



# ExchanGo

Money, a fleeting shadow of desire, often costs more than it gives, whispering promises it cannot keep. Like numbers, it stretches endlessly, yet never fills the void it creates. True wealth lies not in chasing its infinite trail but in savoring moments that no price can measure.





# Meet Our Team

**Najat Mansour**

Computer Engineering

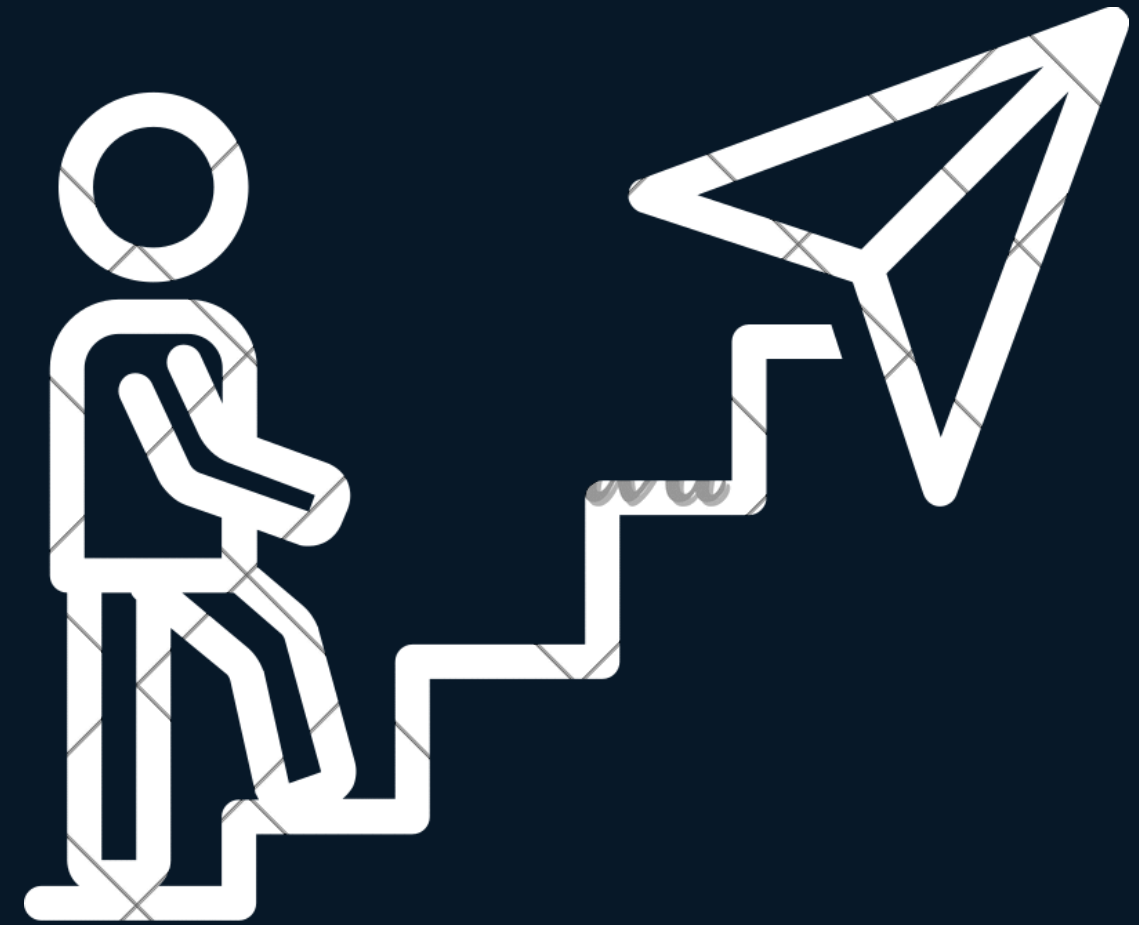


**Mohammad Alawneh**

Computer Engineering



# Introduction

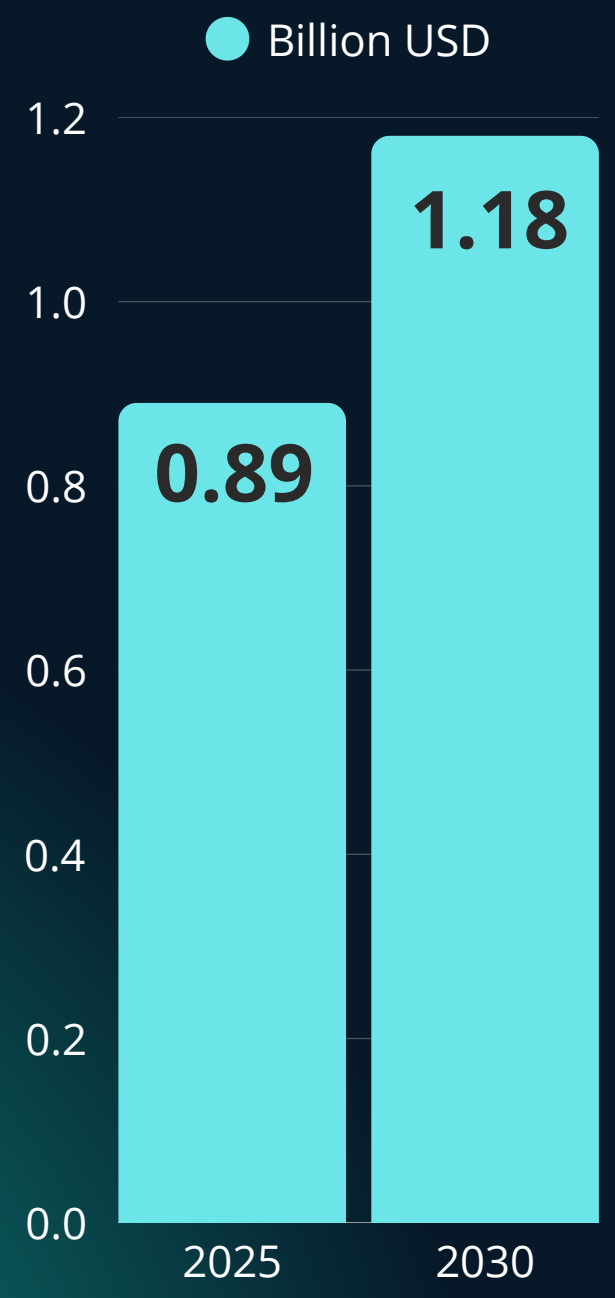




