

THE SMART PILL BOX(Extended)

Stores , Organizes & Dispenses

Abstract

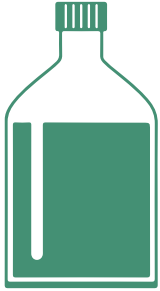
The purpose of this project is to design and develop a smart pill box to help individuals with autism, the elderly, and people with disabilities keep track of their medicine and manage their health. This innovative solution will solve the problem of missed or incorrect doses of medicine, which can have serious consequences for these populations. The design will be compact, user-friendly and easy to operate, making it accessible to people of all ages and abilities. The smart pill box will be equipped with advanced features such as **RFID tracker**, **path detection**, and **object detection**.

The smart pill box will be an essential tool for ensuring the health and well-being of individuals with autism, the elderly, and people with disabilities. By reducing the risk of missed or incorrect doses of medicine, this project will make a significant impact on the quality of life for these populations.

List of Components

Name	Quantity
Microchip AVR-IoT WA Development Board	1
Arduino Mega 2560	1
SG90 Micro Servo Motor	4
Itead Newton NX8048To070(Generic 7.0")	1
Adafruit 16-channel 12-bit PWM/Servo Driver	1
Speaker: 0.25W, 8 Ohms	1
Adafruit Photo transistor IR Light Sensor	4
Adafruit 5mm IR LED(940 nm)	4
Ultrasonic Sensor- HC-SR04	1
Parallax Feedback 360 High Speed Servo	1
Adafruit 5V 2A Switching Wall Power Supply	1

Timeline



Review 1

Review 2

Review 3

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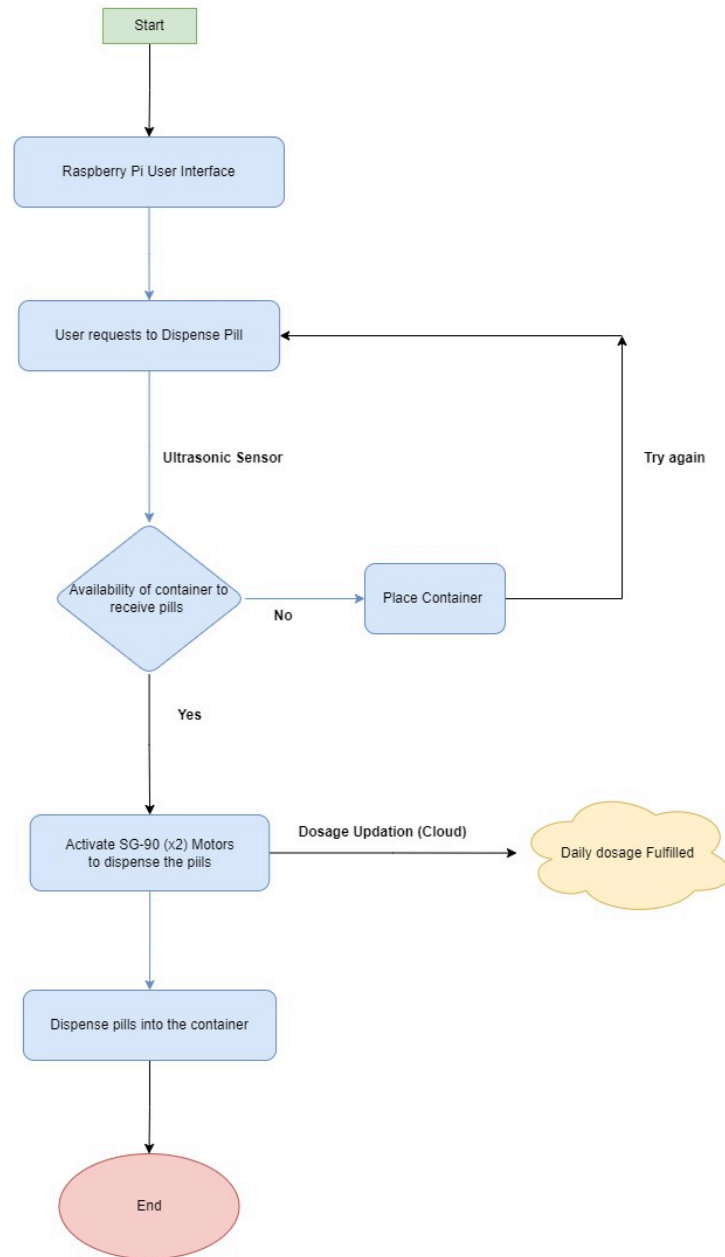
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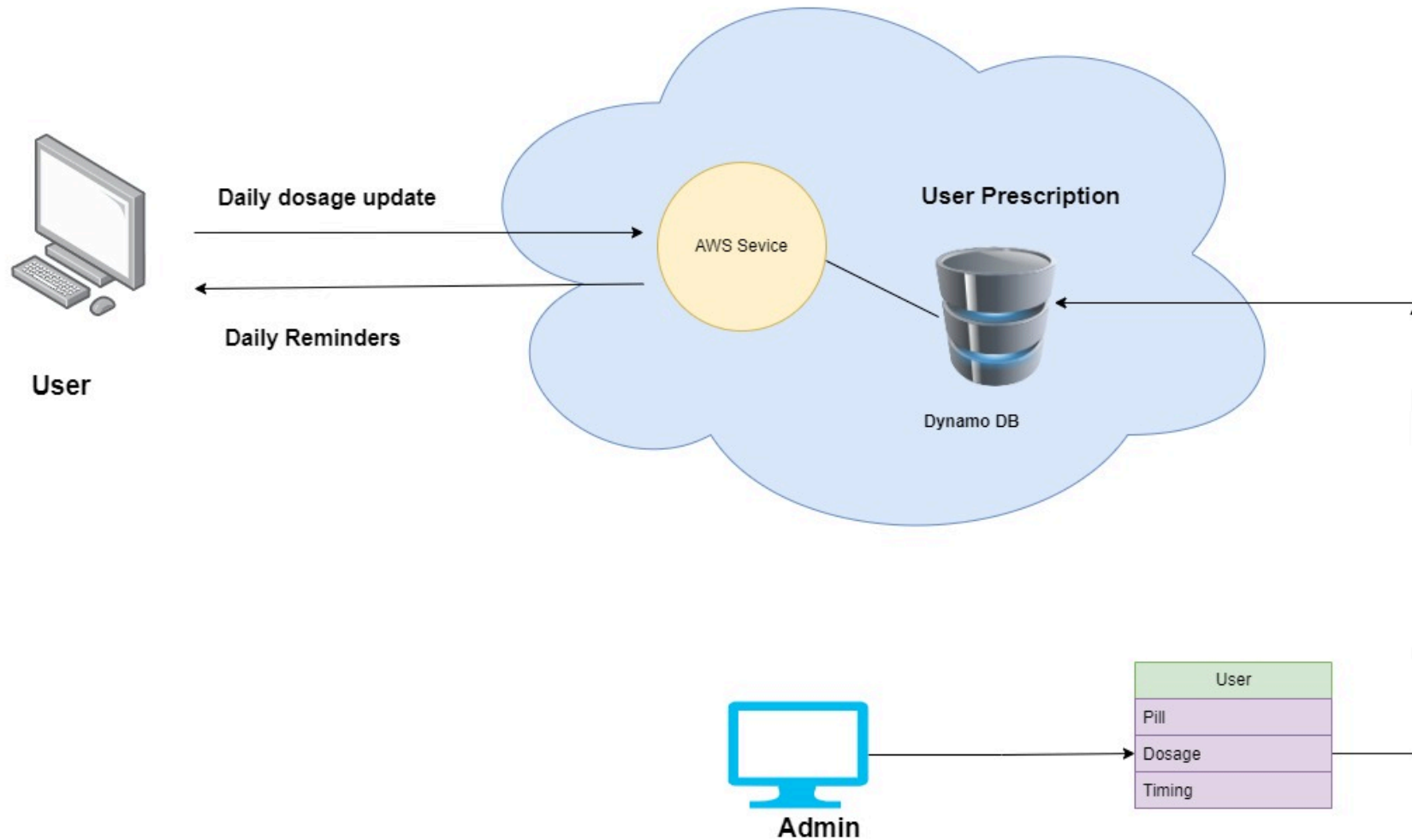
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Flowchart

