Dulovic Smart Home

The idea is to be able to interact with various sensors and actuators, store sensor data in a database for a certain period of time, and present statistics and controls on a web page.

# My Controller Webserver

* Using “my controller” from mycontroller.org. It is Java based, has a Java H2 database.
* Installed in on the WD MyCloud, had to install Java too.
* Has a built-in MQTT client.

# WD MyCloud

* Had to install Java into the share/opt/
* Need a proper SSL certificate for it to communicate with Amazon’s Alexa

# Gateway

* Using W5100 Arduino shield and Arduino Uno.
* Need to somehow power it from MyCloud or elsewhere.

# Nodes

* All the nodes are Arduino Nano, with [NRF24L01](MySnippets/Radio%20-%20NRF24L01/NRF24L01.fzz) Radios. They are powered using old (5v-9v) adapters.
* Try to power them using the USB mini-B, for ease of re-programming.
* Look into OTA updates.
* Nodes should consist of multiple PCBs. The Main node should be just the Arduino, the radio and some connectors.
* The connectors can be DuPont (for sensors) and screw type (for +5VAC and GND), depending on the component on the other side. An RJ45 or RJ11 connector can also be used to link 2 PCBs.
* The radio cables should be done one by one, and laid out next to each other. Use tiny strips of masking tape to hold them in place.

## [Office](_0_OfficeGateway/_0_OfficeGateway.fzz)

**Placement** - The Gateway should be will be near the router, and if possible powered by the MyCloud. The radio can be mounted on the box that will hold the Uno and W5100.

**Power Supply** – From a USB, perhaps the WD MyCloud

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | [**ID**](WorkingNodes/node00_Office/node00_Office.ino) | **Name** | **Cable length** | **Cable type** | [**Fritzing**](WorkingNodes/node00_Office/node00_Office.fzz) |
| 1 |  | Arduino UNO |  |  |  |
| 1 |  | W5100 Ethernet Shield |  |  |  |
| 1 |  | NRF24L01 Radio |  |  |  |
| 1 | [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Relay (Projector/Music) | 100 cm | 3 core | 🗹 |
| 1 | [S1](MySnippets/Sensors/S1_Reed/S1_Reed.ino) | Reed (Door Sensor) | 100 cm | 2 core | 🗹 |

**Note** - This is the actual gateway acting as a node. It is an Arduino UNO with a W5100 Ethernet shield. The radio is connected differently, and is attached to the board using DuPont cables.

**Ideas**

* add another reed switch
* remove all sensors to a dedicated arduino
* encrypt all NRF24 comms

## [Front Door](_1_FrontDoor/_1_FrontDoor.fzz)

**Placement** – near the light switch, where there is power.

**Power Supply** – From a wall wart, perhaps the one in the living room

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | [**ID**](WorkingNodes/node01_FrontDoor/node01_FrontDoor.ino) | **Name** | **Cable length** | **Cable type** | [**Fritzing**](WorkingNodes/node01_FrontDoor/node01_FrontDoor.fzz) |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Relay (Front Door Lights) | 20 cm | 3 core | 🗹 |
| 1 | [A2](MySnippets/Actuators/A2_DoorLock/A2_DoorLock.ino) | Lock (Front Door Electronic Lock) | 150 cm | 2 core | 🗷 |
| 1 | [S1](MySnippets/Sensors/S1_Reed/S1_Reed.ino) | Reed (Front Door Open) | 100 cm | 2 core | 🗷 |
| 1 | [S4](MySnippets/Sensors/S4_MotionDetector/S4_MotionDetector.ino) | PIR (Front Door Motion Detector) | 20 cm | 3 core | 🗹 |
| 1 |  | Wall switch (SPST) | 10 cm | 2 core | 🗹 |

**Ideas**

* add another reed switch for the garden gate
* work with lock
* reed
* improve PIR reliability
* add a DHT11
* secret knock lock ? :)

