**Voucher Generator v1.0**

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**Materials**

* Arduino Nano
* SD Card Module
* Micro SD Card
* 16x2 LCD with I2C Module
* Button Switch
* LED (Any color)
* 220Ω Resistor (optional)
* 10kΩ Resistor (mandatory)
* Multi-coin selector

**Features**

* Customizable coin count.
* Customizable voucher length (max 16 characters).
* Customizable countdown timer.
* Coin recovery.
* Voucher recovery.
* Can generate 1000+ vouchers.
* Support error codes.

**Micro SD Card Default Files**

* **vouchers.txt** – Your data vouchers. Can store up to 1000+
* **voucher.txt** – Voucher recovery. (Auto created by the system)
* **coin.txt** – Coin recovery. (Auto created by the system)
* **length.txt** – Voucher length. (VALUE: ***Number***,MAX:***255***, DEFAULT: ***8****)*
* **count.txt** – Coin counter. (VALUE: ***Number***,MAX:***255***, DEFAULT: ***5****)*
* **timer.txt** – Count down timer. (VALUE: ***Number***,MAX: ***255***, DEFAULT: ***30****)*

**Things Need to Do**

* Voucher length should not greater than 16 characters long.
* Voucher format is **XXXXXXXX,X** the **X’s** length before the comma (**,**) is your voucher code, and the length is according to your specified voucher length in **length.txt** file. The comma (**,**) and the **X** after the comma are mandatory, the value of **X** is 0 (zero) or 1 (one), this value will identify the voucher code in the same line if the voucher code is available (0) or used (1).
* **voucher.txt** should not have empty line.
* voucher format and the identifier (the **X** after the comma) should not have white space (space, unknown characters).
* The identifier length should not more than 1 character long and have not white spaces.
* The voucher code length and your specified length in **length.txt** should be the same.

**How It Works**

1. Press the button
2. Insert (*coin*) peso *(coin is based on your* ***count.txt*** *file value)*
3. Insert coin until shown the voucher code.
4. While countdown timer *(timer is based on your* ***timer.txt*** *file)* is running, pressing button will clear the display and ready for the next voucher.
5. Then will display the “Press the button” again for the next voucher.

*\*Note: While the display is in “Insert (coin) peso” state, it will return to “Press the Button” when no coin inserted after the time longer than the timer based on your* ***timer.txt****.*

**How It Works Explained**

1. At power on, the system will initialize the SD Card Module if properly wired and if the card is inserted or properly formatted in FAT32. If the initialization is failed, it will show an error code of **ERR-100**.
2. The system will then read your configuration file (length.txt, count.txt, timer.txt). If one of them is not exists in your SD card, it will use the default values according to the missing configuration files.
3. Then system will then read and verify the value in **coin.txt** file. This file is the recovery of the coin of the user if he/she inserted a coin and there is a power interruption before he/she get the voucher. The balance (recovery) will then show in the display below the “Press the Button”.
4. The system will then read and verify the data in **voucher.txt** file. This is the same as the **coin.txt** file. If the voucher code shown in the display and the timer is not over or he/she not press the button to clear the display and there is a power interruption, then it will be show again in the display at this state.
5. The system will then read and verify the data in **vouchers.txt** file. If **vouchers.txt** file not exists in your SD card, it will show an error code of **ERR-102**. If the system failed to read the **vouchers.txt** file, it will show an error code of **ERR-103**. If found an empty line in the data, it will show an error code of **ERR-104**. If one of comma in every voucher code in **vouchers.txt** file is not found, it will show an error code of **ERR-105**. If voucher code length is not the same in the specified voucher length in length.txt, it will show an error code of **ERR-106**. If identifier *(the X or the value after the comma in voucher format)* has white spaces or unknown or more than one character long, it will show an error code of **ERR-107**. If there is no available voucher code in the data, it will show an error code of **ERR-108**. If the are no errors found in the **vouchers.txt** file the system is then ready and the display will show “Press the Button”.

**Error Codes**

* ERR-100 Cannot read SD card or SD card module.
* ERR-102 vouchers.txt file not found.
* ERR-103 vouchers.txt file failed to open.
* ERR-104 Found empty line data in vouchers.txt file
* ERR-105 Invalid data format in vouchers.txt file. Comma is not found;
* ERR-106 Found invalid voucher format length.
* ERR-107 Found voucher identifier length is more than 1.
* ERR-108 No available vouchers found.

**The Diagram**