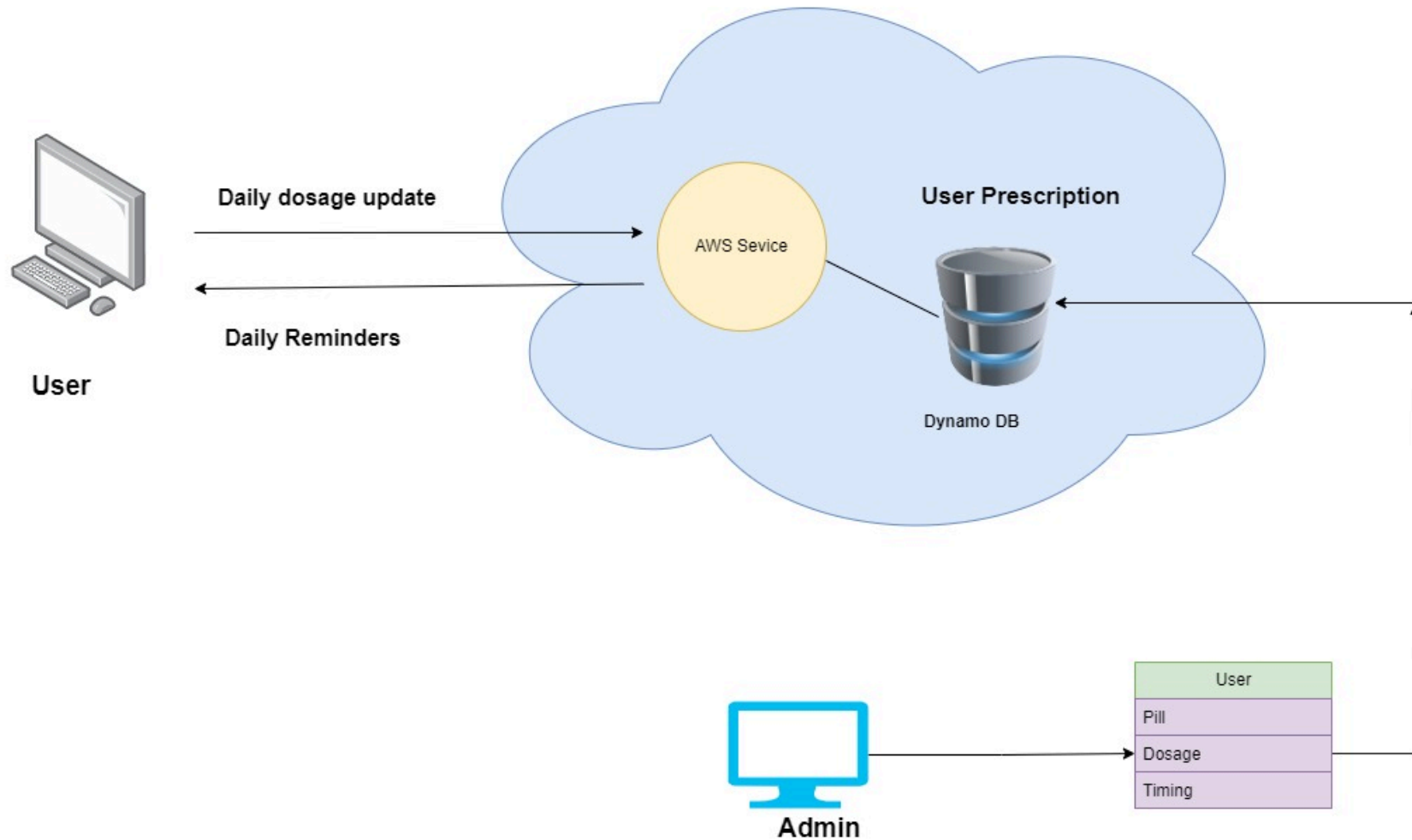
Smart Pill-Dispenser Flowchart



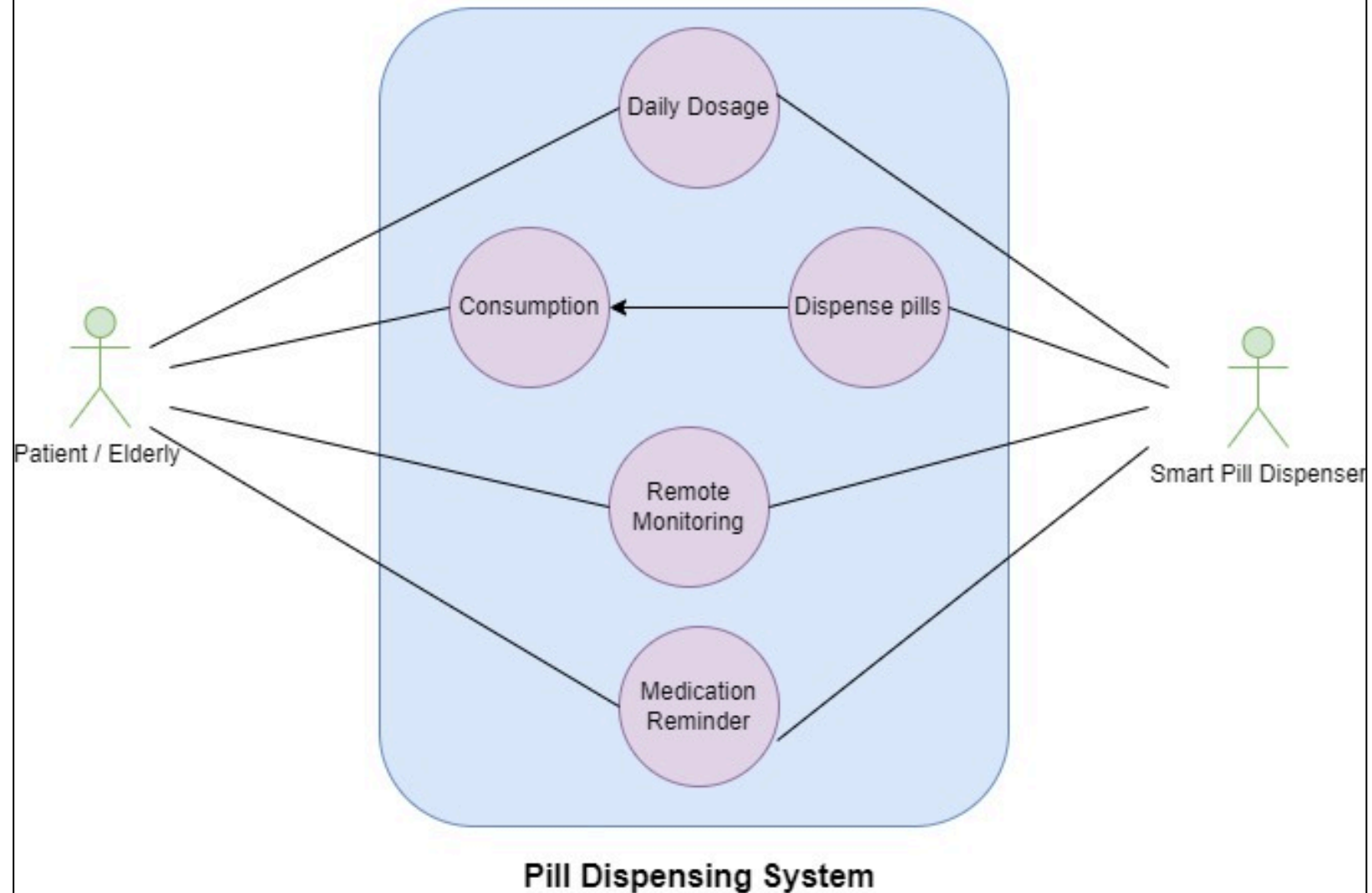
Smart Pill-Dispenser (Cloud - 3 tier Architecture)



Smart Pill-Dispenser (Cloud - 3 tier Architecture)



Use Case Diagram - Home Setup



Added Functionalities

01

Alarm buzzer

Alert individuals with hearing impairments

02

Speech recognition

Speech recognition for the visually impaired

03

Alert/Refill Mechanism

The refill and expiration alerts are a key aspect of the Smart Pill Box's comprehensive approach to health management.

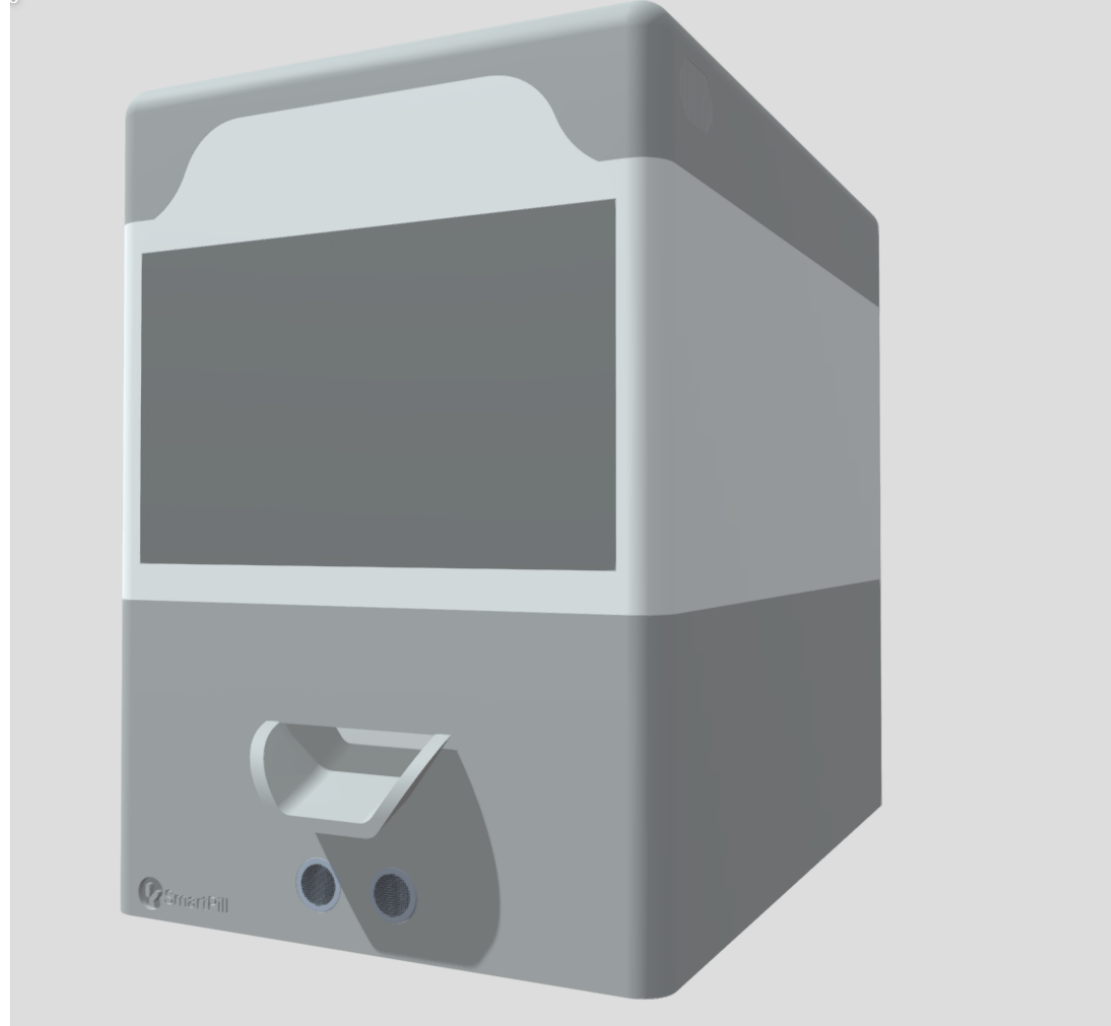
04

Real time monitoring

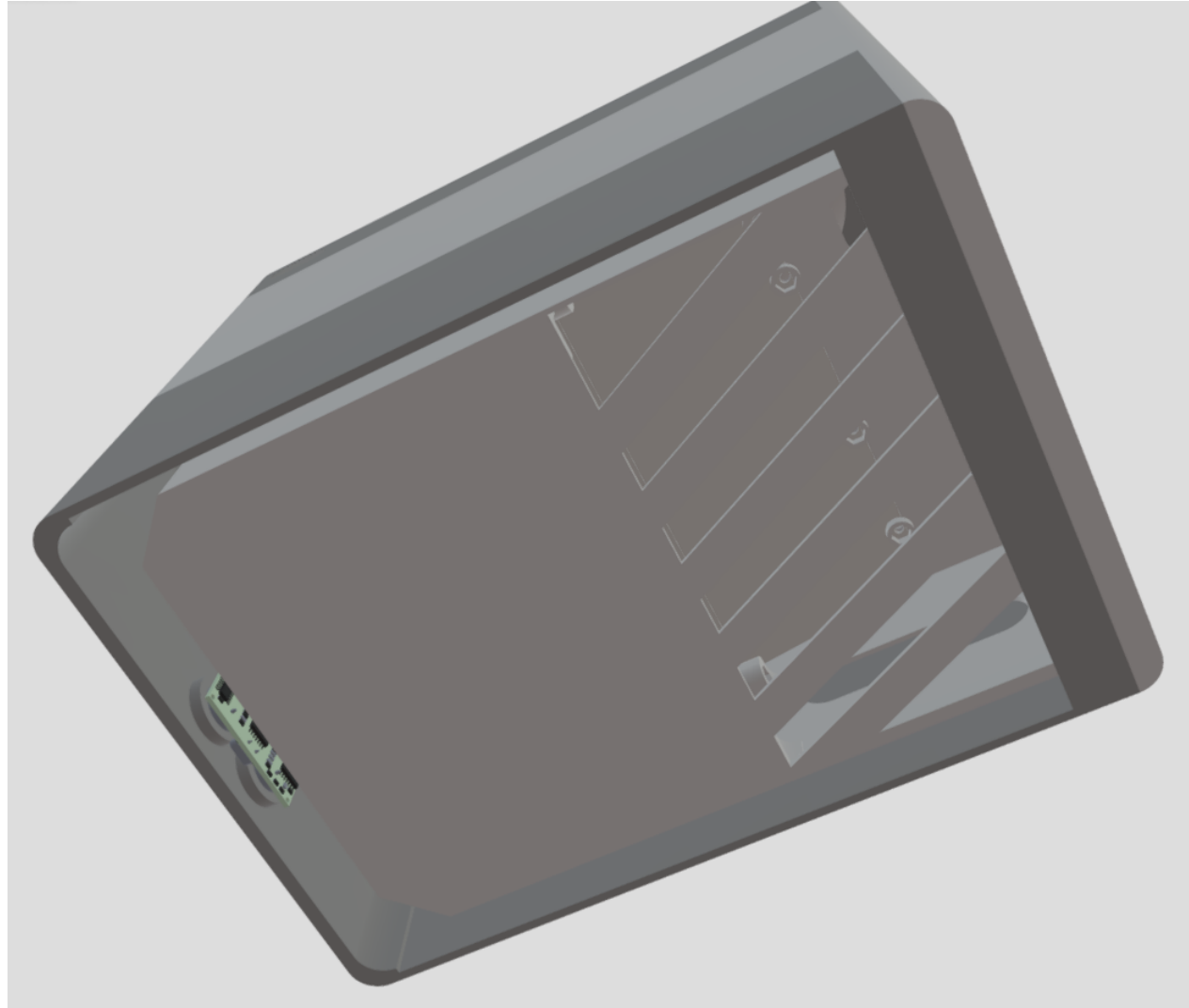
This helps to prevent missed doses and ensure that patients are taking their medication as prescribed, providing peace of mind and improving overall health outcomes.



