Power Budget

Team Number:	Team 209
Project Name:	**Smart Door Sensor**
Team Member Names:	**Bryce, Mathew, Andrew, Dylan**
Version:	**01**

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	SupplyVoltageRange	Qty.	AbsoluteMaximumCurrent (mA)	TotalCurrent(mA)	Unit
	PIC18F57Q43 Curiosity Nano	DM164150	+1.8V - 5.1V	1	100	100	mA
	Ultrasonic Sensor	URM37	+3.3V - 5.5V	1	20	20	mA
	Op-Amp	MCP6004-I/P	+1.8V - 6V	1	0.1	0.1	mA
	+5V Voltage Regulator	L7805CV	+5V - 18V	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.

+12V Power Rail	Component Name	Part Number	SupplyVoltageRange	Qty.	AbsoluteMaximumCurrent (mA)	TotalCurrent(mA)	Unit
	N/A	N/A	N/A	N/A	N/A	N/A	mA
					Subtotal	0	mA
					Safety Margin	25%	
					Total Current Required on +12V Rail	0	mA
c1. Regulator or Source Cho	+12V regulator	N/A	N/A	N/A	N/A	N/A	mA
					Total Remaining Current Available on +12V Rail	#VALUE!	mA

+5V Power Rail	Component Name	Part Number	SupplyVoltageRange	Qty.	AbsoluteMaximumCurrent (mA)	TotalCurrent(mA)	Unit
	PIC18F57Q43 Curiosity Nano	DM164150	+1.8V - 5.1V	1	100	100	mA
	Ultrasonic Sensor	URM37	+3.3V - 5.5V	1	20	20	mA
	Op-Amp	MCP6004-I/P	+1.8V - 6V	1	0.1	0.1	mA
					Subtotal	120.1	mA
					Safety Margin	25%	
					Total Current Required on +5V Rail	150.125	mA
c2. Regulator or Source Cho	+5V Regulator	L7805CV	+5V - 18V	1	1500	1500	mA
					Total Remaining Current Available on +5V Rail	1349.875	mA

-5V Power Rail	Component Name	Part Number	SupplyVoltageRange	Qty.	AbsoluteMaximumCurrent (mA)	TotalCurrent(mA)	Unit
	N/A	N/A	N/A	N/A	N/A	N/A	mA
					Subtotal	0	mA
					Safety Margin	25%	
					Total Current Required on -5V Rail	0	mA
c3. Regulator or Source Cho	-5V Regulator	N/A	N/A	N/A	N/A	N/A	mA
					Total Remaining Current Available on -5V Rail	#VALUE!	mA

+3.3V Power Rail	Component Name	Part Number	SupplyVoltageRange	Qty.	AbsoluteMaximumCurrent (mA)	TotalCurrent(mA)	Unit
	N/A	N/A	N/A	N/A	N/A	N/A	mA
						0	mA
					Subtotal	0	mA
					Safety Margin	25%	
					Total Current Required on +3.3V Rail	0	mA
c4. Regulator or Source Cho	+3.3V low-dropout regulator	N/A	N/A	N/A	N/A	N/A	mA

					Total Remaining Current Available on 3.3V Rail	#VALUE!	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 Current Available on each rail above is not negative.

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 simultaneously. If you need multiple power sources, list

External Power Source 1	**Component Name**	**Part Number**	**SupplyVoltageRange**	**Output Voltage**	**AbsoluteMaximumCurrent (mA)**	**TotalCurrent(mA)**	**Unit**
Power Source 1 Selection	Plug-in Wall Supply	L6R36-090	264VAC	+9V - 36V	5000	5000	mA
Power Rails Connected to External Power Source 1	+12V regulator	N/A	N/A	N/A	N/A	N/A	mA
	+5V Regulator	L7805CV	+5V - 18V	1	1500	1500	mA
	+3.3V low-dropout regulator	N/A	N/A	N/A	N/A	N/A	mA
				Total Remaining Current Available on External Power Source 1		3500	mA

External Power Source 2	**Component Name**	**Part Number**	**SupplyVoltageRange**	**Output Voltage**	**AbsoluteMaximumCurrent (mA)**	**TotalCurrent(mA)**	**Unit**
Power Source 2 Selection	N/A	N/A	N/A	N/A	N/A	N/A	mA
Power Rails Connected to External Power Source 2	-5V Regulator	N/A	N/A	N/A	N/A	N/A	mA
				Total Remaining Current Available on External Power Source 2		#VALUE!	mA

E. Calculate Battery Life (if applicable). For each battery, also check the worst-case lifetime of the battery by indicating the capacity in mAh.

	Component Name	**Part Number**	**SupplyVoltageRange**		**Capacity(mAh)**	**RequiredByRegulators**	
	Battery	N/A	N/A	N/A	N/A	N/A	
					Battery Life	#VALUE!	hours

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