## BBQ Area

**Placement** - on the gazebo horizontal beam, near the power supply.

**Power Supply** – From a wall wart, perhaps pull a cable up to the gazebo roof.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | [**Fritzing**](WorkingNodes/node02_BbqArea/node02_BbqArea.fzz) |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Relay (BBQ Light) | 100 cm | 3 core | 🗷 |
| 1 | [A3](MySnippets/Actuators/A3_IRtx/A3_IRtx.ino) | RGB Light IR Transmitter | 10 cm | 3 core | 🗷 |
| 1 | [S3](MySnippets/Sensors/S3_PressureSensor/S3_PressureSensor.ino) | Barometric Pressure and Temperature | 10 cm | 4 core | 🗹 |
| 1 | [S4](MySnippets/Sensors/S4_MotionDetector/S4_MotionDetector.ino) | PIR (Motion Detector in BBQ Area) | 30 cm | 3 core | 🗷 |
| 1 | [S7](MySnippets/Sensors/S7_WaterTemperature/S7_WaterTemperature.ino) | Water Temperature | 300 cm | 3 core | 🗷 |
| 1 | [S8](MySnippets/Sensors/S8_UV/S8_UV.ino) | UV Sensor | 50 cm | 3 core | 🗷 |
| 1 | [S9](MySnippets/Sensors/S9_PH/S9_PH.ino) | PH Sensor | 300 cm | Bnc | 🗷 |
| 1 | S10 | ORP Sensor | 300 cm | Bnc | 🗷 |
| 1 |  | Wall switch (SPST) | 10 cm | 2 core | 🗷 |
|  |  |  |  |  |  |

**Ideas**

* add another reed switch for the garden gate
* Move the BBQ spotlight, set up so it can switch manually as well as remote.
* Add a white strip to the BBQ gazebo roof

## Patio

**Placement** – near the ceiling.

**Power Supply** – From a wall wart, connected to fan/spotlight mains.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | [**Fritzing**](WorkingNodes/node03_Patio/node03_Patio.fzz) |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Relay (Spotlight) | 5 cm | 3 core | 🗷 |
| 1 | [S2](MySnippets/Sensors/S2_DHT11/S2_DHT11.ino) | DHT11 ( Temperature & Humidity sensor) | 5 cm | 3 core | 🗹 |
| 1 | A4 | DC motor (Curtain) | 500 cm | 3 core | 🗷 |
| 1 | A4 | DC motor (Projector) | 200 cm | 3 core | 🗷 |

**Ideas**

* add a single motor for both curtain and projector, use ratio gears.
* Make projector disappear into ceiling
* Fan and Light control with RF433 ?
* Raise and lower spotlight?

## Jacuzzi

**Placement** – near the light switch, where there is power.

**Power Supply** – From a wall wart, near the breaker box.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | [**Fritzing**](WorkingNodes/node04_Jacuzzi/node04_Jacuzzi.fzz) |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | [A14](MySnippets/Actuators/A14_MultiRelay/A14_MultiRelay.ino) | 4 channel Relay | 10 cm | 6 core | 🗹 |
| 1 | S11 | Weight sensor (for Gas bottle) |  |  | 🗷 |

**Ideas**

* Use a stretch resistor for a tilted bottle?
* Need a chlorine dispenser
* How about a nice smelling salts dispenser

## Water Pump

**Placement** – on the back wall.

**Power Supply** – From a wall wart, near the pump power.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | [**Fritzing**](WorkingNodes/node05_Waterpump/node05_Waterpump.fzz) |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 2 | [A12](MySnippets/Actuators/A12_MultiRelay/A12_MultiRelay.ino) | Relay (Lights & Pump) | 100 cm | 4 core | 🗷 |
| 1 | [S4](MySnippets/Sensors/S4_MotionDetector/S4_MotionDetector.ino) | PIR motion | 150 cm | 3 core | 🗷 |
| 1 | [S6](MySnippets/Sensors/S6_VAC/S6_VAC.ino) | VAC sensor (pump working?) | 100 cm | 3 core | 🗷 |
| 1 | S11 | Weight sensor (for Gas bottle) |  |  | 🗷 |