3-D model(side view)



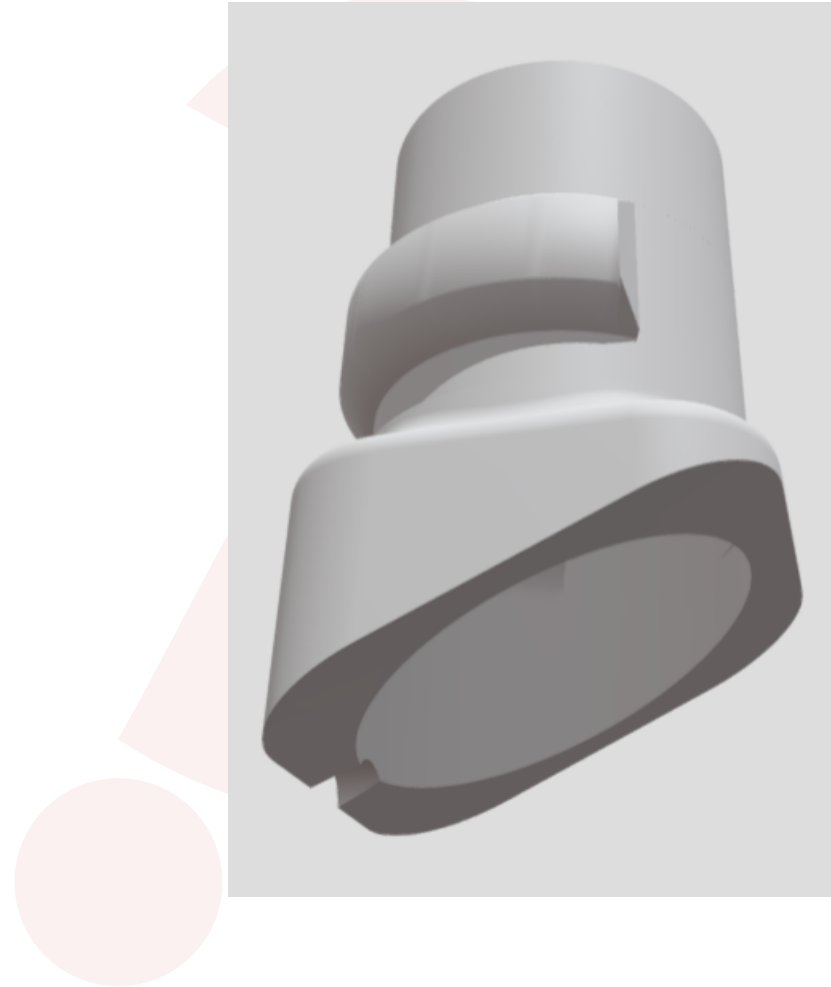
3-D model(bottom view)



3-D model- Pill container

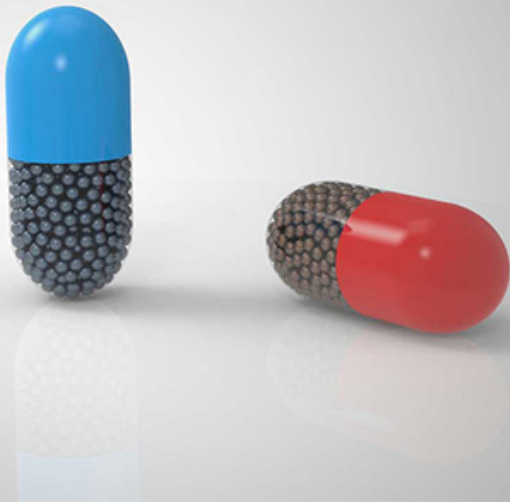


3-D model- Pill container(bottom view)



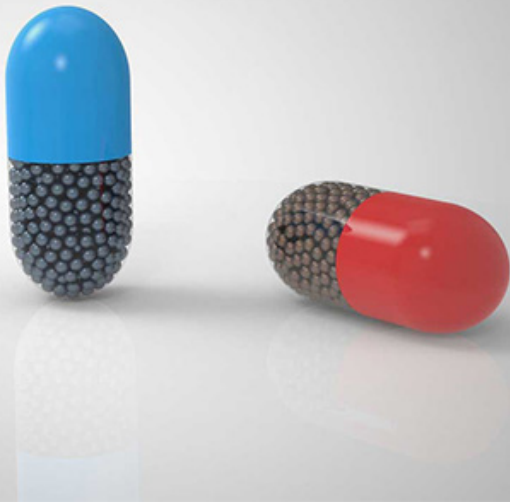
Workload Distribution

- 1) Dhyan & Jeevantika - Mobile App development + PPT
- 2) Ivan & Aditya – Coding + AWS
- 3) Priyam & Khajan – Circuit and Components



TEAM MEMBERS

- 1) 20BCE7013 Aditya Patil
- 2) 20BCE7648 Dhyan
- 3) 20BCI7097 Ivan Philip Christopher
- 4) 20BCR7087 Jeevantika Gurung
- 5) 20BES7003 Khajan Singh
- 6) 20BES7012 Priyam Mascharak



Conclusion

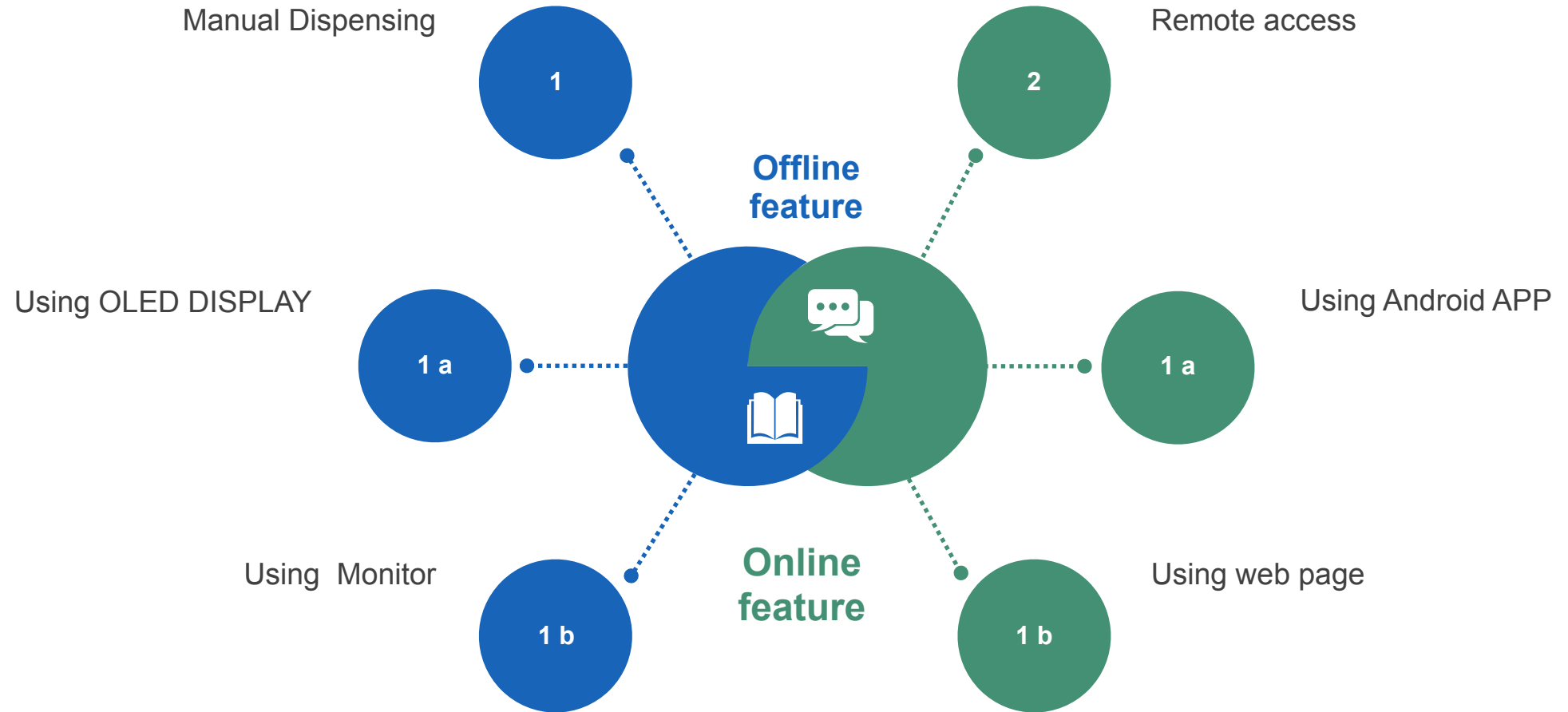
In conclusion, the Smart Pill Box is a cutting-edge solution for managing health and ensuring that patients with autism, the elderly, and people with disabilities never miss a dose of their medication. Its advanced features, including automatic medication reminders, real-time monitoring of pill intake, and path detection technology, make it a comprehensive and easy-to-use solution for managing health. The Smart Pill Box is a crucial tool for improving the quality of life for these populations and ensuring that they receive the care and support they need to stay healthy and active. We are confident that this project will have a positive impact on the lives of countless individuals and make a meaningful contribution to the field of health management.



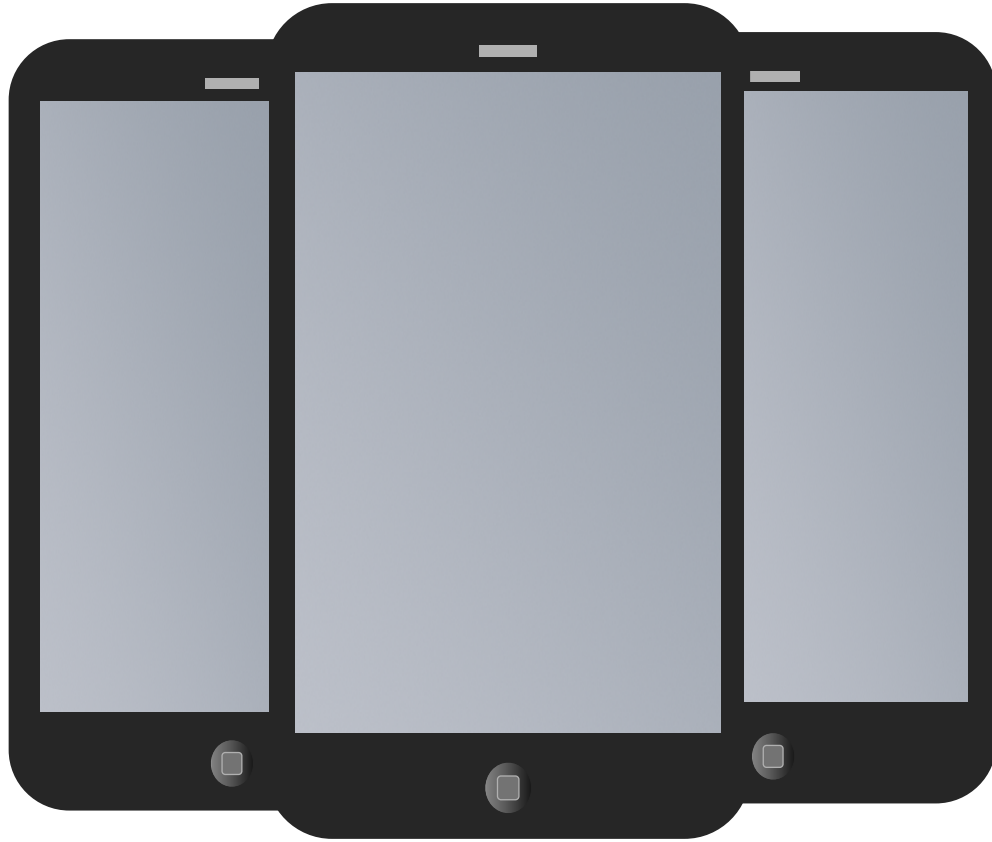
List of Components after modification

Name	Quantity
IR sensor model	1
OLED display	1
SG90 Micro Servo Motor	4
PCA9685 Pulse width modulator	1
Adafruit 16-channel 12-bit PWM/Servo Driver	1
Speaker: 0.25W, 8 Ohms	1
Adafruit Photo transistor IR Light Sensor	4
Adafruit 5mm IR LED(940 nm)	4
9V Battery	1
12.5 watt micro USB adaptor	1
raspberry pi 3 model 3	1

Dispensing mechanisms



Android APP



ANDROID STUDIO



App stores pill configuration details
inside S3 bucket



Bucket object triggers lambda function which
contains the pill configuration as the payload

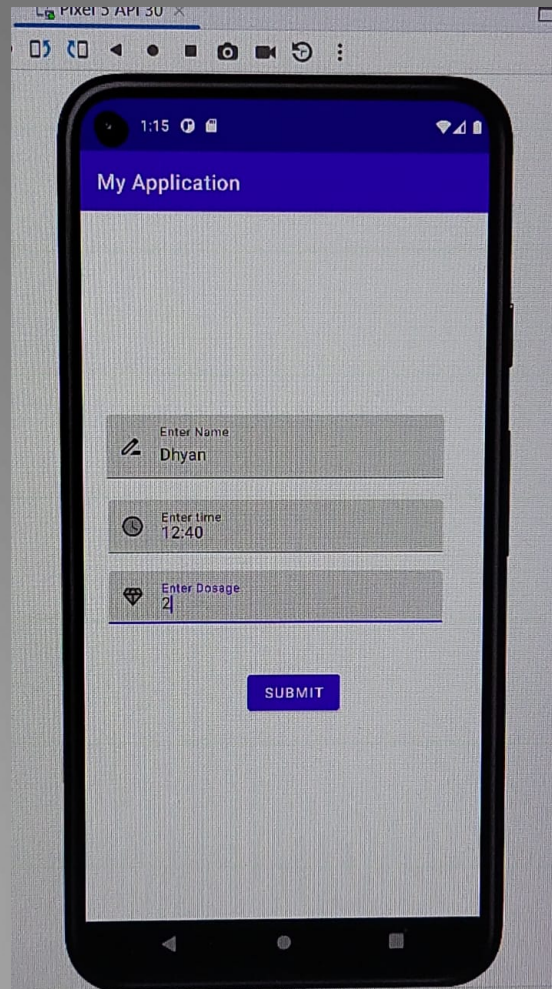


lambda function
Outputs a log file from which the raspberry pi
takes the details and outputs the required no of

