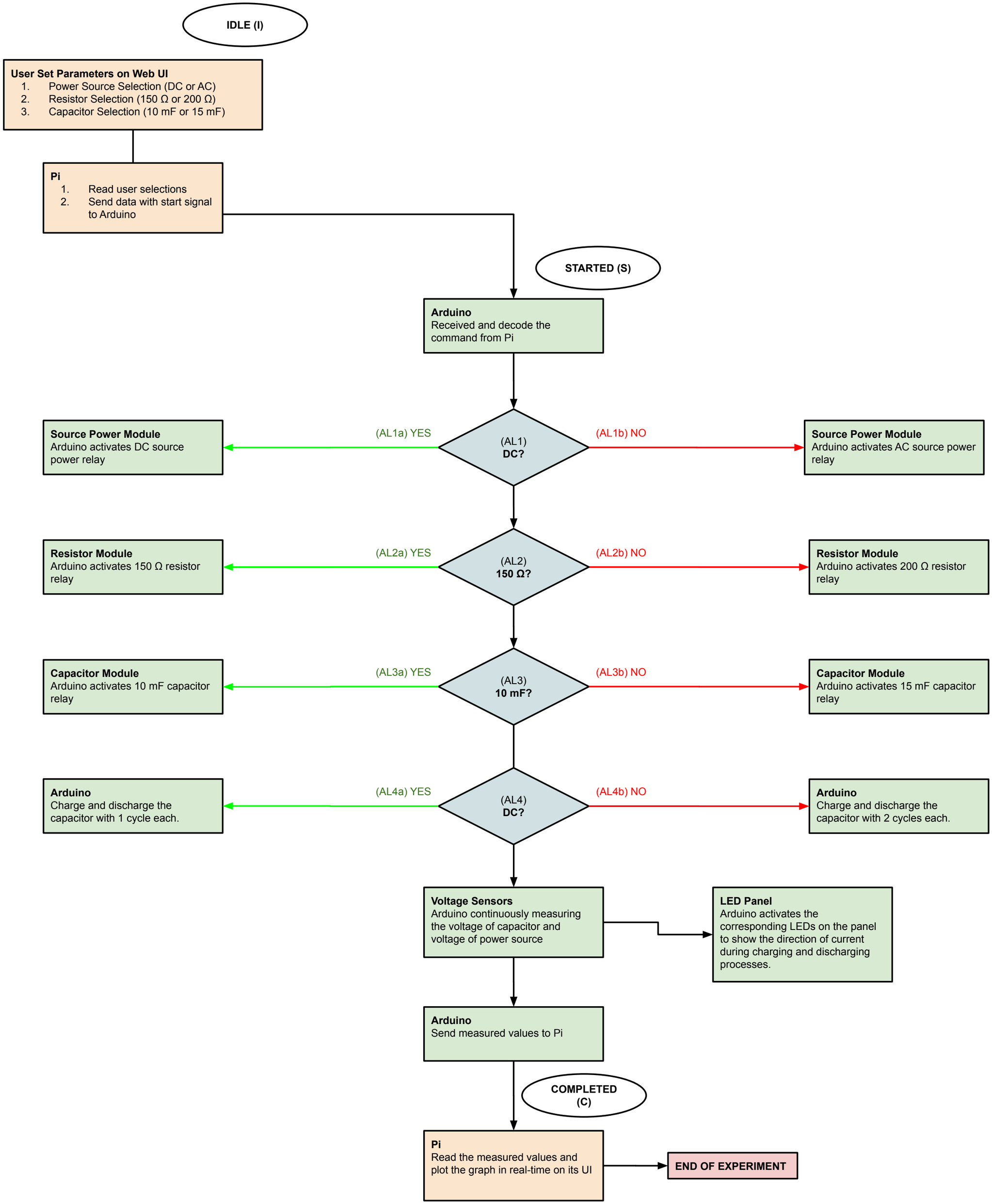
IDLE (I)
User Set Parameters on Web UI
1. Power Source Selection (DC or AC)
2. Resistor Selection (150 Ω or 200 Ω)
3. Capacitor Selection (10 mF or 15 mF)
Pi
1. Read user selections
2. Send data with start signal to Arduino
STARTED (S)
Arduino
Received and decode the command from Pi
(AL1) DC?
(AL1a) YES
Source Power Module
Arduino activates DC source power relay
(AL1b) NO
Source Power Module
Arduino activates AC source power relay
(AL2) 150 Ω?
(AL2a) YES
Resistor Module
Arduino activates 150 Ω resistor relay
(AL2b) NO
Resistor Module
Arduino activates 200 Ω resistor relay
(AL3) 10 mF?
(AL3a) YES
Capacitor Module
Arduino activates 10 mF capacitor relay
(AL3b) NO
Capacitor Module
Arduino activates 15 mF capacitor relay
(AL4) DC?
(AL4a) YES
Arduino
Charge and discharge the capacitor with 1 cycle each.
(AL4b) NO
Arduino
Charge and discharge the capacitor with 2 cycles each.
Voltage Sensors
Arduino continuously measuring the voltage of capacitor and voltage of power source
LED Panel
Arduino activates the corresponding LEDs on the panel to show the direction of current during charging and discharging processes.
Arduino
Send measured values to Pi
COMPLETED (C)
Pi
Read the measured values and plot the graph in real-time on its UI
END OF EXPERIMENT