**Ideas**

* The pump should be OFF at night
* The PIR should only fire the lights from dusk til dawn

## Garage

**Placement** – on wall near kitchen.

**Power Supply** – From a wall wart.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | [**Fritzing**](WorkingNodes/node06_Garage/node06_Garage.fzz) |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Relay (Overhead Lights) | 20 cm | 3 core | 🗷 |
| 1 | [S1](MySnippets/Sensors/S1_Reed/S1_Reed.ino) | Reed switch (gate) | 300 cm | 2 core | 🗷 |
| 1 | [S4](MySnippets/Sensors/S4_MotionDetector/S4_MotionDetector.ino) | PIR motion | 50 cm | 3 core | 🗷 |
| 1 | [S13](MySnippets/Sensors/S13_UltraSonic/S13_UltraSonic.ino) | Ultrasonic(water tank) | 300 cm | 4 core | 🗷 |
| 1 | [S13](MySnippets/Sensors/S13_UltraSonic/S13_UltraSonic.ino) | Ultrasonic distance (car) | 50 cm | 4 core | 🗷 |

**Ideas**

* The PIR should be located on (or near) the fan
* The Relay should be inside the fan
* The PIR should only fire the lights from dusk til dawn
* The USS for car detection should be on (or near) the fan

## Kitchen

**Placement** – near breakers.

**Power Supply** – From a wall wart, near the breaker box.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | [**Fritzing**](WorkingNodes/node07_Kitchen/node07_Kitchen.fzz) |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Relay (Pantry LED Lights) | 500 cm | 3 core | 🗷 |
| 1 | [S1](MySnippets/Sensors/S1_Reed/S1_Reed.ino) | Reed switch (pantry) | 500 cm | 2 core | 🗷 |
| 1 | [S1](MySnippets/Sensors/S1_Reed/S1_Reed.ino) | Reed switch (door) |  |  | 🗷 |
| 1 | [S2](MySnippets/Sensors/S2_DHT11/S2_DHT11.ino) | DHT11 ( Temperature & Humidity sensor) | 5 cm | 3 core | 🗷 |
| 1 | [S14](MySnippets/Sensors/S14_Gas/S14_Gas.ino) | MQ2 Smoke/Gas sensor |  |  | 🗷 |

**Ideas**

* The Smoke sensors should be under the cupboard
* The Arduino should be inside the cupboard
* The lines to the pantyr can be combined and go over the ceiling

## TV Room

**Placement** – near breaker box.

**Power Supply** – From breaker box?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | [**Fritzing**](WorkingNodes/node08_TVroom/node08_TVroom.fzz) |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Relay (Airconditioning) | 100 cm | 3 core | 🗷 |
| 1 | [S2](MySnippets/Sensors/S2_DHT11/S2_DHT11.ino) | DHT11 ( Temperature & Humidity sensor) | 5 cm | 3 core | 🗷 |
| 1 | [S4](MySnippets/Sensors/S4_MotionDetector/S4_MotionDetector.ino) | PIR motion (hallway) |  |  | 🗷 |

**Ideas**

* The PIR should be in the hallway

## Master Bedroom

**Placement** – near light switch.

**Power Supply** – From light switch?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | **Fritzing** |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Relay (Airconditioning) | 100 cm | 3 core | 🗷 |
| 1 | [S2](MySnippets/Sensors/S2_DHT11/S2_DHT11.ino) | DHT11 ( Temperature & Humidity sensor) | 5 cm | 3 core | 🗷 |