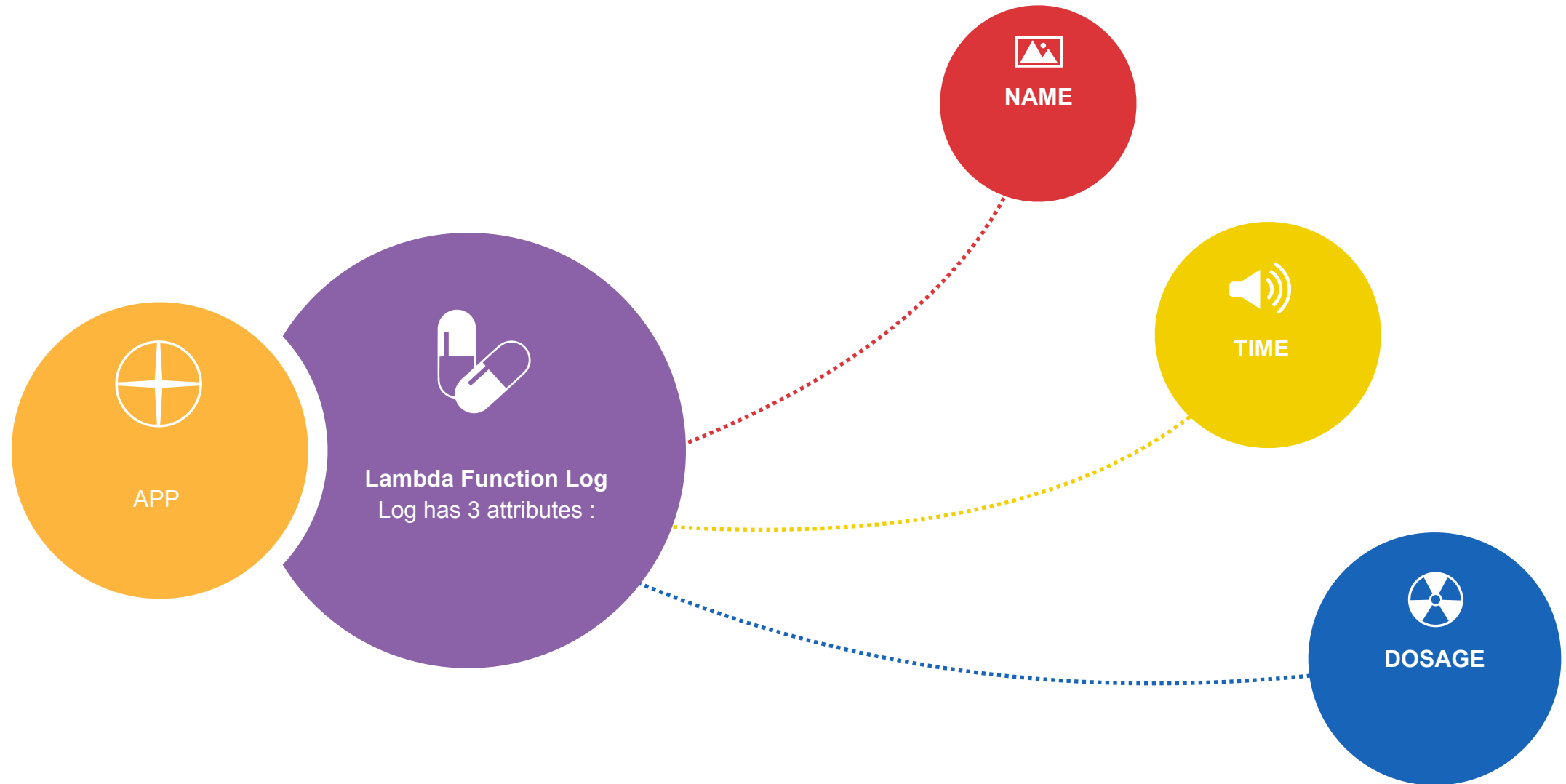




APP INTERFACE



FUNCTIONS



Log output

The section below shows the logging calls in your code. [Click here](#) to view the

START RequestId: f49dfffb9-3414-4308-b99c-572c76b8fc93 Version: \$LATE

New S3 object created:

Bucket: smartpills

Key: userdetails/userdetails.txt

Contents: Patient Name: Dhyan

Time of consumption: 12:40

Dosage(Nos): 2

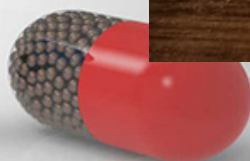
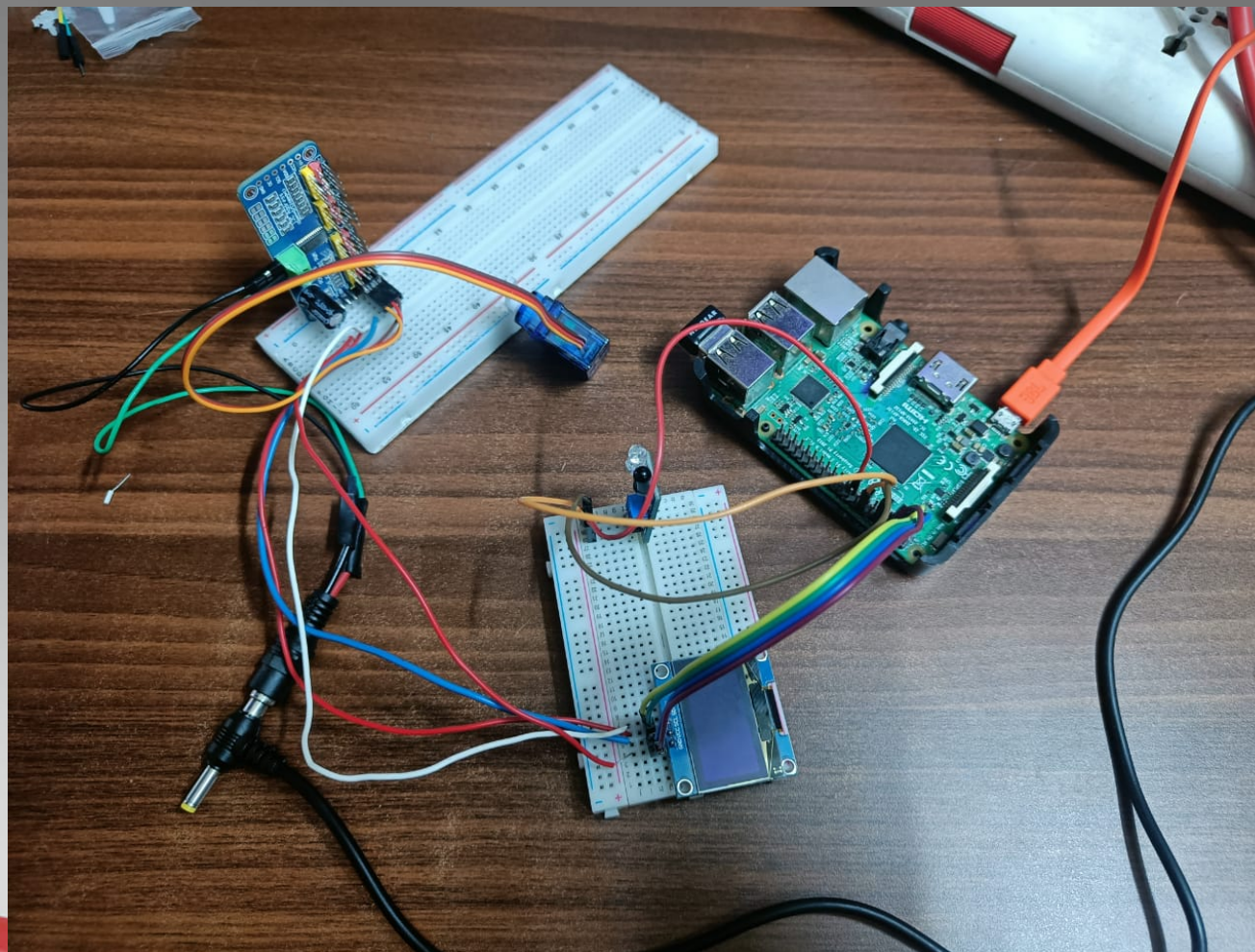
REPORT RequestId: f49dfffb9-3414-4308-b99c-572c76b8fc93

Duration: 1.

