UNIVERSITI KUALA LUMPUR CITY CAMPUS
MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY

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Lecturer	**MDM NORILAWATI BINTI MD JALI**
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TITLE: USER MANUAL FOR GROUP 5 PRODUCT

PRODUCT: AUTOMATED MULTI-PURPOSE DISPENSER

PREPARED BY:

NAME	ID NUMBER
Sofea Balqis Binti Mohd Bazir	52052323041
Siti Nursarah Binti Dzulkhairi	52052323015
Nazmina Binti Abdul Jaleel	52052323065
Puteri Natasha Binti Shariffudin	52052323102
Muhammad Ridzuan Bin Razali	52052323125
Amirul Azwat Bin Julfkli	52052323147

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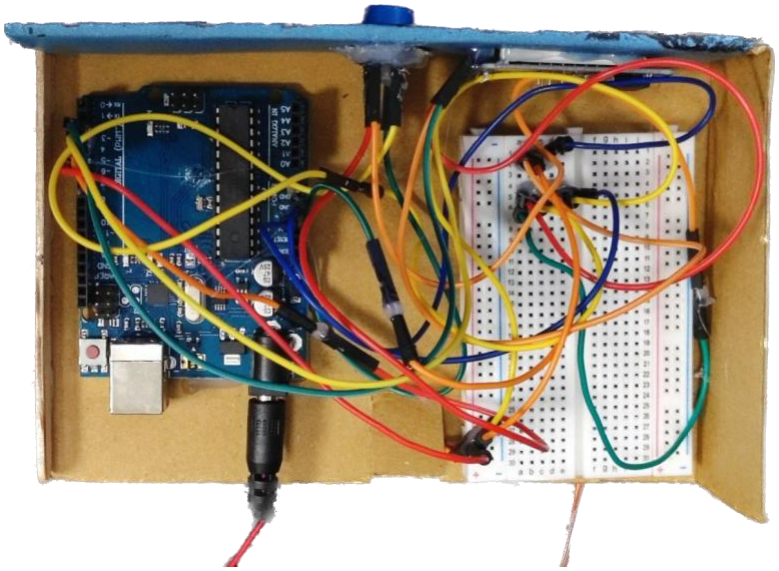
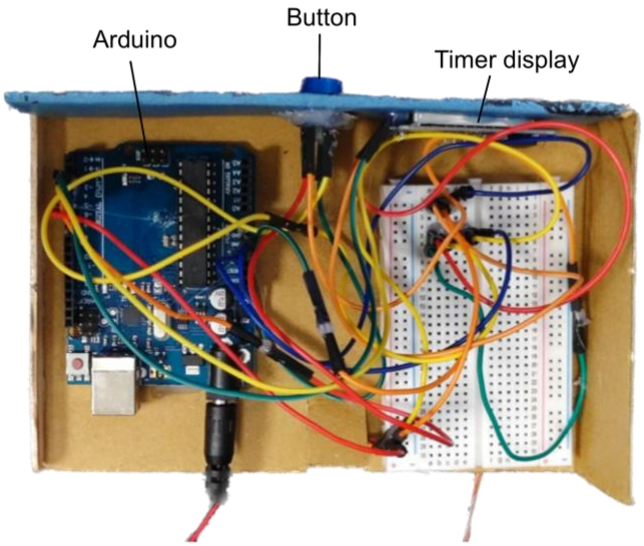


THE MATERIALS

i. Arduino ATmega328 16U2
ii. Servo Motor SG90 Plastic Gear
iii. PBS-11A Push Button Switch 240VAC 3A
iv. 18650 Rechargeable battery 3.7V Flat Top
v. Battery Holder Casing with 2 Slots
vi. TM1637 Based 4 Digit 7 Segment Display
vii. Ice cream sticks
viii. Plastic container