## Kids Bedroom

**Placement** – near light switch.

**Power Supply** – From light switch?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | **Fritzing** |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Relay (Airconditioning) | 100 cm | 3 core | 🗷 |
| 1 | [S2](MySnippets/Sensors/S2_DHT11/S2_DHT11.ino) | DHT11 ( Temperature & Humidity sensor) | 5 cm | 3 core | 🗷 |

## Guest Bedroom

**Placement** – near light switch.

**Power Supply** – From light switch?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | **Fritzing** |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Relay (Airconditioning) | 100 cm | 3 core | 🗷 |
| 1 | [S2](MySnippets/Sensors/S2_DHT11/S2_DHT11.ino) | DHT11 ( Temperature & Humidity sensor) | 5 cm | 3 core | 🗷 |

## Workshop

**Placement** – near light switch.

**Power Supply** – From light switch?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | **Fritzing** |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
|  | [S6](MySnippets/Sensors/S6_VAC/S6_VAC.ino) | VAC Sensor (Inverter working?) |  |  | 🗷 |

## Utility

**Placement** – mobile.

**Power Supply** – battery powered.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | **Fritzing** |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Relay (Airconditioning) |  |  |  |
|  |  |  |  |  |  |
| 1 | [S6](MySnippets/Sensors/S6_VAC/S6_VAC.ino) | VAC Sensor (Measure power?) |  |  |  |
| 1 | [S16](MySnippets/Sensors/S16_IRrx/InfraRedReceiver.ino) | IR rx |  |  |  |
| 1 | [S19](libraries/ADulovic/S19.h) | Sound sensor |  |  |  |

## Generator

**Placement** – near the generator.

**Power Supply** – From a wall wart, near the breaker box.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qty** | **ID** | **Name** | **Cable length** | **Cable type** | **Fritzing** |
| 1 |  | Arduino Nano V3.0 (ATmega328P) USB |  |  |  |
| 1 |  | NRF24L01+ Radio |  |  |  |
| 1 |  | PCB, 4x6cm, 20x14 pins |  |  |  |
| 1 | A1 | Relay (Automatic starter) |  |  |  |
|  |  | 3 core cable |  |  |  |
| 1 | S6 | VAC sensor (Street power?) |  |  |  |
| 1 | S3 | Battery Voltage meter |  |  |  |

