

Solar Panels Cleaner Invention

Checkpoint 2

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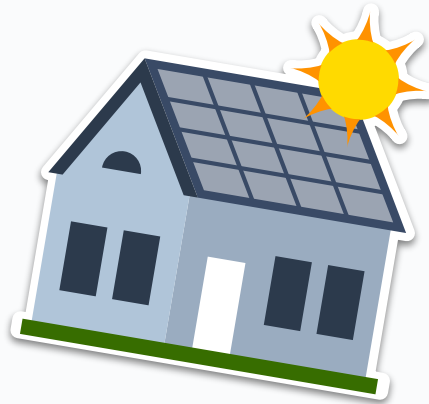
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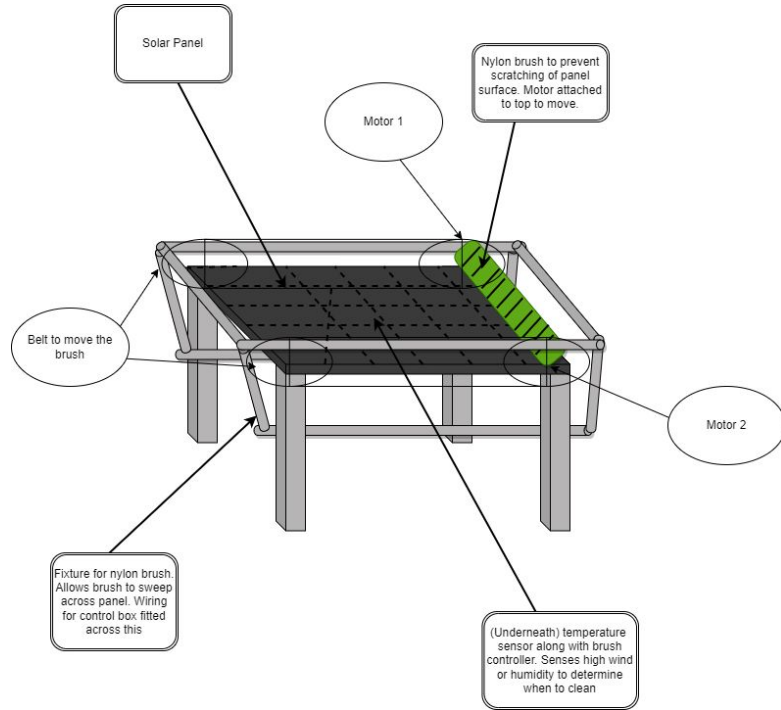