PRODUCT'S CODING

```
#include <Servo.h>
#include <TM1637Display.h>

Servo myservo; // Create a Servo object

int buttonPin = 4; // Pin for the tactile button

// Define TM1637 display pins (CLK, DIO)
const int CLK = 2;
const int DIO = 3;

// Initialize the TM1637 display
TM1637Display display(CLK, DIO);

int servingDuration = 0; // Serving duration in seconds
bool servingInProgress = false; // Flag to indicate if serving is in progress
unsigned long servingEndTime = 0; // Timestamp when serving should end
bool hasMovedTo0Degrees = false; // Track whether the servo has moved to 0 degrees

const unsigned long portionDuration = 3; // Duration to open the lid for one portion in seconds
const unsigned long positionChangeDuration = 2000; // Duration to change position after timer finish

unsigned long buttonPressTime = 0; // Time when the button was pressed
int clickCount = 0; // Number of short clicks
const unsigned long shortClickThreshold = 800; // Set the duration for a short click
const unsigned long longHoldThreshold = 3000; // Set the duration for a long hold
```

```
void setup() {
  myservo.attach(5); // Attach the servo to digital pin 5
  pinMode(buttonPin, INPUT_PULLUP); // Set the button pin as input with internal pull-up resistor

  // Initialize the TM1637 display
  display.setBrightness(0x0f); // Set the brightness (adjust as needed)
  display.showNumberDec(0, false); // Clear the display
  myservo.write(0); // Ensure the servo starts with the lid closed (0 degrees)
}

void loop() {
  int buttonState = digitalRead(buttonPin);
  unsigned long currentTime = millis();

  if (buttonState == LOW) {
    if (buttonPressTime == 0) {
      buttonPressTime = currentTime;
    }

    unsigned long buttonPressDuration = currentTime - buttonPressTime;

    if (buttonPressDuration >= longHoldThreshold) {
      // Long hold detected, release a portion (3 seconds)
      servingInProgress = true;
      startServing(portionDuration); // Open the lid to 90 degrees for 3 seconds
      buttonPressTime = 0;
    }
  } else if (buttonPressTime != 0) {
    if (buttonPressTime != 0 && buttonState == HIGH) {
```

```
  if (buttonPressTime != 0) {
    unsigned long buttonPressDuration = currentTime - buttonPressTime;

    if (buttonPressDuration >= shortClickThreshold) {
      // Short click detected
      clickCount++;

      if (clickCount == 1) {
        servingDuration = 10;
      } else if (clickCount == 2) {
        servingDuration = 15;
      } else if (clickCount == 3) {
        servingDuration = 20;
      } else {
        servingDuration = 0; // Reset the timer after the 4th click
        clickCount = 0;
      }

      if (servingDuration > 0) {
        servingInProgress = true;
        startServing(servingDuration);
        hasMovedTo0Degrees = false; // Reset the flag
      }
    }

    buttonPressTime = 0;
  }
 }

}
```

```
  if (servingInProgress) {
    int remainingTime = (servingEndTime - currentTime) / 1000;
    display.showNumberDec(remainingTime, false);

    if (currentTime >= servingEndTime) {
      stopServing();
      delay(positionChangeDuration); // Wait for the position change duration
      myservo.write(0); // Close the lid to 0 degrees after serving
      hasMovedTo0Degrees = true; // Set the flag
    }
  } else if (!hasMovedTo0Degrees) {
    myservo.write(0); // Close the lid to 0 degrees when not serving
  } else {
    myservo.write(90); // Set the motor angle to 90 degrees after 2 seconds in 0 degree position
  }
}

void startServing(int duration) {
  myservo.write(90); // Open the lid to 90 degrees during serving
  display.showNumberDec(duration, false); // Display the countdown
  servingEndTime = millis() + (duration * 1000); // Calculate serving end time
}

void stopServing() {
  myservo.write(0); // Close the lid to 0 degrees after serving
  display.showNumberDec(0, false); // Clear the countdown
  servingDuration = 0;
  servingInProgress = false;
}
```

SAFETY WARNING

⚠ WARNING ⚠

- Do NOT immerse the product in water.
- Keep product away from fire.
- Keep product away from children aged 0-3
- Always turn off product before cleaning, replacing parts or items inside the container.
- This product is limited to SMALL and DRY pet foods, snacks, candies, and other small items.
- Any modification of the product may have consequences for safety and proper functioning.
- This product is intended for adults, children, and pets.
- Avoid placing the product on a moving/unstable platform.

THE FUNCTIONS

Function	Explanation
Automatic dispenser	Dispenses supplements according to the timer set by user
Automatic pet feeder	Dispenses dry food for pets (cats, dogs, fish) according to the timer set by user
Storage	Drawers as storage to keep various items
Decoration	Can be used as a decoration for indoors and outdoors

INSTRUCTIONS

1. Fill the container with the appropriate items

2. Push and hold the tactile button according to the desired timer;

a) If the button is held for 5 seconds by the user, the items inside the container will be dispensed in 3 seconds.
b) If the button is pushed 2 times by the user, the items inside the container will be dispensed in 10 seconds.
c) If the button is pushed 3 times by the user, the items inside the container will be dispensed in 15 seconds.
d) If the button is pushed 4 times by the user, the items inside the container will be dispensed in 20 seconds.

note: The timer available on the actual product are as follows; 10 minutes, 20 minutes, 30 minutes, 1 hour

COST

MATERIAL	PRICE	QUANTITY	TOTAL
Arduino ATmega328 16U2	RM 28.00	1	RM 28.00
Servo Motor SG90 Plastic Gear	RM 7.00	1	RM 7.00
PBS-11A Push Button Switch 240VAC 3A	RM 1.20	1	RM 1.20
18650 Rechargeable battery 3.7V Flat Top	RM 3.25	2	RM 6.50
TM1637 Based 4 Digit 7 Segment Display	RM 5.60	1	RM 5.60
Battery Holder Casing with 2 Slots	RM 2.50	1	RM 2.50
Ice cream sticks packet	RM 2.40	1	RM 2.40
Plastic containers	RM 2.40	2	RM 4.80
			TOTAL: RM 58

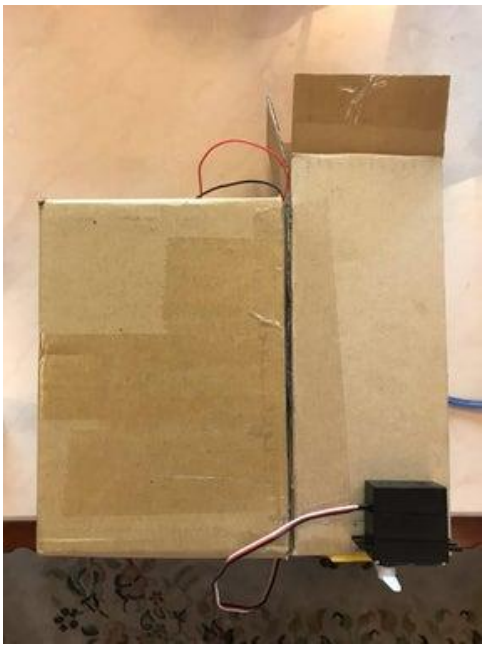
SELLING PRICE

((Total price + Shipping price) x Profit percentage (%)) + Total price with shipping

= (RM 58 + RM 4.90) x 25%
= RM 15.73 —— profit
= RM 62.90 + RM 15.73
= RM 78.63

REFERENCES

1. https://www.instructables.com/Modification-of-Arduino-Automatic-Pet-Feeder-With-/



2. https://vt.tiktok.com/ZSNhx3WCV/