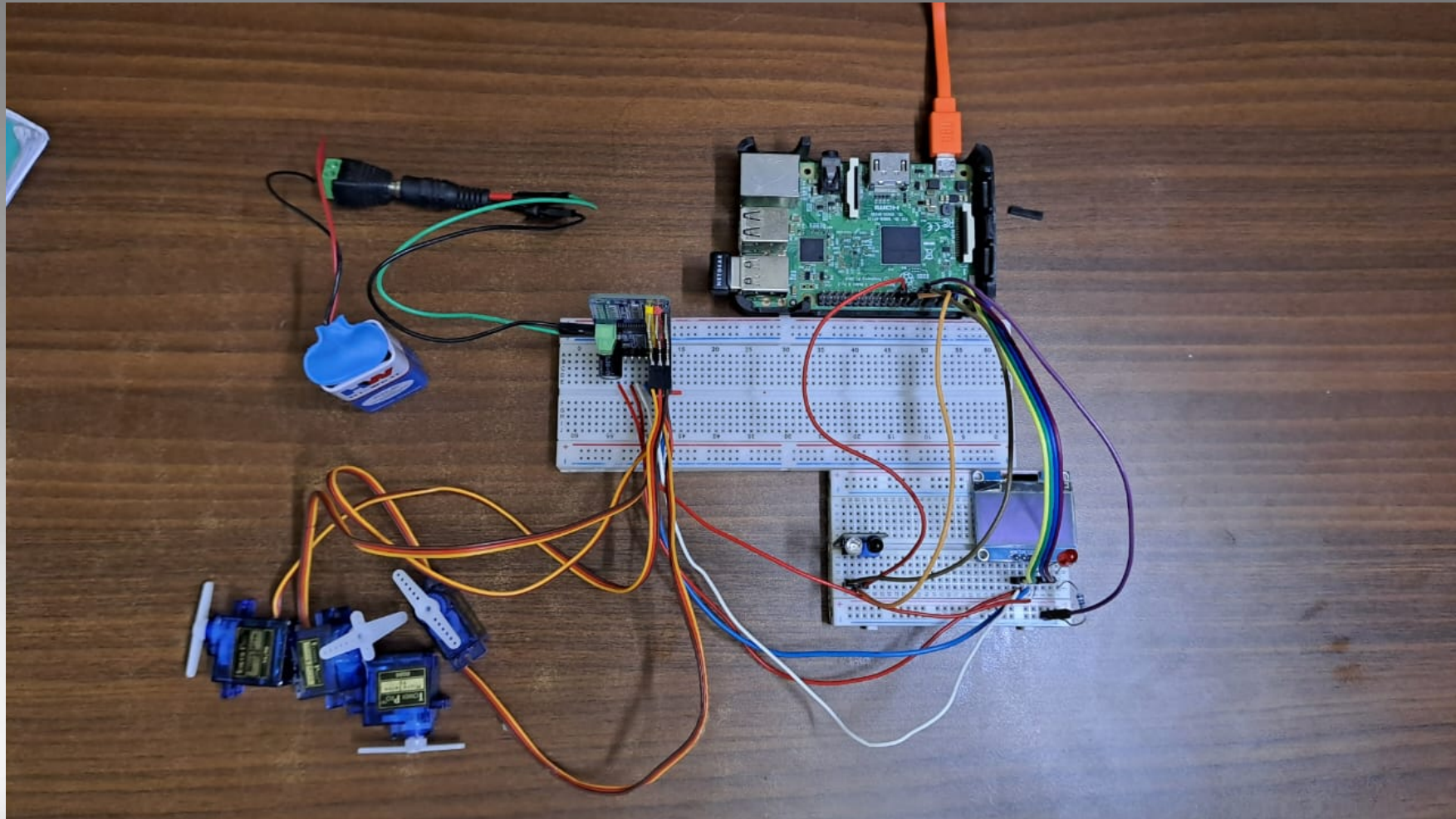


LOG OUTPUT

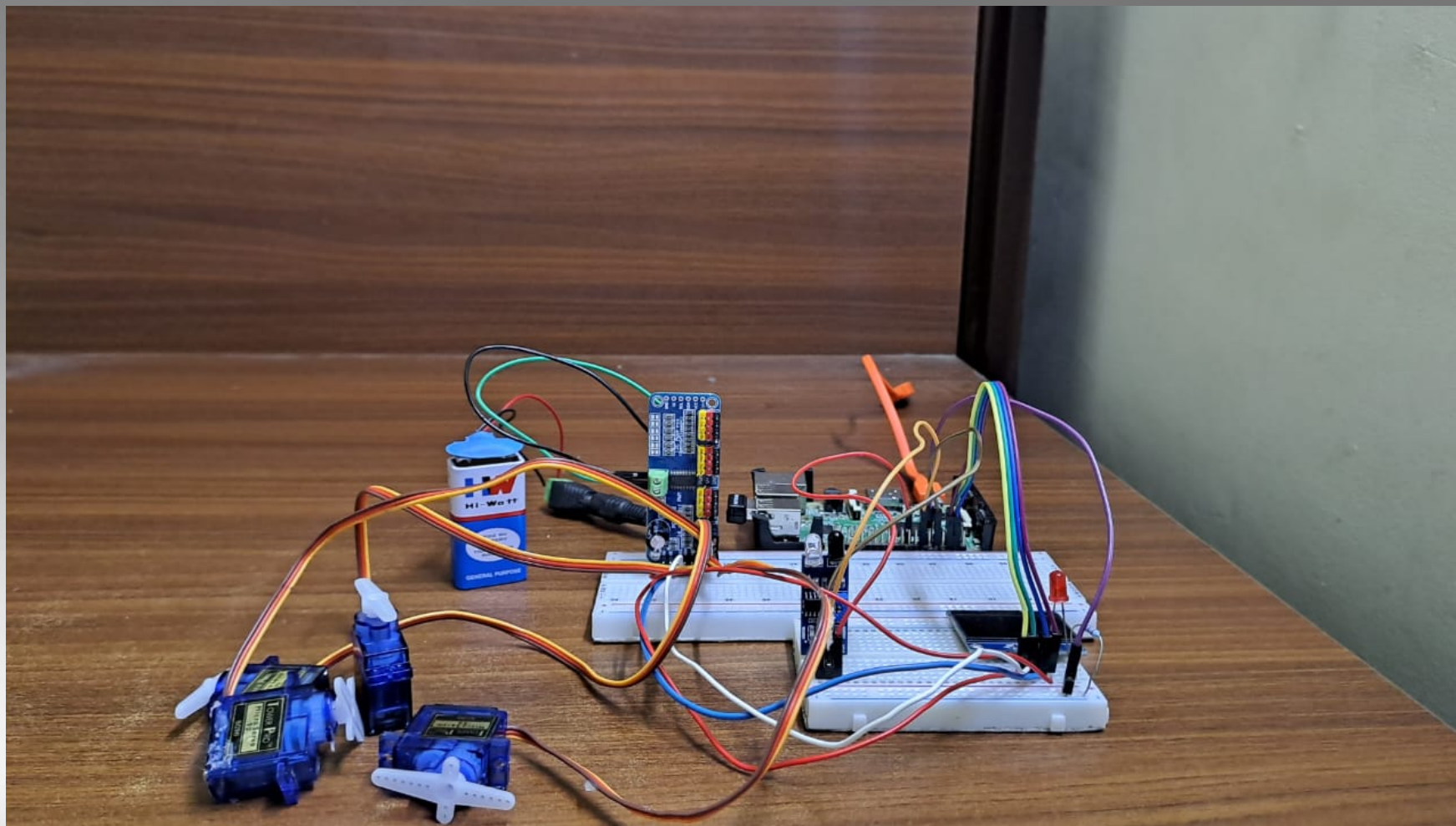




CIRCUIT



CIRCUIT



CIRCUIT





FEATURES

01

APP

We can set the medicine dosage and time.

02

MANUAL DISPENSING

It will dispense the medicine with a manual click

03

POWER BACKUP AND BUZZER

04

WEB PAGE & REMOTE ACCESS

Packages

A

OLED DISPLAY

LUNA is one of several pixel structures used in OLED displays.

B

PCA9685 PWM

For the PCA9685 PULSE WIDTH MODULATOR

C

BOTO 3

software development kit (SDK) for the Python programming language, which provides APIs (Application Programming Interfaces)

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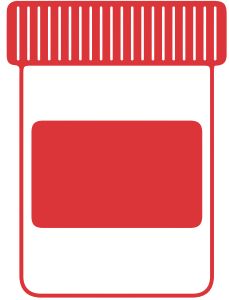
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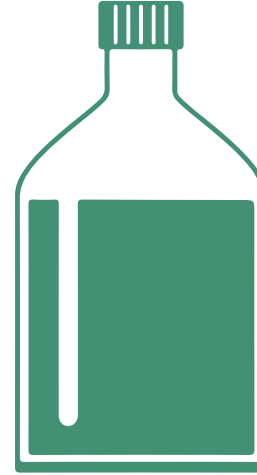
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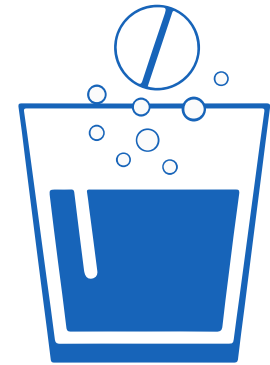
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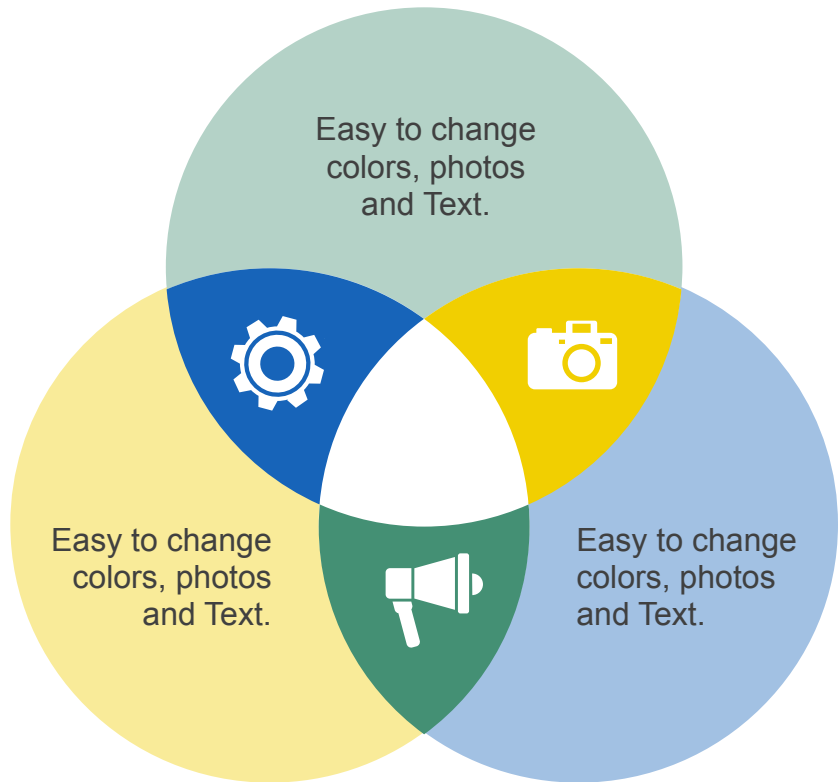
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Packages

A

OLED DISPLAY

LUNA is one of several pixel structures used in OLED displays.

B

PCA9685 PWM

For the PCA9685 PULSE WIDTH MODULATOR

C

BOTO 3

software development kit (SDK) for the Python programming language, which provides APIs (Application Programming Interfaces)

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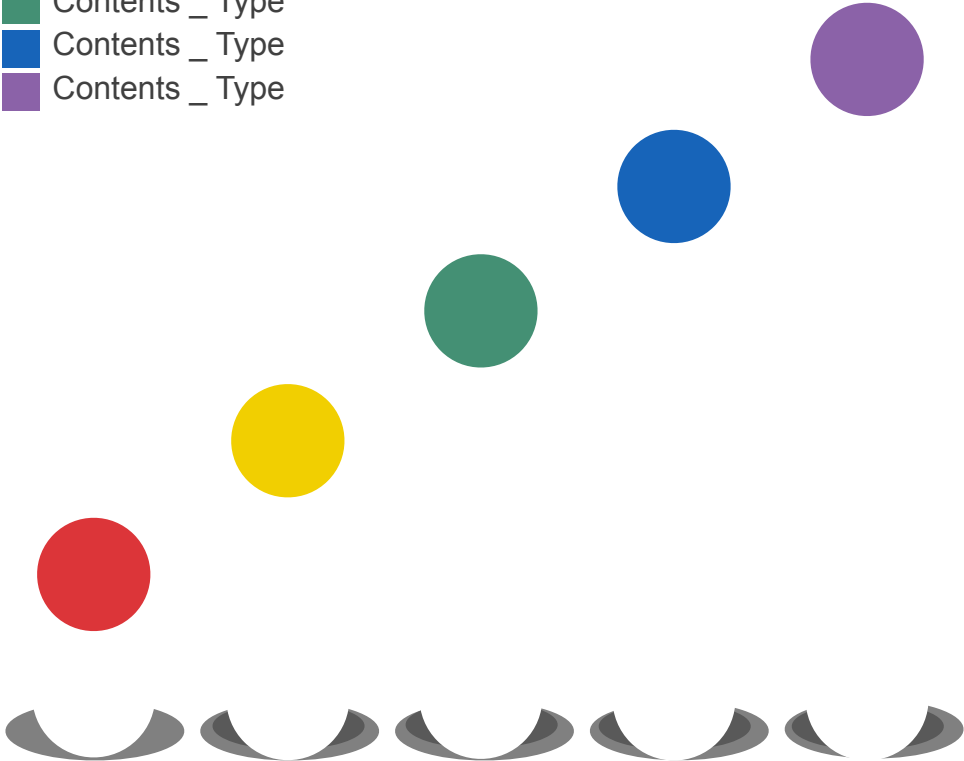
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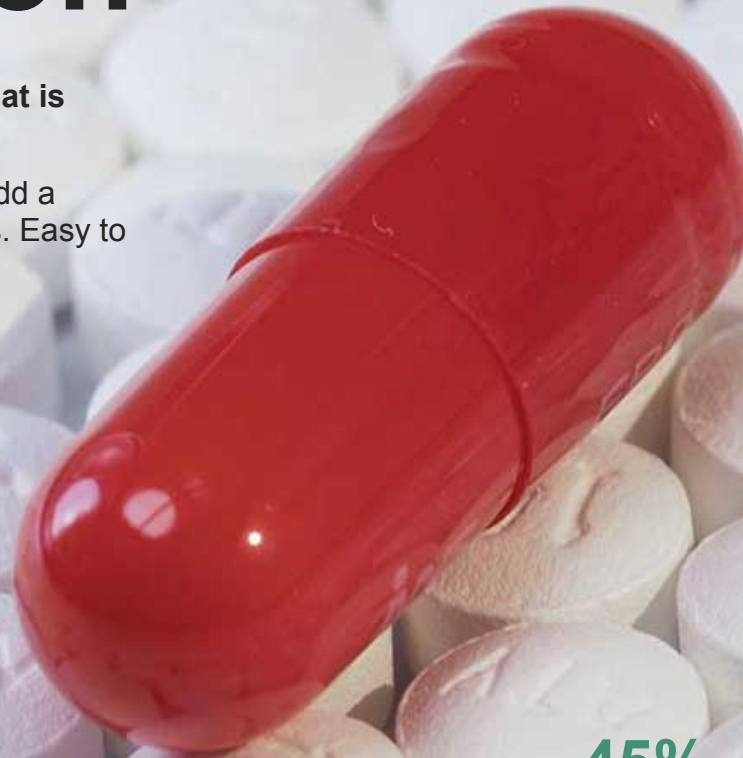
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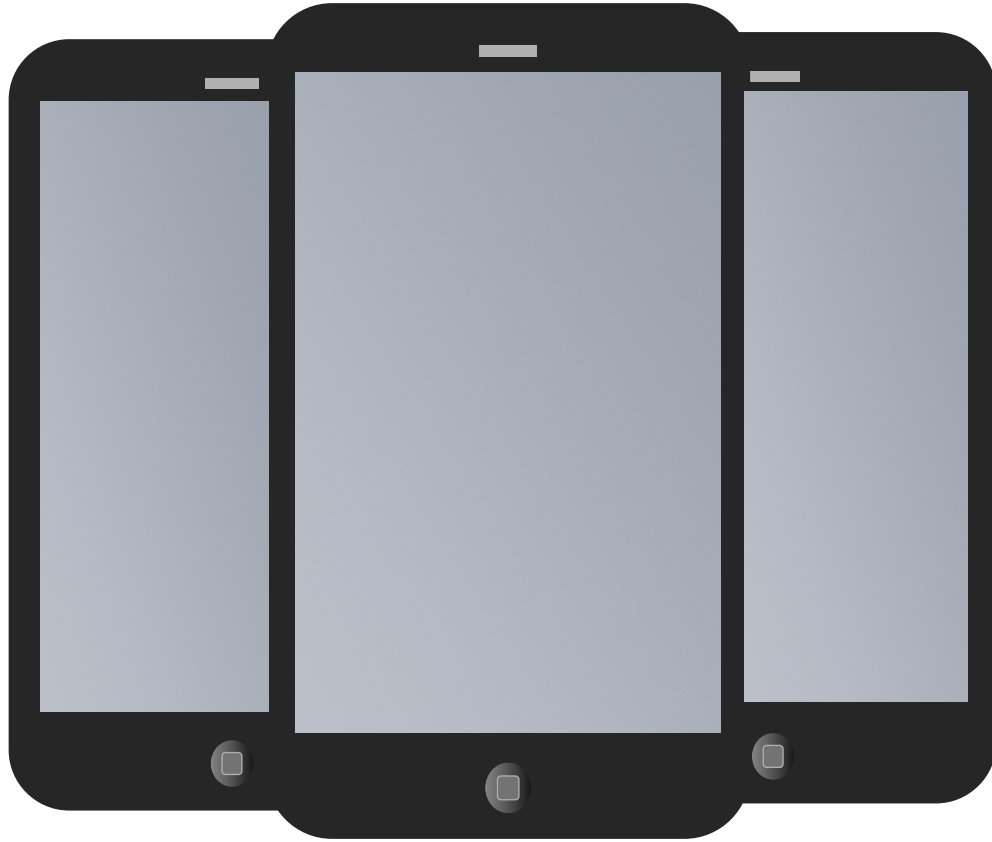