# Motivation (1)

Foreign Exchange Market Size in USD

WOW!  
Information



01

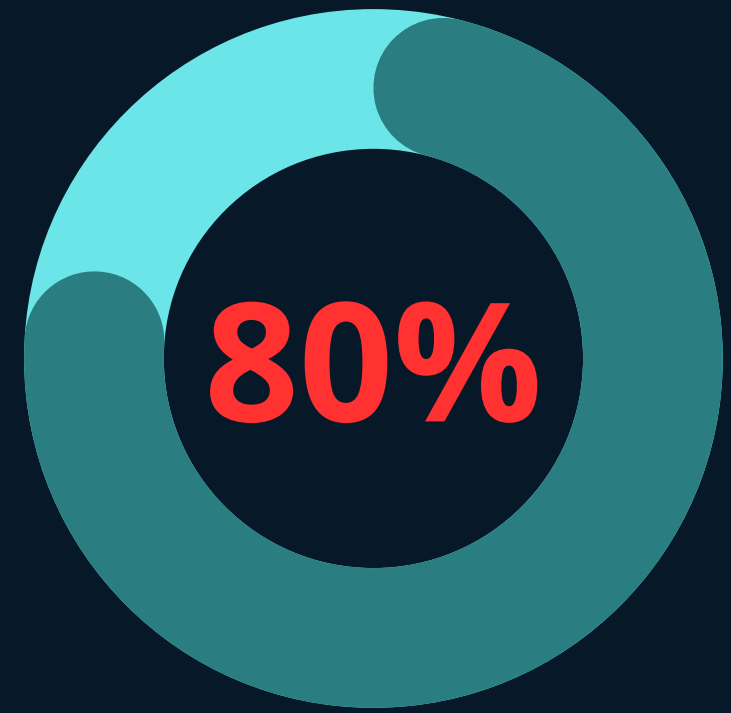
**1.1 Billion** tourists in 2024

02

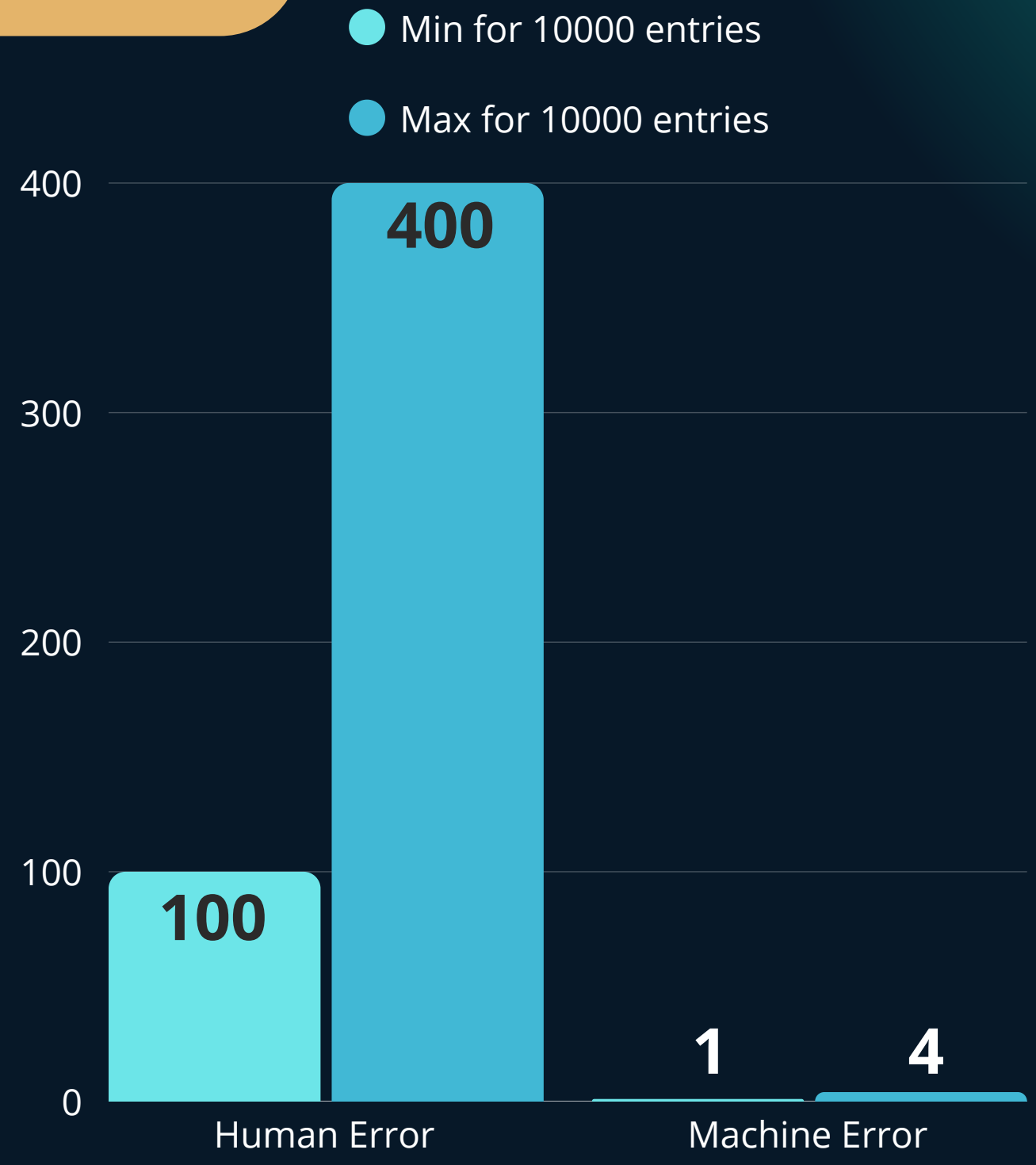
**3.5 Million** ATMs worldwide cannot exchange currencies

