

**I.T. MAJOR ELECTIVE 3**

**ROBOTICS**

**PROPOSAL**

**PROJECT TITLE:**

**SARI-SARI VENDO**

**Project Proponents**

|  |  |  |
| --- | --- | --- |
| Name | Designation | Signature |
| Cedie Boie Bulos | Project Lead / Arduino Development / Design / 1.1 / 1.2 |  |
| Quizon, Renalyn | Layout and Designing Planning / 1.2 |  |
| Cariño, John Kenneth | Back-End Programmer / Database Designer / 1.3 |  |
| Dalaguit, Judith Ann | Implementation and Testing / 1.4 |  |
| Hinoguin, Charisse | Interior Designer / 1.2 |  |
| Mancao, Kerrie Kris | Web Development / 1.3 |  |
| Ongtawco, Joseph Radny | Arduino Development / 1.1 |  |
| Ramirez, Jhena Lyn | Implementation and Testing / 1.4 |  |
| Rosaroso, Neil Steven | Exterior Designer / 1.2 |  |
| Ruiz, Vincent Lopez | Lead Layout Designer / 1.2 |  |

**Project Description**

Computers are universally used. After the Industrial Revolution, the Computer Age developed. It was a period in human history where new forms of research, work and communication developed throughout the world.

The Project is a different type of vending machine combined that was combined and altered using Arduino robotics, unlike others, we use an Arduino electronic, a commonly used for prototyping, manufacturing and interactive electric objects. Vending machines are electronic machines used to disperse products, but later on, companies introduced other vending machine capabilities, including disperse of electronic products and a deployable unit.

Arduino is developing to make electronics more accessible to designers, hobbyist and anyone who is interested in creating interactive objects or environments. Arduino products are purchasable as pre-assembled or built hand-by-hand. Users can adopt the boards to their needs, as well as updating and distributing of their own versions.

The Project is similar to a common vending machine, but with innovation and new functions, which makes it unique those others, does not possess this functionality. Our project unique functionality is the echo sensor that detects entity movement when it is nearby and it activates its lighting system to attract attention as the concept of a honey trap.

**Reason for Project**

The purpose of this project is to create a new business idea wherein it makes use of accessible Arduino parts, open sources of information and makes use of the Vending Machine concept. Also, to share knowledge with other students, professionals and hobbyists. This “SARI-SARI VENDO” project makes use of servomotors, case, batteries, Arduino mega, cables, LCD, LED, buttons and coin slot. Combining the Vending Machine concept and Arduino. A smartly designed Vending Machine will be a great advantage for small to big scale businesses. A machine that can work or serve 24/7 without too much supervision. To make this possible, we conducted research and analysis on possibilities upon creation.

**Project Milestone**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Activities** | **In Charge** | **Target Date** | **Actual / Completion Date** | **Remarks** |
| Company search and identifying the project | Ongtawco , Joseph Radny Y., Bulos, Cedie Boie G., Cariño, John Kenneth M. | November 10, 2018 | November 12, 2018 |  |
| Writing the proposal statement | Bulos, Cedie Boie G. | November 12, 2018 | November 16, 2018 |  |
| System Approval |  | November 15, 2018 | November 16, 2018 |  |
| Designing the project | Ruiz, Vincent Lopez | November 10, 2018 | December 05, 2018 |  |
| Implementation | Rosaroso, Neil Steven | December 05, 2018 | December 08, 2018 |  |
| Testing | Dalaguit, Judith Ann, Mancao, Kerrie Kris | December 09, 2018 | December 12, 2018 |  |
| Deployment | Hinoguin, Charisse  Ramirez, Jhena Lyn | December 13, 2018 | December 15, 2018 |  |
| Finalized | Bulos, Cedie Boie G.  Quizon, Renalyn  Cariño, John Kenneth  Dalaguit, Judith Ann  Hinoguin, Charisse  Mancao, Kerrie Kris  Ongtawco, Joseph Radny  Ramirez, Jhena Lyn  Rosaroso, Neil Steven  Ruiz, Vincent Lopez | December 15, 2018 | December 31, 2018 |  |