No idea how to flip the breakers. Might have to buy new ones…

# My Snippets

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Name** | **Type** | **Variables** | **Volts** |
| [R](MySnippets/Radio/NRF24L01/NRF24L01.h) | NRF2401+ |  |  | 3.3v |
| [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Single Relay | S\_BINARY | V\_STATUS | 5V |
| [A12](MySnippets/Actuators/A12_MultiRelay/A12_MultiRelay.ino) | Multi Relay (2ch) | S\_BINARY | V\_STATUS | 5V |
| [A14](MySnippets/Actuators/A14_MultiRelay/A14_MultiRelay.ino) | Multi Relay (4ch) | S\_BINARY | V\_STATUS | 5V |
| [A2](MySnippets/Actuators/A2_DoorLock/A2_DoorLock.ino) | DC Motor (Door Lock) | S\_LOCK | V\_LOCK\_STATUS | 5V |
| [A3](MySnippets/Actuators/A3_InfraRedTransmitter/A3_InfraRedTransmitter.ino) | IR Tx | S\_IR | V\_IR\_SEND | 5V |
| [A4](MySnippets/Actuators/A4_Motor/A4_Motor.ino) | DC Motor (Curtains) | S\_COVER | V\_UP, V\_DOWN, V\_STOP, V\_PERCENTAGE |  |
| [A5](MySnippets/Actuators/A5_PassiveBuzzer/A5_PassiveBuzzer.ino) | Passive Buzzer | S\_BINARY | V\_STATUS | 5V |
| [A6](MySnippets/Actuators/A6_DimmerLED/A6_DimmerLED.ino) | Dimmer LED | S\_DIMMER | V\_STATUS, V\_PERCENTAGE |  |
| A7 |  |  |  |  |
| A8 |  |  |  |  |
| [S1](MySnippets/Sensors/S1_Reed/S1_Reed.ino) | Reed switch (door/window) | S\_DOOR | V\_TRIPPED |  |
| [S2](MySnippets/Sensors/S2_DHT11/S2_DHT11.ino) | Humidity & Temperature | S\_HUM / S\_TEMP | V\_HUM / V\_TEMP | 5V |
| [S3](MySnippets/Sensors/S3_PressureSensor/S3_PressureSensor.ino) | Barometric & Temperature | S\_BARO / S\_TEMP | V\_PRESSURE, V\_FORECAST / V\_TEMP |  |
| [S4](MySnippets/Sensors/S4_MotionDetector/S4_MotionDetector.ino) | PIR Motion switch | S\_MOTION | V\_TRIPPED | 5V |
| [S5](MySnippets/Sensors/S5_LightMeter/S5_LightMeter.ino) | PV Light sensor | S\_LIGHT\_LEVEL | V\_LIGHT\_LEVEL , V\_LEVEL | 5V |
| [S6](MySnippets/Sensors/S6_VAC/S6_VAC.ino) | VAC Sensor | S\_POWER | V\_WATT, V\_KWH |  |
| [S7](MySnippets/Sensors/S7_WaterTemperature/S7_WaterTemperature.ino) | Water Temperature sensor | S\_WATER\_QUALITY | V\_TEMP |  |
| [S8](MySnippets/Sensors/S8_UV/S8_UV.ino) | UV sensor | S\_UV | V\_UV |  |
| S9 | PH sensor | S\_WATER\_QUALITY | V\_PH |  |
| S10 | ORP sensor | S\_WATER\_QUALITY | V\_ORP |  |
| S11 | Weight sensor | S\_WEIGHT | V\_WEIGHT |  |
| S12 | Battery Voltage sensor | S\_MULTIMETER | V\_VOLTAGE, V\_CURRENT |  |
| [S13](MySnippets/Sensors/S13_UltraSonic/S13_UltraSonic.ino) | Ultrasonic Distance sensor | S\_DISTANCE | V\_DISTANCE |  |
| [S14](MySnippets/Sensors/S14_Gas/S14_Gas.ino) | Gas switch | S\_AIR\_QUALITY | V\_LEVEL |  |
| [S15](MySnippets/Sensors/S15_Smoke/S15_Smoke.ino) | Smoke switch | S\_SMOKE | V\_TRIPPED |  |
| [S16](MySnippets/Sensors/S16_IRrx/InfraRedReceiver.ino) | IR Rx | S\_IR | V\_IR\_RECEIVE |  |
| S17 | Water Level | S\_WATER\_LEAK | V\_TRIPPED |  |
| S18 | Hall | S\_DOOR | V\_TRIPPED |  |
| [S19](libraries/ADulovic/S19.h) | Sound sensor | S\_SOUND | V\_LEVEL (in dB) |  |

