Power Budget

Team Number:	206
Project Name:	**Modular Motion-and-light sensing control subsystem**
Team Member Names:	**Mihir Patel, Adrian Perez, Zane Brauer**
Version:	**2**

A. List ALL major components (active devices, integrated circuits, etc.) except for power sources, voltage regulators, resistors, capacitors, or passive elements

All Major Components	Component Name	Part Number	Supply Voltage Range	#	Absolute	Total	Unit
	PIC18F57Q43 Microcontroller	PIC18F57Q43	1.8V - 5.5V	1	500	500	mA
	Motion Sensor (LSI/CSI)	LS6501LP	3V - 5V	1	5	5	mA
	Motor (Pololu - 2371)	Pololu 2371 Motor	3V - 9V	1	550	550	mA
	H-bridge Motor Driver	FAN8100N	5V - 20V	1	100	100	mA
	Op-Amp (MCP6004)	MCP6004	2.7V - 6.0V	1	0.4	0.4	mA
	LED Status Indicators	Generic Red	5V	1	20	20	mA
	5V Regulator	LM7805	7V - 35V	1	1500	1500	mA

B. Assign each major component above to ONE power rail below. Try to minimize the number of different power rails in the design.

+5V Power Rail	Component Name	Part Number	Supply Voltage Range	#	Absolute	Total	Unit
	PIC18F57Q43 Microcontroller	PIC18F57Q43	1.8V to 5.5V	1	500	500	mA
	Motion Sensor	LS6501LP	3V - 5.5V	1	5	5	mA
	MCP6004 Op-Amp	MCP6004	2.7V - 6.0V	1	0.4	0.4	mA
	LED	Generic Red	5V	1	20	20	mA
	H-bridge	FAN8100N	5V - 20V	1	100	100	mA
	DC Motor (Gearmotor)	2371 - Pololu	3V - 9V	1	550	550	mA
					Subtotal	1175.4	mA
					Safety Margin	25%	
					Total Current Required on +5V Rail	1469.25	mA
c2. Regulator or Source Choice	+5V Regulator	LM7805	7V - 35V	1	1500	1500	mA
					Total Remaining Current Available on +5V Rail	30.75	mA

C. For each power rail above, select a specific voltage regulator using the same process as for major component selection. Confirm that the Total Remaining

Rail	Component Name	Part Number	Supply	#	Absolute	Total	Unit
+5V Power Rail	+5V Regulator	LM7805	7V - 35V	1	1500	1469.25	mA
					Subtotal	30.75	mA

D. Select a specific external power source (wall supply or battery) for your system, and confirm that it can supply all of the regulators for all of the power rails

External Power Source 1	Component Name	Part Number	Supply	Output	Absolute	Total	Unit
Power Source 1 Selection	Plug-in Wall Supply	Amazon B09ZTKTLGW	110VAC	12V DC	5000	5000	mA
Power Rails Connected to External Power Source 1	+5V Regulator	LM7805	12V -> 5V	+5V	1469.25	1469.25	mA
					Total Remaining Current Available on External Power Source 1	3530.75	mA

Notes

External Supply Voltage should be determined by the dropout voltage for highest-voltage regulator (e.g., +14V for a +12V regulator).
If you have multiple units in your design (e.g., a base unit and remote unit) then you need a separate power budget for each unit