# Motivation (2)

Human Errors



Busniess Failures



# Objectives

Services

Types of currencies

Control Methods

Breaking

Banknotes

Manual

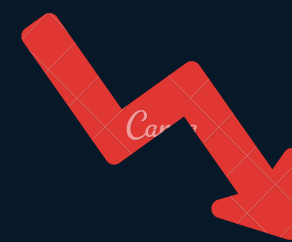
Consolidating

Coins

Wireless



Efficiency



Discrimination

**Literature**

**Review**



# Similar Projects



HongZhou

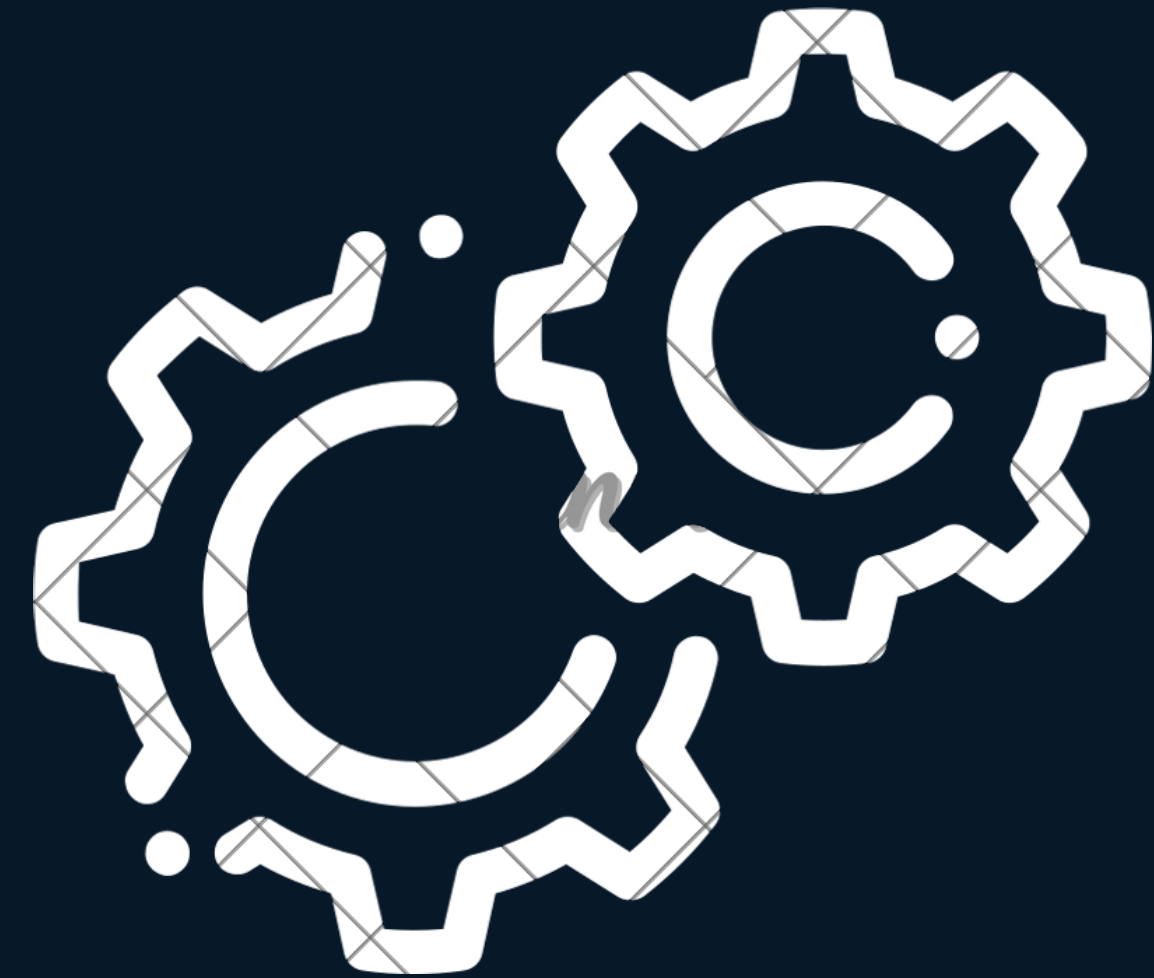


CEM - 4300  
Glory