# Datasheets, Pinouts and prices

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Name** |  | **Model / Datasheet** | **Amazon** | **Pinouts** | **Links** | **#** |
|  | Arduino Nano V3.0 |  | [TE359](ATmega328P-ATMEL.pdf) | [4.40](http://a.co/6qtxba0) |  |  | 14 |
| [R](MySnippets/Radio/NRF24L01/NRF24L01.h) | Radio | 🗹 | [NRF2401+](file:///C:\Users\Aleksandar\Documents\Arduino\MySnippets\Radio\NRF24L01\nRF24L0Plus.pdf) | [1.60](http://a.co/5J1dNta) | [9,10,11,12,13](MySnippets/Radio/NRF24L01/pins.png) |  | 16 |
| [A1](MySnippets/Actuators/A1_SingleRelay/A1_SingleRelay.ino) | Single Relay | 🗹 | [SRD-05VDC-SL-C](file:///C:\Users\Aleksandar\Documents\Arduino\MySnippets\Actuators%20(Digital%20Output)\A1_SingleRelay\SONGLE-SRD-05VDC-SL-C.pdf) | [3.30](http://a.co/6J04nKC) | 1 |  | 11 |
| [A12](MySnippets/Actuators/A12_MultiRelay/A12_MultiRelay.ino) | Multi Relay (2ch) | 🗹 | [SRD-05VDC-SL-C](file:///C:\Users\Aleksandar\Documents\Arduino\MySnippets\Actuators%20(Digital%20Output)\A1_SingleRelay\SONGLE-SRD-05VDC-SL-C.pdf) | [7.32](http://a.co/0vDFMIg) | 2 | [h1](http://kookye.com/2016/08/01/smart-home-sensor-kit-for-arduinoraspberry-pi/) | 1 |
| [A14](MySnippets/Actuators/A14_MultiRelay/A14_MultiRelay.ino) | Multi Relay (4ch) | 🗹 | [SRD-05VDC-SL-C](file:///C:\Users\Aleksandar\Documents\Arduino\MySnippets\Actuators%20(Digital%20Output)\A1_SingleRelay\SONGLE-SRD-05VDC-SL-C.pdf) | [7.00](http://a.co/ea46Ux2) | 4 |  | 1 |
| [A2](MySnippets/Actuators/A2_DoorLock/A2_DoorLock.ino) | DC Motor (Door Lock) | 🗷 | [92640-001](MySnippets/Actuators/A2_DoorLock/92640-001.pdf) | [40.00](http://a.co/1FTVN8m) | 2 | [h1](http://www.instructables.com/id/Control-a-Schlage-electronic-deadbolt-with-an-ardu/), [h2](http://www.robotroom.com/BipolarHBridge.html) | 1 |
| [A3](MySnippets/Actuators/A3_InfraRedTransmitter/A3_InfraRedTransmitter.ino) | IR Tx | 🗹 |  | [37 kit](http://a.co/7OqFMaa) | 1 | [h1](https://learn.adafruit.com/using-an-infrared-library/sending-ir-codes) | 1 |
| [A4](MySnippets/Actuators/A4_Motor/A4_Motor.ino) | DC Motor (Curtains) | 🗷 |  |  |  |  | 1 |
| [A5](MySnippets/Actuators/A5_PassiveBuzzer/A5_PassiveBuzzer.ino) | Passive Buzzer | 🗹 |  | [kit](http://a.co/7OqFMaa) |  |  | 0 |
| [A6](MySnippets/Actuators/A6_DimmerLED/A6_DimmerLED.ino) | Dimmer LED | 🗷 |  | [kit](http://a.co/7OqFMaa) |  |  | 0 |
| A7 |  |  |  |  |  |  |  |
| A8 |  |  |  |  |  |  |  |
| [S1](MySnippets/Sensors/S1_Reed/S1_Reed.ino) | Reed switch | 🗹 |  | [0.20](http://a.co/1Yi1OMC) |  | [h1](http://randomnerdtutorials.com/monitor-your-door-using-magnetic-reed-switch-and-arduino/) | 5 |
| [S2](MySnippets/Sensors/S2_DHT11/S2_DHT11.ino) | Temperature & Humidity | 🗹 | [DHT11](MySnippets/Sensors/S2_DHT11/dht11.pdf) | [2.00](http://a.co/gryg9zf) |  |  | 5 |