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Android APP



ANDROID STUDIO



App stores pill configuration details
inside S3 bucket

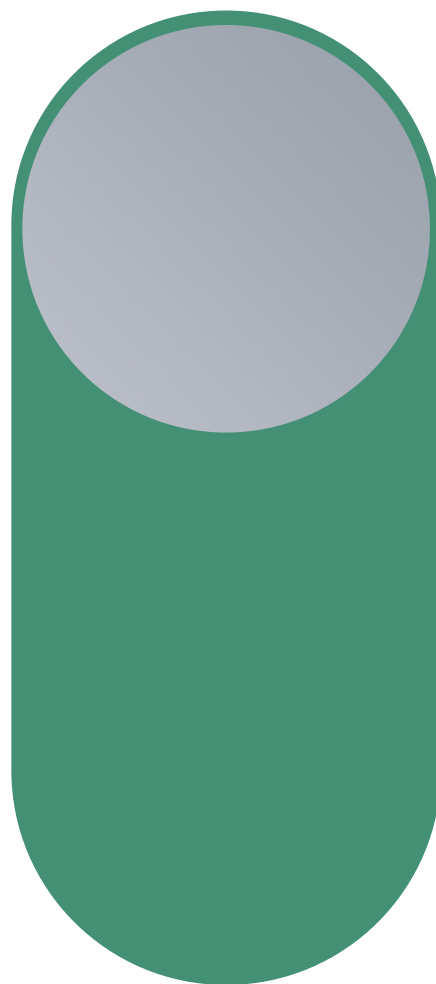
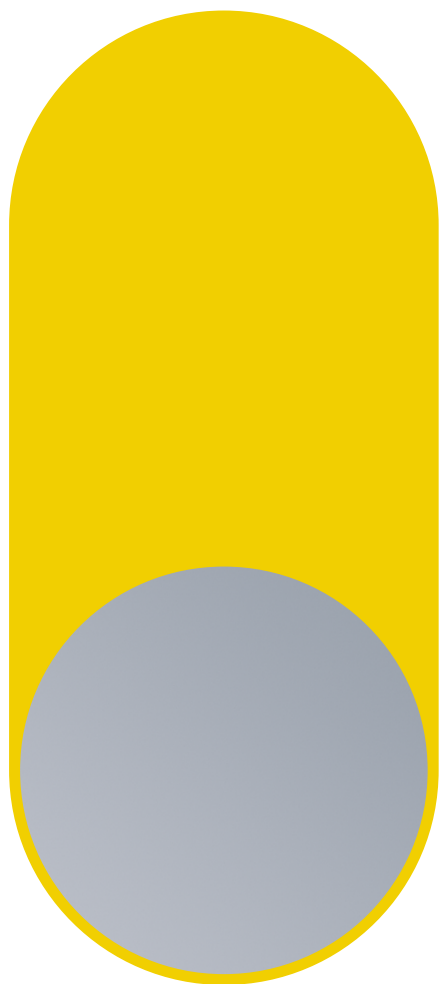
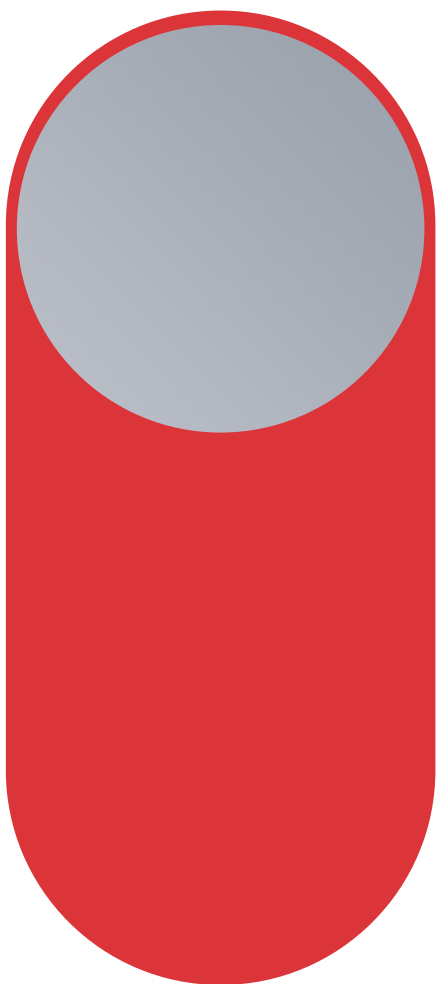


Bucket object triggers lambda function which
contains the pill configuration as the payload



lambda function
Outputs a log file from which the raspberry pi
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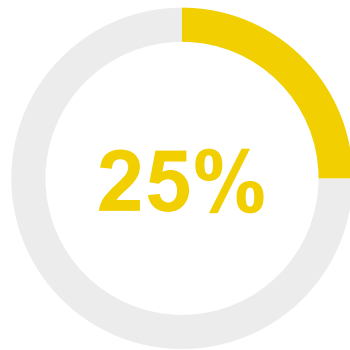


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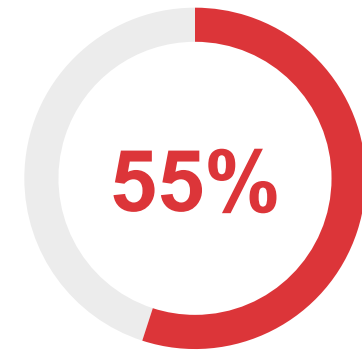
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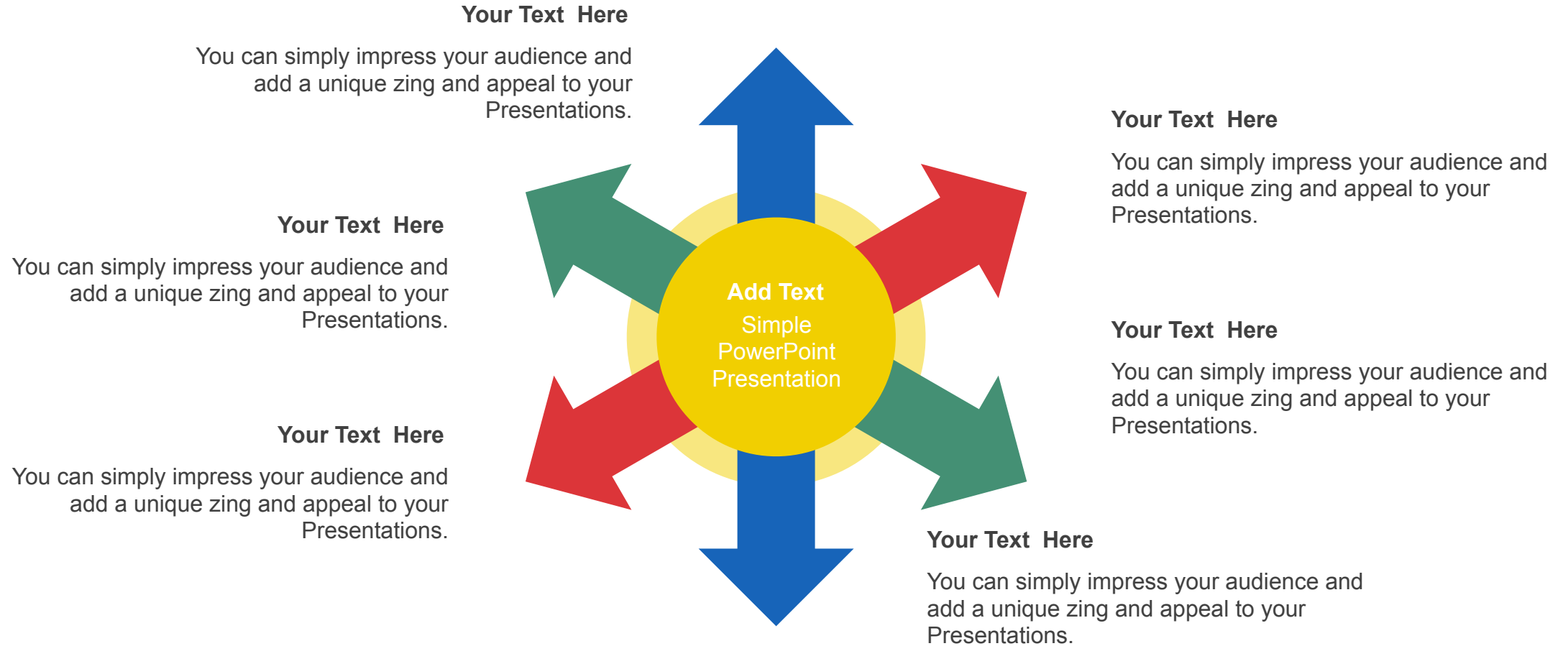
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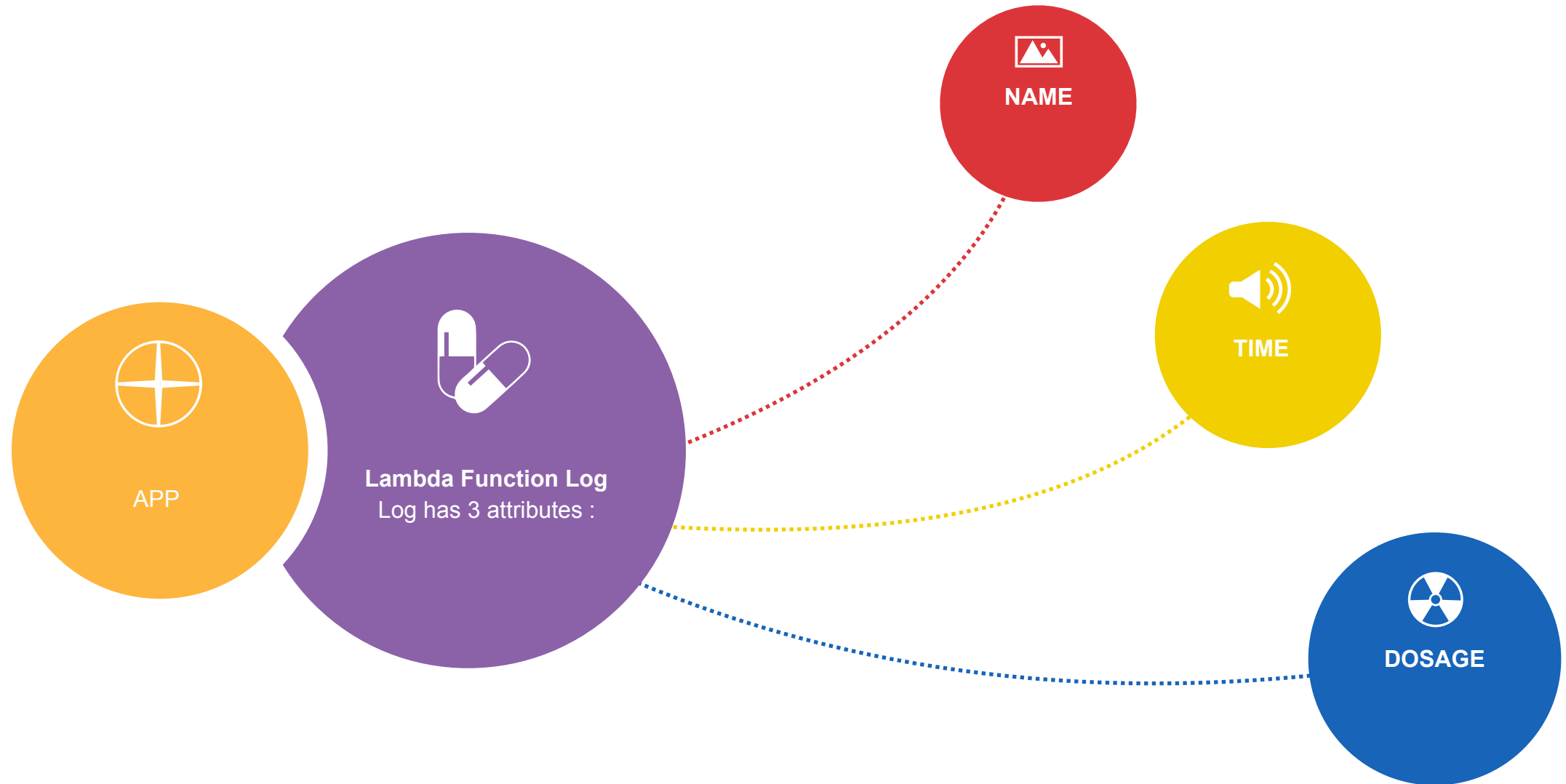