Only Breaking  
Exchange

# Methodology



System UI

Tools

Input Mechanism

Currency Detection

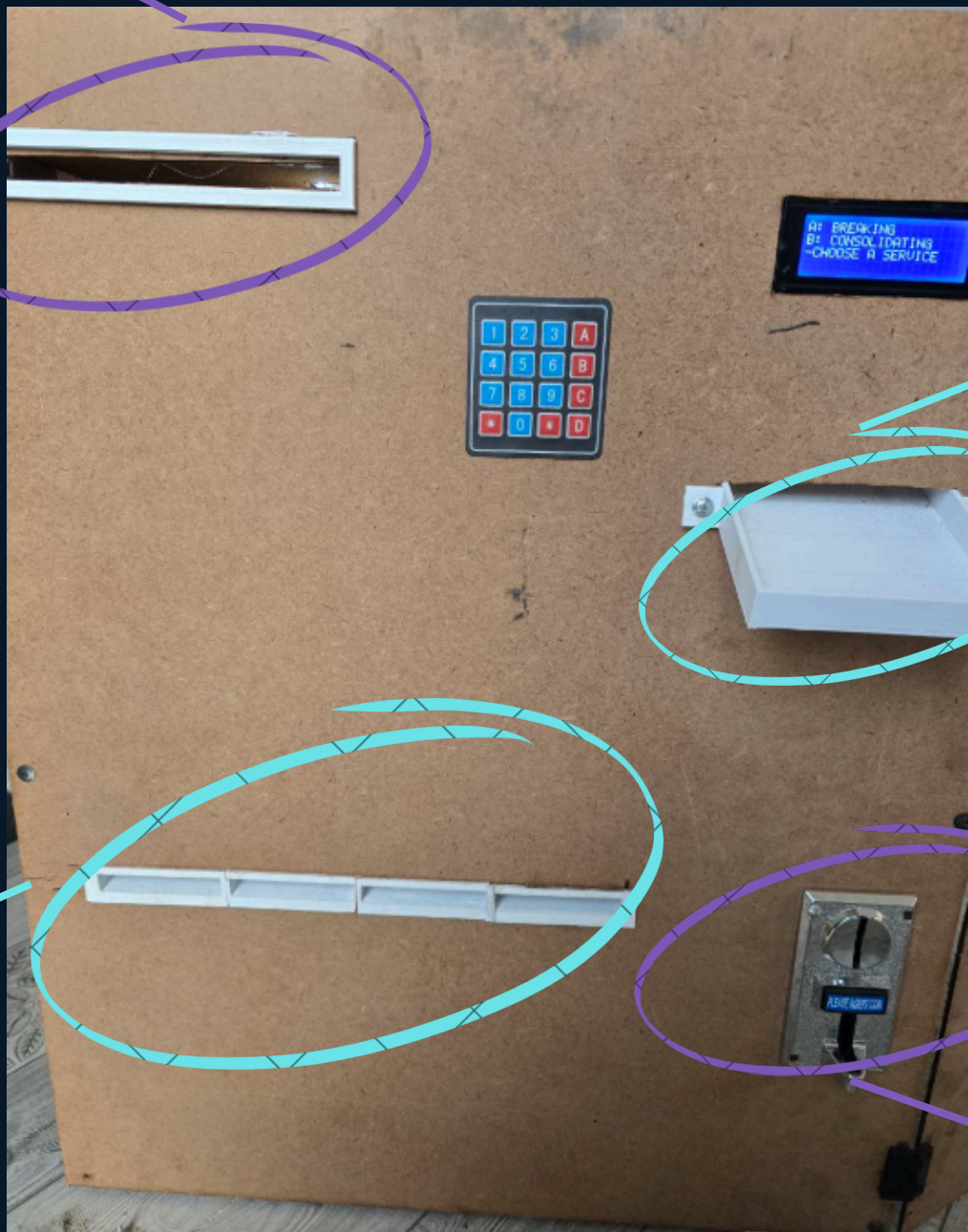
Processing Transaction

Output Mechanism

Mobile Application

Constraints

**Input  
Banknotes**



**Output  
Coins**

**Output  
Banknotes**

**Input  
Coins**

System UI

Tools

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints

Microcontrollers

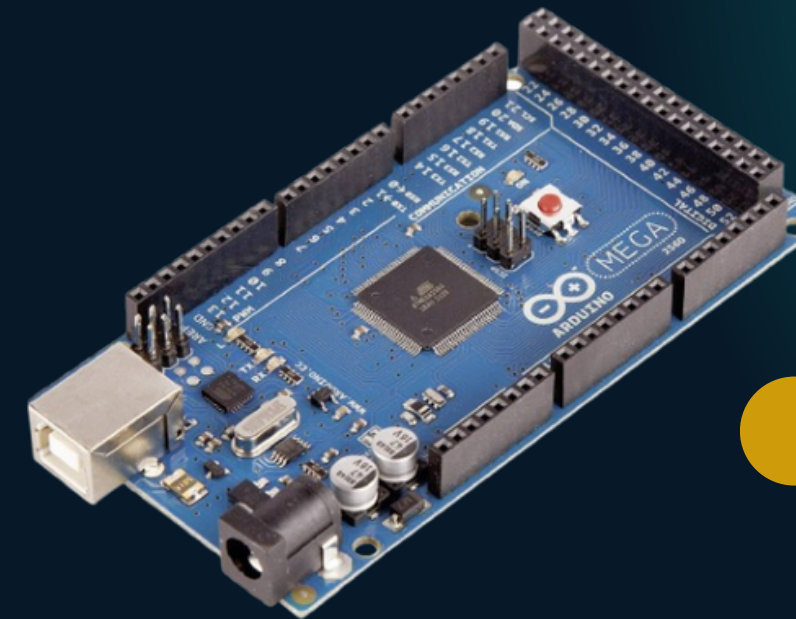
Motors

Sensors

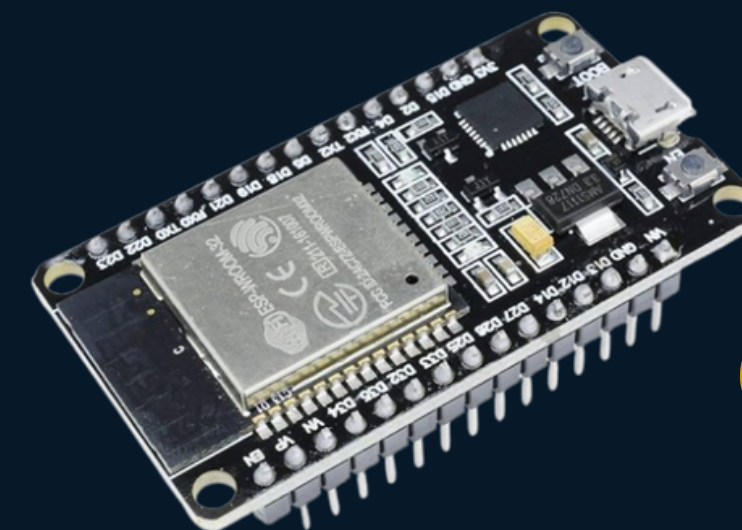
I/O Devices

Others (1)

Others (2)



Arduino-Mega 2560



ESP32



System UI

**Tools**

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints

Microcontrollers

**Motors**

Sensors

I/O Devices

Others (1)

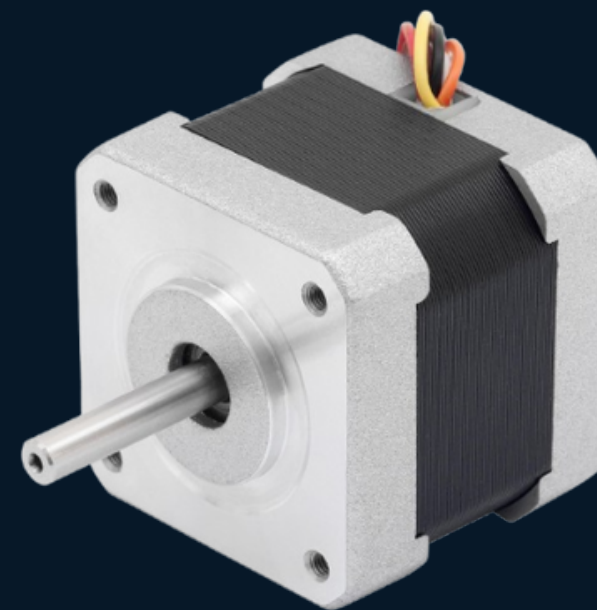
Others (2)