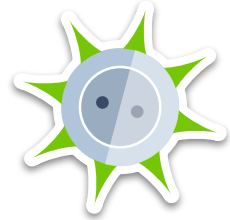
Selected Design

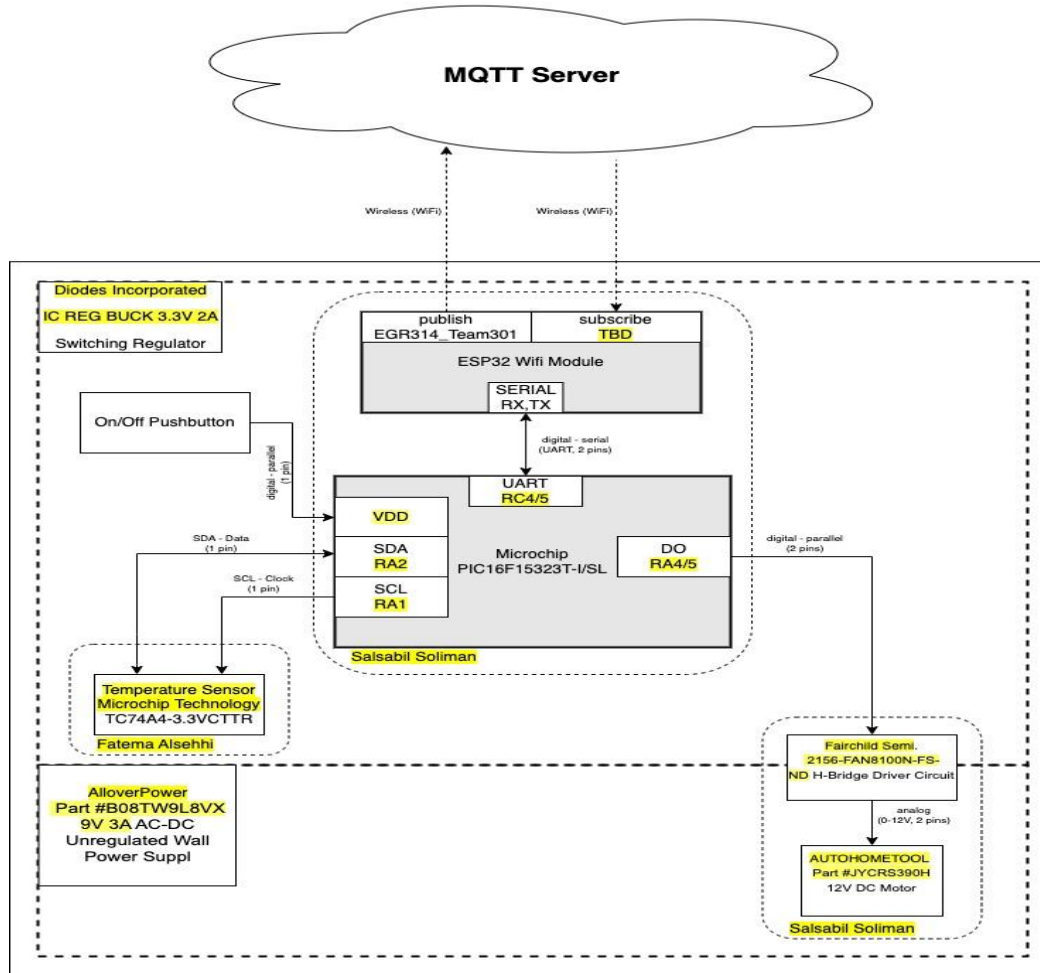


Solar Panel Cleaner



- All features
- Simplicity





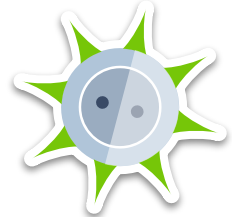
Block Diagram




- 9V to 3.3V
- H-bridge to motor (RA4,RA5)
- Temperature sensor with amplifying and functioning (RA1,RA2)



Component Selection

- Two main subsystems: Temperature sensor, Micro-controller
- Extra parts for a fully functioning Project
- Chosen based on three categories, price, quality, availability



Component	Pros	Cons
 <p>Temperature Sensor Digital. Part No. TC74A4-3.3VCTTR Price: 1.09\$</p>	<ul style="list-style-type: none"> • It's digital • Well manufactured • Famous in the industry 	<ul style="list-style-type: none"> • Limited temperature range • It can heat itself • Hard to find
 <p>Mini motor Part No. B01M58POHF Price: 6\$</p>	<ul style="list-style-type: none"> • Have a wide range of voltage • Not expensive • Run on low current .24A 	<ul style="list-style-type: none"> • Sold by amazon • Require a motor driver • Bearings wearing out quickly
 <p>Brush DC Motor Controller Part No. IFX9201SGAUMA1 Price: 4.88\$/each</p>	<ul style="list-style-type: none"> • Lowest price • Previous experience with FAN8100N • Drive up to 3A 	<ul style="list-style-type: none"> • Power efficiency • Not available in peralta lab • Only up to 9v of supplying and loading voltage





