module	9V Battery
Inputs	N/A
Outputs	+/- 9V DC
Functionality	Delivers DC voltage to the Arduino Nano.

Arduino Nano: Level 1



Module	Arduino Nano
Inputs	Main button, on/off switch
Outputs	Serial Data (SDA/SCL)
Functionality	PCBA (printed circuit board assembly) with ATMega328P microcontroller. It has a USB to serial-adapter along with a pre-loaded Arduino program.

SSD1306 Driver: Level 1

Module	SSD1306 Driver
Inputs	Serial Data (SDA/SCL)
Outputs	128x64 Dot Matrix
Functionality	Display controller interfaces with microcontroller to get a visual output.