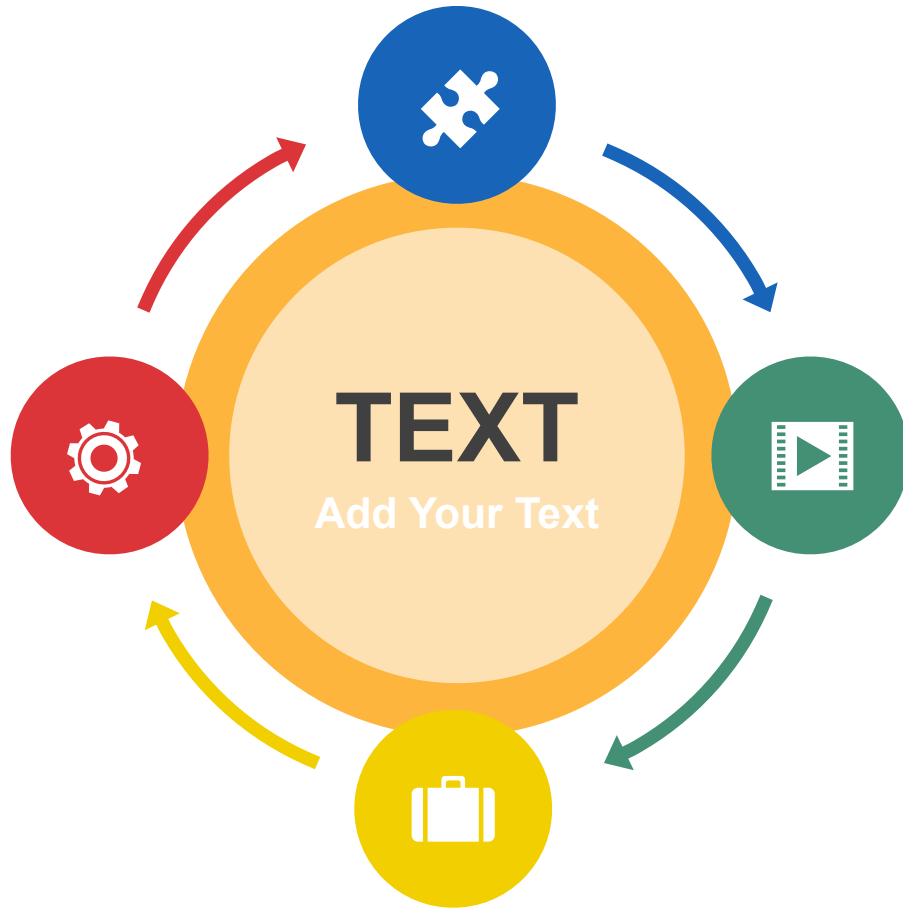
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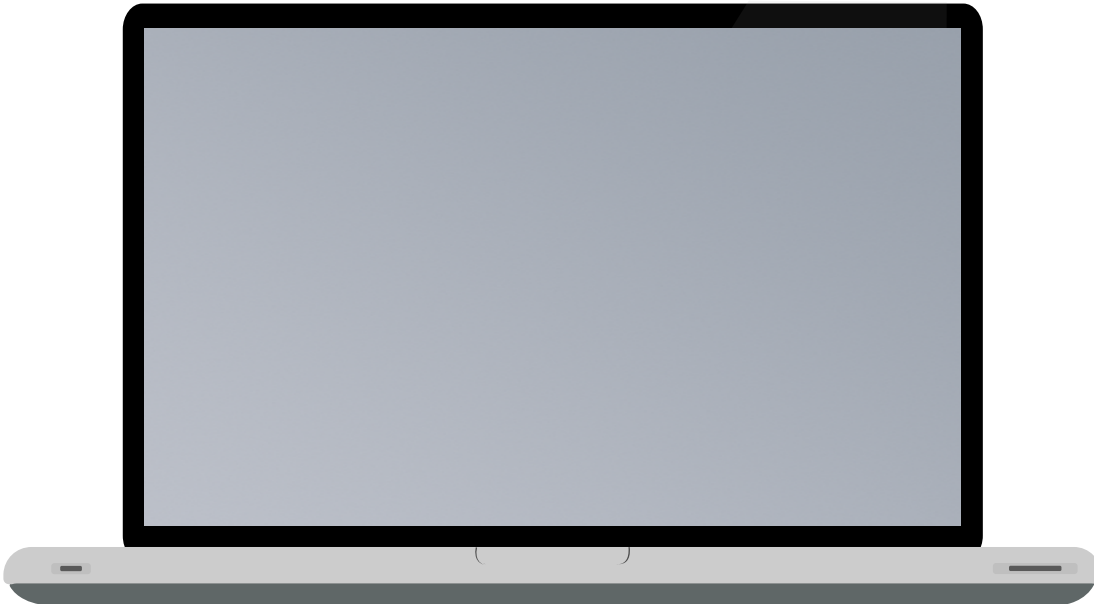
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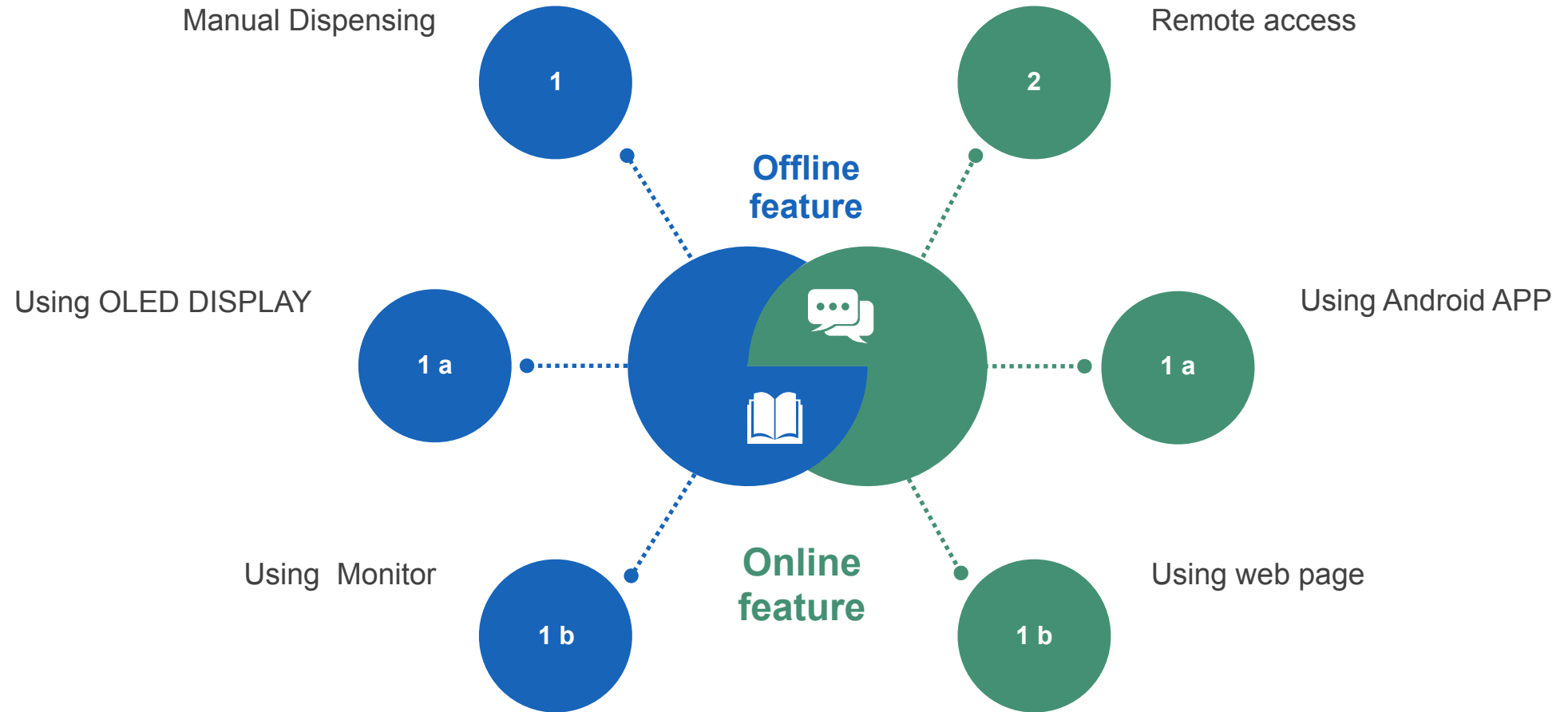
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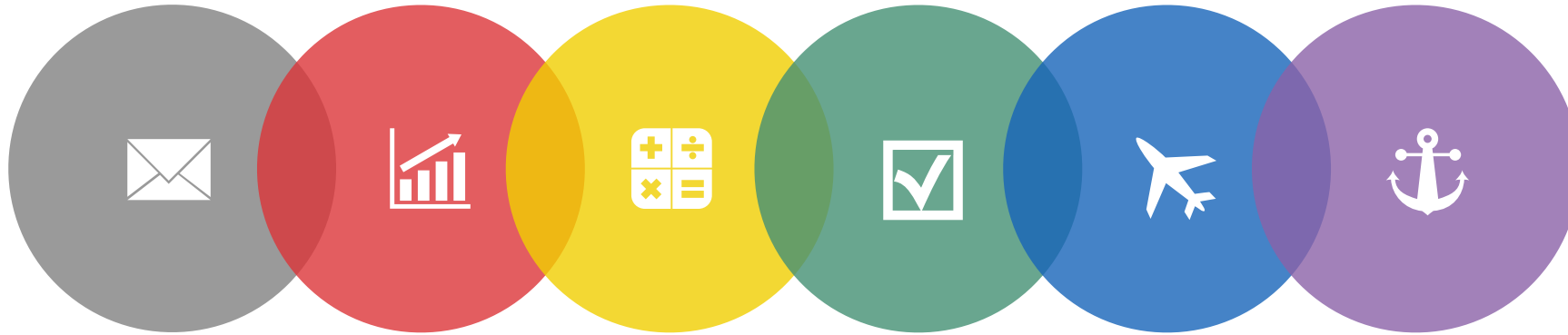
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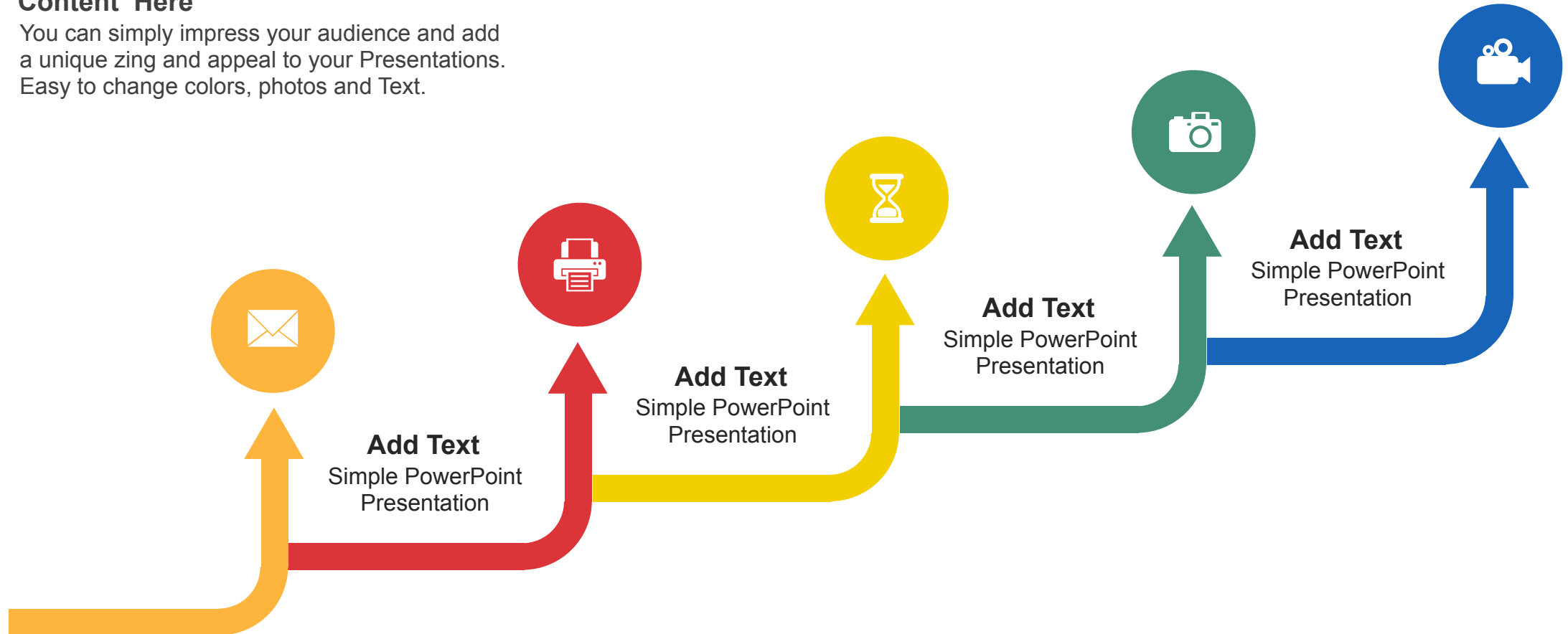
