**MAIDS PROJECT CIRCUIT DESIGN ADDENDUM**

**CLAUDIO F. MEIS – N00674230 – SEPTEMBER 2019**

**Important note:**

**The circuit here outlined may change due to production restrictions, component availability and future modifications.**

**Tentative Prototype Circuit Design Using GPIO.BOARD Pins (Input and Output sources) (GPIO PIN NUMBERS MAY CHANGE DUE TO MODIFICATIONS)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Raspberry Pi 4 Model B and Sensors Connections** | | | | | | |
| **Sensor** | **Sensor Pins** | **RP4 Pins** | **Sensor Pins** | **RP4 Pins** | **Sensor Pins** | **RP4 Pins** |
| **PIR Sensor** | VCC | 5V | Middle Pin (input) | GPIO4 | GND | GND |
| **LED (Resistor = 220 ohms)** | Short end of LED (cathode) | GND | Long end of LED (anode) | GPIO13 |  |  |
| **Buzzer** | -ve pin on buzzer | GND | +ve pin on buzzer | GPIO8 |  |  |
| **Sound Sensor** | VCC | 5V | GND | GND | Digital Output D0 | GPIO7 |
| **Push Button** | VCC | 5V | Signal Pin (input) | GPIO10 | GND | GND |
| **LEDs** | OUT | GPIO21 | GND | GND |  |  |
| **THE WIFI PART OF THE PROJECT WILL BE IMPLEMENTED DURING THE CENG355 COURSE.** | | | | | | |
| **WiFi Wireless Tranceiver** | VCC | 3.3V | RST | 3.3V | CH\_PD | 3.3V |
| GND | GND | TXD | GPIO14 | RXD | GPIO15 |
| GPIO0 | NO CON. | GPIO2 | NO CON. |  |  |
|  | | | | | |
| **Expected outcome:** | | | | | | |
| The system should set off a visual and audible alarm whenever motion or sound is detected and engage the mailing system to send a time-stamped message (in CENG355 also a picture of the intruder) to the home/business owner informing him/her of the intrusion. | | | | | | |

**TENTATIVE MAIDS PROJECT BUDGET**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item Description** | | **No. of Units** | **Total Cost (CDN $)** |
| 1 | Raspberry Pi 4 Model B (2GB) Running Raspbian | 1 | 65.95 |
| 2 | Falken Design WT2447-1-8/1212 Acrylic White Sheet, Translucent 55%, 12" X 12", 1/8" Thick | 1 | 13.78 |
| 3 | Willwin 5pcs High Sensitivity Sound Microphone Sensor Detection Module For Arduino AVR PIC | 5 | 11.98 |
| 4 | Uxcell A14092500ux0825 DIY Project DC3-24V Continuous Sound Electronic Alarm Buzzer, Black, 2 Piece | 1 | 7.24 |
| 5 | Robojax Hc-Sr505 Pir (Passive Infrared) Motion Infrared Sensor Module | 1 | 11.40 |
| 6 | 120pcs 20cm Length Jumper Wires/Dupont Cable Multicolored(10 Color) 40pin M To F, 40pin M To M, 40pin F To F For Breadboard/Arduino Based/DIY/Raspberry Pi 2 3/Robot Ribbon Cables Ki | 1 | 9.99 |
| 7 | Morris 70165 SPST Miniature Push Button, Maintained Contact, On-Off With 6" Leads, Black | 1 | 12.24 |
| 8 | Wifi Wireless Transceiver | 1 | 17.00 |
| 9 | Smraza Compatible With Raspberry Pi 4 Power Supply With ON/Off Switch, 5V 3A USB-C Charger Adapter For Raspberry Pi 4 Model B 1GB / 2GB / 4GB Version | 1 | 13.59 |
| 10 | M3 Nylon Hex Standoff Plastic Thread Motherboard Spacer Prototyping Accessories For PCB, Quadcopter Drone, Computer & Circuit Board Assortment Kit (M3 Male Female ; Black) | 1 | 11.62 |
| 11 | Sandisk Extreme Pro 32GB SDHC UHS-I Card (SDSDXXG-032G-GN4IN) [Newest Version] | 1 | 19.20 |
| 12 | MG Chemicals 500 Series Copper Clad Prototyping Board With 1-Ounce Copper, 1/32-Inch Copper Thick, 2 Side, 6-Inch Length X 4-Inch Width, FR4 | 1 | 10.32 |
| 13 | Mini Drill Black Portable Handheld Drill Metal Hole Punch Machine Hand Tools For Ordinary Wood Plastic Acrylic Books Voucher Books | 1 | 9.79 |
| 14 | BB830 Solderless Breadboard - White | 1 | 9.60 |
|  | Part: S6104-Nd  Mfg : Sullins Connector Solutions / Pptc202lfbn-Rc  Desc: Conn Hdr 40pos 0.1 Tin Pcb 3.28000 3.28  Coo : Taiwan Eccn: Ear99 Htsus: 8536.69.4040  Lead Free Rohs3 Comp Reach Unaffected Jan-2019 | 1 | 2.29 |
| 15 | Part: S7035-Nd  Mfg : Sullins Connector Solutions / Pppc021lfbn-Rc  Desc: Conn Hdr 2pos 0.1 Gold Pcb 0.45200 4.52  Coo : Taiwan Eccn: Ear99 Htsus: 8536.69.4040  Lead Free Rohs3 Comp Reach Unaffected Jan-2019 | 8 | 4.52 |
| 16 | Part: S7036-Nd  Mfg : Sullins Connector Solutions / Pppc031lfbn-Rc  Desc: Conn Hdr 3pos 0.1 Gold Pcb 0.53000 1.59  Coo : Taiwan Eccn: Ear99 Htsus: 8536.69.4040  Lead Free Rohs3 Comp Reach Unaffected Jan-2019 | 3 | 1.59 |
| 17 | Part: S7002-Nd  Mfg : Sullins Connector Solutions / Pptc041lfbn-Rc  Desc: Conn Hdr 4pos 0.1 Tin Pcb 0.65000 1.30  Coo : Taiwan Eccn: Ear99 Htsus: 8536.69.4040  Lead Free Rohs3 Comp Reach Unaffected Jan-2019 | 4 | 1.38 |
| 18 | Part: S7072-Nd  Mfg : Sullins Connector Solutions / Pptc042lfbn-Rc  Desc: Conn Hdr 8pos 0.1 Tin Pcb 0.96000 1.92  Coo : Taiwan Eccn: Ear99 Htsus: 8536.69.4040  Lead Free Rohs3 Comp Reach Unaffected Jan-2019 | 1 | 1.52 |
| 19 | UGREEN Active Micro HDMI to HDMI VGA Video Converter Adapter with 3.5mm Audio Jack and Micro-USB Power for Ultrabooks, Tablets, Smartphones, Cameras and Camcorders (Black) | 1 | 24.99 |
| 20 | Cylewet 14Pcs 12mm Waterproof Momentary On Off Reset Push Button Switch Mini Round Switch 7 Colors (Pack of 14) CLT1088 | 1 PACKAGE | 9.99 |
| 21 | SanDisk Ultra 32GB microSDHC UHS-I Card with Adapter, Grey/Red, Standard Packaging (SDSQUNC-032G-GN6MA) | 1 | 13.99 |
| **TOTAL PROJECT COST** | | | **283.97** |