**Costing**

***Hardware***

|  |  |
| --- | --- |
| **Components** | **Price** |
| Universal Coin Slot x1 | ₱ 500.00 |
| Bill Acceptor | ₱ 7,000.00 |
| Arduino Mega 2560 R3 x 1 | ₱ 860.00 |
| Original TowerPro MG995 Continuous Rotation Servo 360 degrees 100% Metal x 5 (₱ 850 x 5) | ₱ 4,250 |
| 4X4 Membrane Keypad for Arduino RPi AVR PIC 51MCU | ₱ 150.00 |
| Module Relay | ₱ 50 |
| Arduino LCD | ₱ 300.00 |
| Power supply 12V DC | ₱ 520.00 |
| Spring x 25 ₱ 150 | ₱ 3,750 |
| Acrylic glass | ₱ 450.00 |
| Silicon Glass Glue Sealant 300ml | ₱ 200.00 |
| Marine ply board ¾ | ₱ 1,350.00 |
| Epoxy Glue | ₱ 450.00 |
| Wiring Female to Male Jumper | ₱ 130.00 |
| Wiring Male to Male Jumper | ₱ 130.00 |
| Nail 1 ½ - 1 kilo | ₱ 100.00 |
| Stanley Claw Hammer | ₱ 195.00 |
| Sand Paper 5pcs | ₱ 10.00 |
| Boysen Paint Color White | ₱ 1,094.00 |
| Paint Brush | ₱ 15.00 |
| Stanley Cutting Saw | ₱ 300.00 |
| Monggol Pencil – 3 pcs. | ₱ 18.00 |
| Stanley Tape Measure – 2pcs (280/each) | ₱ 560.00 |
| Screws and Bolts | ₱ 753.00 |
| Soldering Lead | ₱ 137.00 |
| Soldering Iron | ₱ 137.00 |
| APC BX650LI-MS | ₱2,389.00 |
| L Ruler – 2pcs (287/each) | ₱ 574.00 |
| IP Cam | ₱ 2,300.00 |
| Wi-Fi Module | ₱ 155.00 |
| Black Electric tape | ₱ 90.00 |
| RFID - card | ₱ 196.00 |
| RC522 Module | ₱ 149.00 |
| **Total Amount (appx.)** | ₱ 28,917.00 |

***Software***

* Windows 7 or later
* Notepad++
* Visual Studio Code IDE
* XAMPP (Apache / MySQL)
* Sketch Up
* Arduino IDE v. 1.8.6 or later
* Node Javascript
* Postman

Hardware

Segregate by module (development requirement)

Buwag flowchart Front ug Back 3 platform

Flowchart (1 main)

Total Flowchart (4 pcs)

Sub Flowchart (3 pcs)

Work Break down structure

(Designation from breakdown parts)

**Project Scope**

***Customer***

* Can purchase a product by selecting it using keypad controls.
* Can view the products inside the vending machine with labels.
* Can view the price of a product in LCD upon selection.
* After purchasing the product, the customer may already get the product for a few seconds.
* Customer will see the confirmation message in the Sari-Sari Vendo.
* Will accept any Philippine Peso Currency.

***Owner / Administrator***

* Stock – in
  + Stock the products inside the Sari-Sari Vendo.
* Stock – out
  + Can remove the product.
* Can sell the product into the machine as a deployable unit.
* Web portal
  + Can manage product details.
  + Can view sales reports.
  + Can manage account/s.

***Sari-Sari Vendo***

* A Designed glass door that serves as a transparent obstruction of the product when an entity checks the displayed available products.
* Dispense the product that was selected when the given requirement is true upon purchase of the product.
* The vending machine prompts a message through its LCD when a customer selects a particular product.
  + Not enough balance to purchase the product.
  + Confirmation message.
* A keypad that function as a remote for selecting and purchasing a product.
  + Select a product code
  + Cancel purchase
  + Confirm purchase
  + Done purchasing
* An LCD that displays information
  + Selected product code
  + Price of the labelled product
  + Remaining Balance
* A proximity Sonar sensor that can initiate the light of the vending machine when a nearby entity is close, which can enable the lighting system.
* Can automatically reject an invalid or unreadable currency.

**FEATURES**

* RFID locking system
* IP Camera

**Benefits or Advantage**

* 24/7 Operational convenience
* Automated
* Maintainable
* Goods are accessible
* Convenient access to healthier option
* Improved customer satisfaction
* Promote workplace wellness
* Sari-sari vendo saves time of the customer.

**Limitation**

* Sari-sari vendo cannot give change either bills or coins.
* If no power or electricity, the vending machine is non-functional.
* Sari-sari vendo are constantly subject to security-concern that may damage the machine.
* Sari-sari vendo cannot provide efficient customer-seller relation.
* Sari-sari vendo are bound to malfunction without regular maintenance.
* Coin slot will cannot receive defective coins.
* Customers cannot have a refund.

System Flowchart

**Approver Signatures**

|  |  |  |
| --- | --- | --- |
| Approver’s Name/Designation | Signature | Date Signed |
| Mr. Donald M. Francisco  ACLC College Instructor |  |  |
| Mr. Roy L. Imperial, MSIT  ACLC College Dean/School Director |  |  |