DC Power Connectors
Part No.
PJ-075DH-SMT-TR
Price: 1.15\$

- Low cost
- Rated for 24VDC
- Small footprint
- Rated for 3.5A

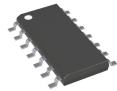
- Smaller outer contact



IC REG BUCK 3.3V 2A
Part No.
AP63203WU-7
Price: 0.91\$

- Cheaper cost
- Good 2A output
- Smaller footprint

- Operating temperature range is lower



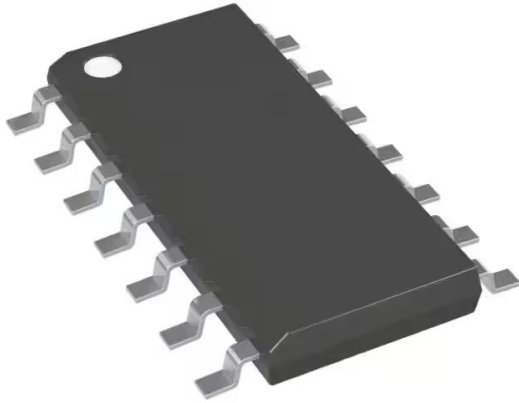
PIC16F15323T-I/SL
Part No.
PIC16F15323T-I/SLTR-ND
Price: 0.99\$

- High performance
- Low power consumption
- Low cost

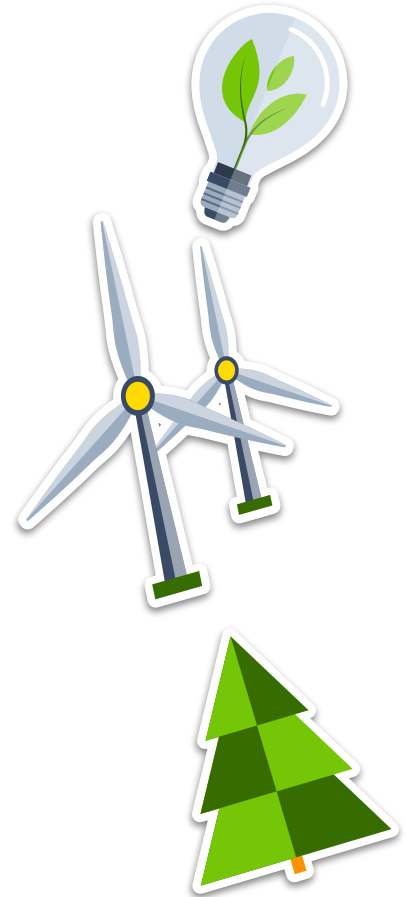
- Limited availability of third-party libraries
- Limited peripheral options



Microcontroller Selection



- It has the best quality
- It has all the features we are looking for
- In -stock and fast delivery
- 8 Bit , 1 i2c pin, 1 SPI, 4 PWM, 2 UART



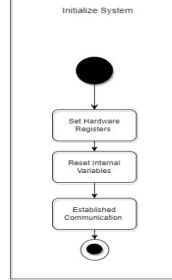
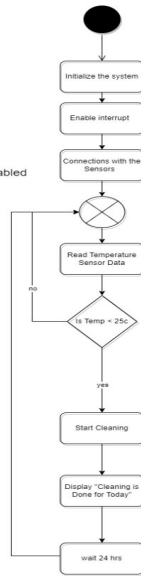
Software Proposal

- Main Loop
- Initialize System
- Start Cleaning
- Process Messages

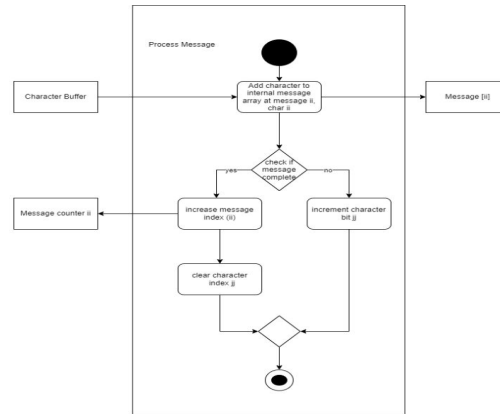
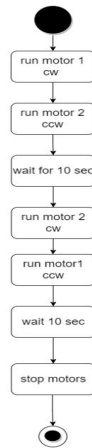


Main loop

interrupt enabled



start cleaning



Hardware Proposal

Subsystems

- Micro-controller)
(ESP32 plug-in
- Temperature sensor
(I2C)