| [S3](MySnippets/Sensors/S3_PressureSensor/S3_PressureSensor.ino) | Barometric & Temperature | 🗹 | [BMP180](MySnippets/Sensors/S3_PressureSensor/BST-BMP180-DS000-09.pdf) | [7.00](http://a.co/0za6BMU) |  |  | 1 |
| [S4](MySnippets/Sensors/S4_MotionDetector/S4_MotionDetector.ino) | PIR Motion switch | 🗹 | [HC-SR501](file:///C:\Users\Aleksandar\Documents\Arduino\MySnippets\Switches%20(Digital%20Input)\S4_MotionDetector\31227sc.pdf) | [1.80](http://a.co/dorRqX6) |  | [h1](http://kookye.com/2016/08/01/smart-home-sensor-kit-for-arduinoraspberry-pi/) | 3 |
| [S5](MySnippets/Sensors/S5_LightMeter/S5_LightMeter.ino) | PV Light sensor | 🗹 | 50-100 kOhm | [0.10](http://a.co/3Js6MW4) |  |  | 0 |
| [S6](MySnippets/Sensors/S6_VAC/S6_VAC.ino) | VAC Sensor | 🗹 | [ACS712ELC-20A](MySnippets/Sensors/S6_VAC/ACS712-Datasheet.pdf) | [3.00](http://a.co/5Hlnhc5) |  | [h1](http://kookye.com/2016/08/01/smart-home-sensor-kit-for-arduinoraspberry-pi/) | 2 |
| [S7](MySnippets/Sensors/S7_WaterTemperature/S7_WaterTemperature.ino) | Water Temperature | 🗹 | [DS18B20](file:///C:\Users\Aleksandar\Documents\Arduino\MySnippets\Sensors\S7_WaterTemperature\DS18B20.pdf) | [2.50](http://a.co/9d2G3wP) |  | [h1](http://osoyoo.com/wp-content/uploads/samplecode/DS18B20.txt) | 1 |
| [S8](MySnippets/Sensors/S8_UV/S8_UV.ino) | UV sensor | 🗷 | [S12SD](http://a.co/7oxTR7r) | [6.00](http://a.co/4R7PtP4) |  |  | 1 |
| S9 | PH sensor | 🗷 | [SEN0161](http://a.co/eXPy86I) / [this](http://a.co/c2mAckh) / [kit](http://a.co/chm1Bpb) |  |  |  | 1 |
| S10 | ORP sensor | 🗷 | [This](http://a.co/4s1IAcR) or [this](http://a.co/eSHZdbQ) |  |  |  | 1 |
| S11 | Weight sensor | 🗷 |  | [8.00](http://a.co/cT1MOt1) |  |  | 2 |
| S12 | Battery Voltage | 🗷 |  |  |  |  | 1 |
| [S13](MySnippets/Sensors/S13_UltraSonic/S13_UltraSonic.ino) | Ultrasonic Distance | 🗷 |  |  |  | [h1](http://kookye.com/2016/08/01/smart-home-sensor-kit-for-arduinoraspberry-pi/) | 2 |
| [S14](MySnippets/Sensors/S14_Gas/S14_Gas.ino) | Gas switch | 🗷 |  | [hs kit](http://a.co/gws68rA) |  | [h1](http://kookye.com/2016/08/01/smart-home-sensor-kit-for-arduinoraspberry-pi/) | 1 |
| [S15](MySnippets/Sensors/S15_Smoke/S15_Smoke.ino) | Smoke switch | 🗷 |  | [hs kit](http://a.co/gws68rA) |  | [h1](http://kookye.com/2016/08/01/smart-home-sensor-kit-for-arduinoraspberry-pi/) | 1 |
| [S16](MySnippets/Sensors/S16_IRrx/InfraRedReceiver.ino) | IR Rx | 🗹 |  | [37 kit](http://a.co/7OqFMaa) |  | [h1](http://kookye.com/2016/08/01/smart-home-sensor-kit-for-arduinoraspberry-pi/) | 1 |
| S17 | Water Level | 🗷 |  | [hs kit](http://a.co/gws68rA) |  |  | 0 |
| S18 | Hall | 🗷 |  | [37 kit](http://a.co/7OqFMaa) |  |  | 0 |
| [S19](libraries/ADulovic/S19.h) | Sound sensor | 🗷 |  |  |  |  | 1 |