### Hardware Requirements

Note that not all purchases were needed or implemented within the current scope of this project, meaning some purchases were for redundancy in case of faults and if the scope of the project was to be expanded. Unless otherwise stated, all purchases were made in Naira.

Table 1: Hardware Requirements cost table(in NGN).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S/N | Name | Quantity | Unit Cost(NGN) | Total Cost(NGN) |
| 1 | Raspberry pi 3b+ | 1 | 25000 | 25000 |
| 2 | 9 in 1 multifunctional Expansion shield | 1 | 3500 | 3500 |
| 3 | Arduino Pro Micro | 1 | 3300 | 3300 |
| 4 | 2.2kΩ 1W resistor | 10 | 15 | 150 |
| 5 | Mg90s Servo | 2 | 1700 | 3400 |
| 6 | Relay module 2 channel | 2 | 800 | 1600 |
| 7 | Female-female jumper wire (set) | 1 | 650 | 650 |
| 8 | Male-female jumper wire (set) | 1 | 650 | 650 |
| 9 | Male-male Jumper wires (set) | 2 | 650 | 1300 |
| 10 | vero board big size stripped | 2 | 300 | 600 |
| 11 | Vero board small size stripped | 3 | 150 | 450 |
| 12 | Bi-directional logic level converter | 3 | 550 | 1650 |
| 13 | 7cmx9cm double sided fiberglass PCB veroboard/stripboard | 6 | 350 | 2100 |
| 14 | UF5408 Diode | 10 | 50 | 500 |
| 15 | LCD 2004 Module | 1 | 2500 | 2500 |
| 16 | Plastic keyboard 4x4 | 1 | 2000 | 2000 |
| 17 | Double Rocker Power Switch | 3 | 300 | 900 |
| 18 | 10KΩ 1W resistor | 10 | 15 | 150 |
| 19 | BC547(NPN) | 10 | 20 | 200 |
| 20 | 5mm red LED | 3 | 10 | 30 |
| 21 | 5mm LED blue | 5 | 10 | 50 |
| 22 | 3mm LED green | 5 | 5 | 25 |
| 23 | 3mm LED yellow | 5 | 5 | 25 |
| 24 | 40 pin 2mm single in line (SIL) female header | 2 | 180 | 360 |
| 25 | 40pin 2mm single in line(SIL) male header | 10 | 50 | 500 |
| 26 | PIR motion sensor | 2 | 1000 | 2000 |
| 27 | Door magnetic switch normally open | 1 | 400 | 400 |
| 28 | Arduino uno r3 | 3 | 6500 | 19500 |
| 29 | Light Bulb(200W), lamp holder & Type G plug | 4 | N/A | 3000 |
| 30 | Paper board Cartons | 4 | N/A | N/A(recycled used ones) |
|  | Total Cost |  |  | 76490 |

The table below shows software packages were used in the realization of this project. Note that while all of the software used could be replaced by another to perform the same function, certain software were more critical to the completion of the requirements of this project.

Table 2: Software tools used in Home Automation Project

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S/N | Software Name | Producer | Requirement level | Plugins/Addons | References |
| 1 | Google Chrome | Google | Replaceable | N/A |  |
| 2 | Visual Studio Community(2019) | Microsoft Corporation | Required | Visual Studio Build Tools 2017, Azure development .NET cross-platform development, Game development with Unity. | - |
| 3 | Visual Studio Code | Microsoft Corporation | Replaceable | C# support extension, Azure Tools extension, Debugger for Unity extension. | - |
| 4 | Arduino IDE | Arduino | Required | N/A | - |
| 5 | VNC viewer | ReAlVnc | Replaceable | N/A | - |
| 6 | Putty | Simon Tatham, Open-source | Replaceable | N/A | - |
| 7 | Proteus | Labcenter Electronics | Required | Arduino Library for Proteus V2.0, Proteus Libraries of Embedded Sensors. | [39][40] |
| 8 | Unity3d | Unity Technologies | Required | Facebook SDK for Unity, Newtonsoft JSON for Unity, AdobeXD to Unity UI converter, M2MQTT for Unity, DoTween, Azure Functions for Unity. | [41][42][43] |
| 9 | Edraw Max | Wondershare | Replaceable | N/A | - |
| 10 | Software Ideas Modeler | SoftwareIdeas | Replaceable | N/A | - |
| 11 | Adobe XD | Adobe Inc. | Required | AdobeXD to Unity UI converter | [41] |
| 12 | AutoCad Web App | Autodesk | Replaceable | N/A | - |