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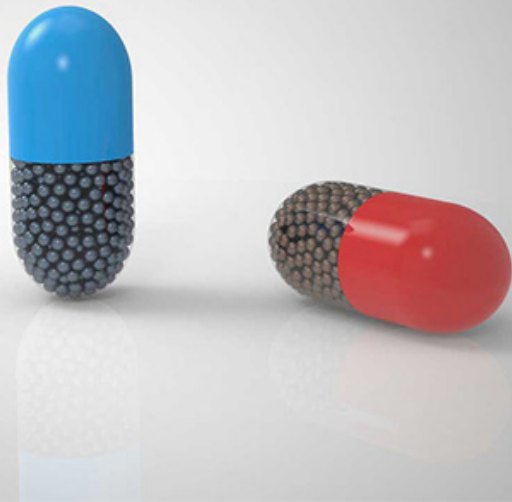
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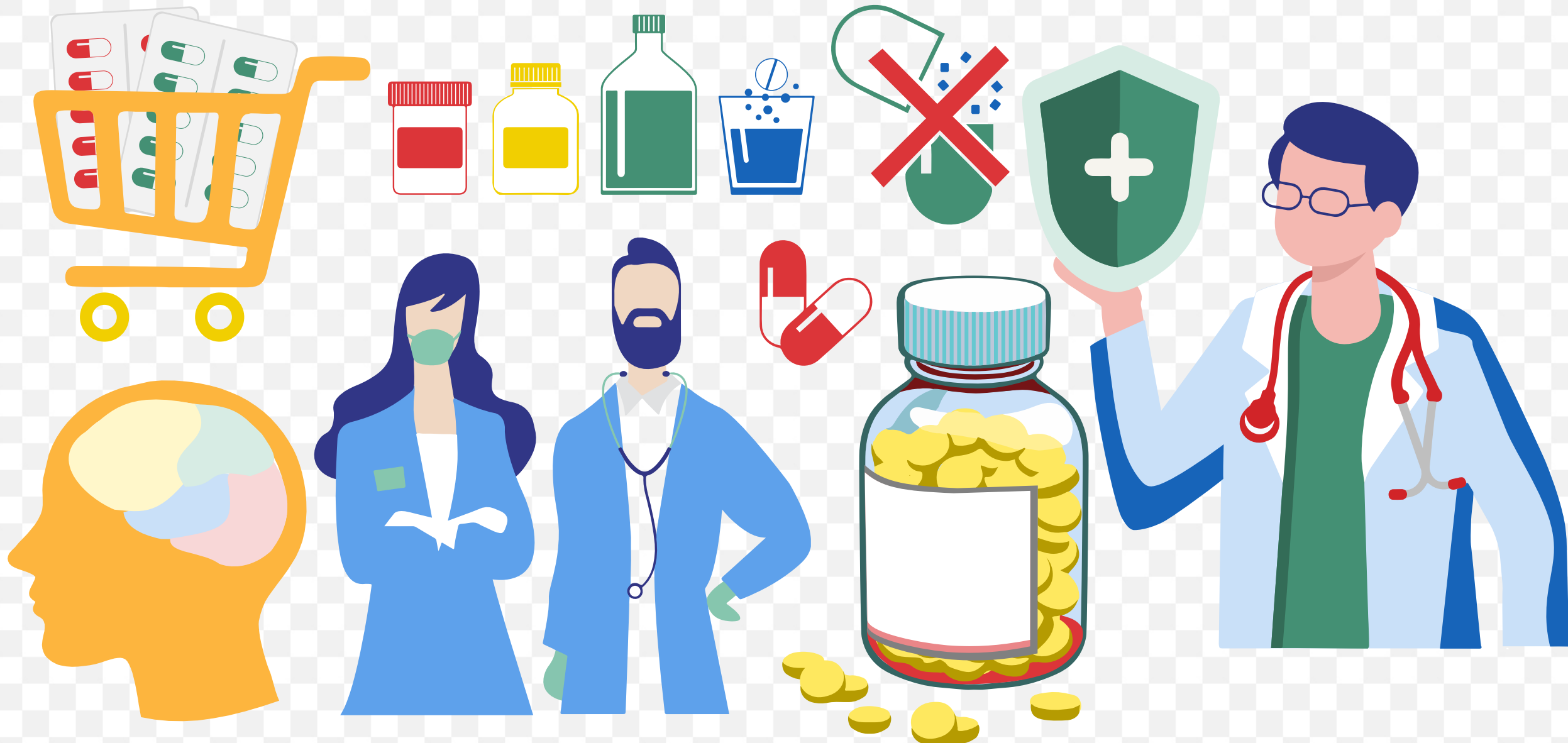
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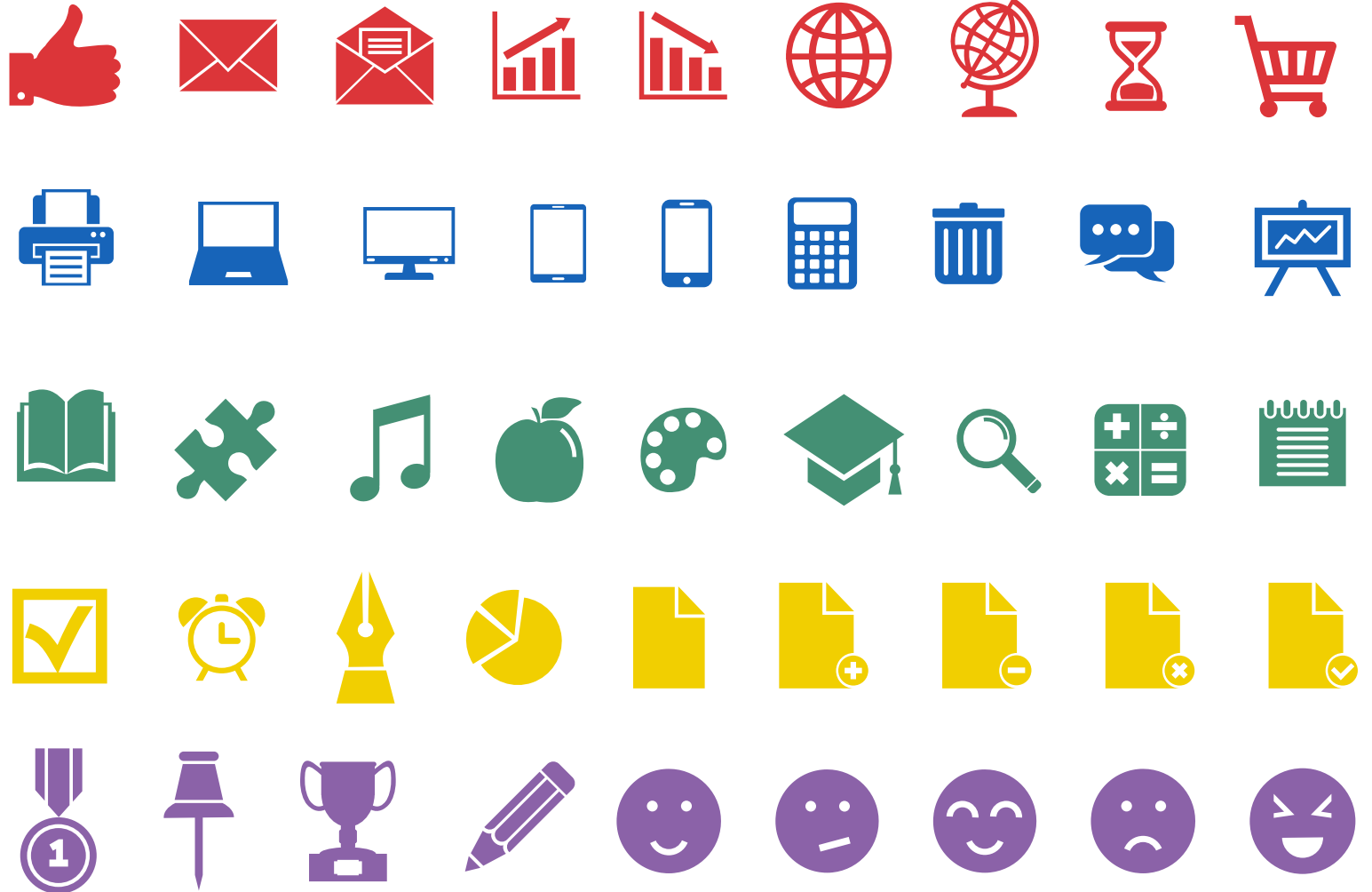
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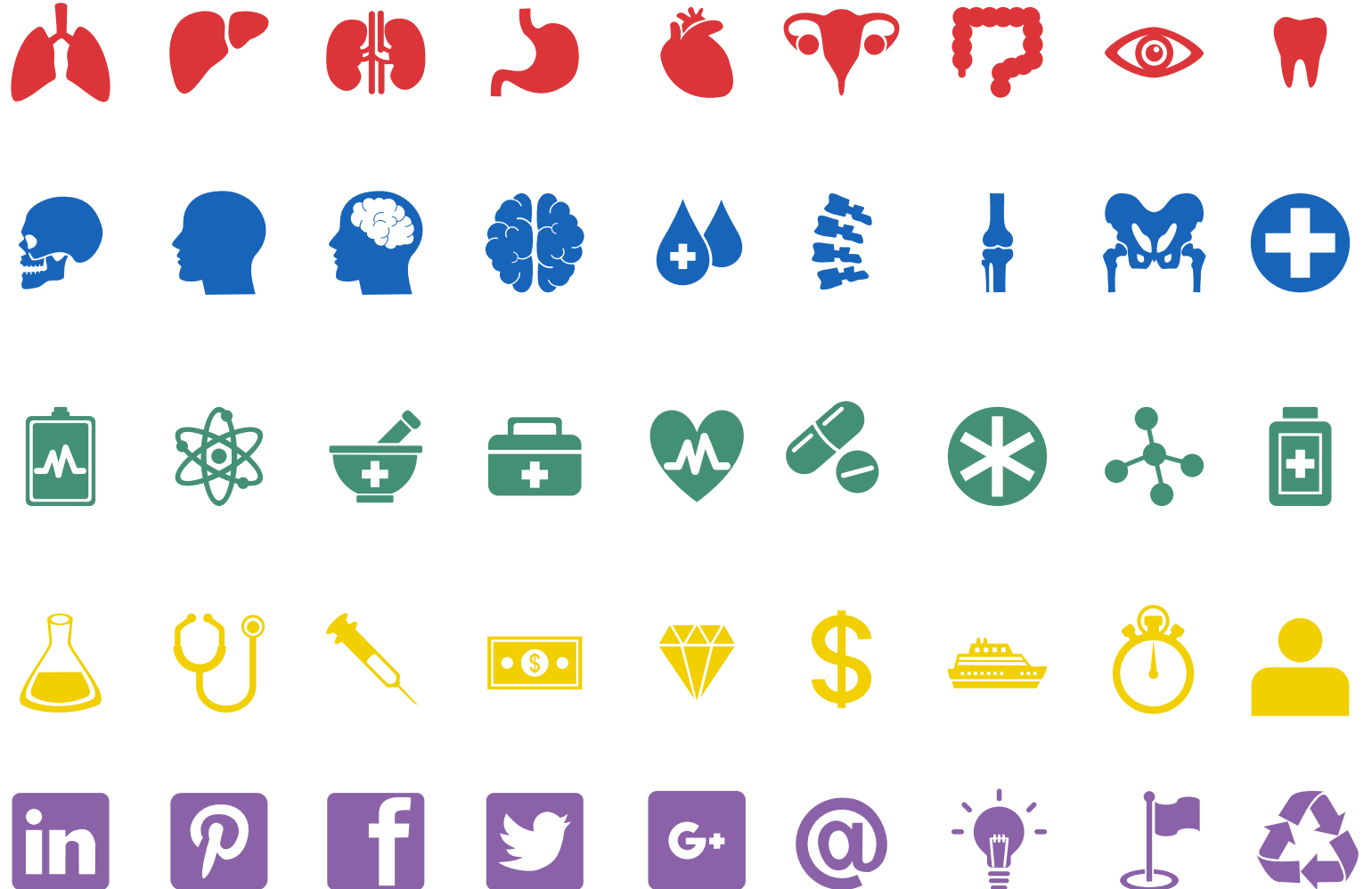
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