**DC Motor**



**Servo Motor**



**Stepper Motor  
NEMA 17 / 103H548**



**Stepper Motor Driver  
TB-6600**

System UI

Tools

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints

Microcontrollers

Motors

Sensors

I/O Devices

Others (1)

Others (2)



TCS230/TCS3200  
Color Sensor

System UI

Tools

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints

Microcontrollers

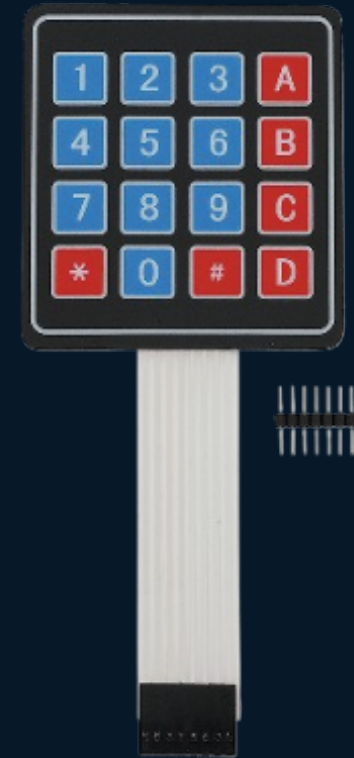
Motors

Sensors

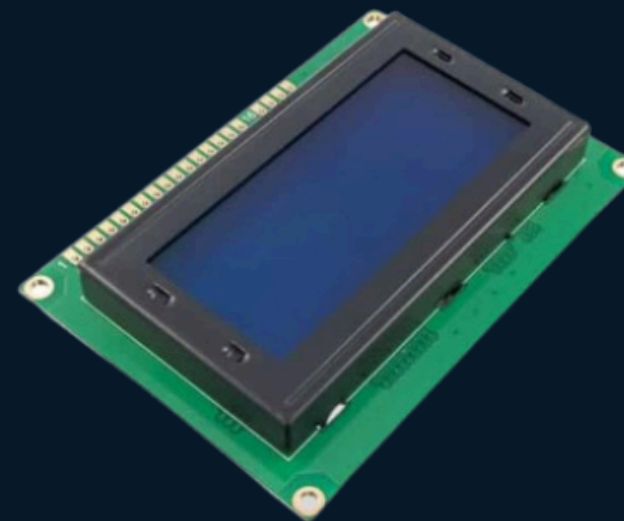
I/O Devices

Others (1)

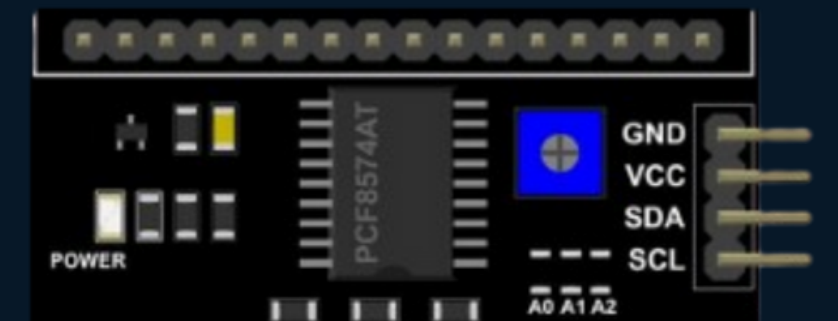
Others (2)



4 X 4 Matrix Keypad



16 X 4 LCD



PCF8574 Adapter

System UI

**Tools**

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints

Microcontrollers

Motors

Sensors

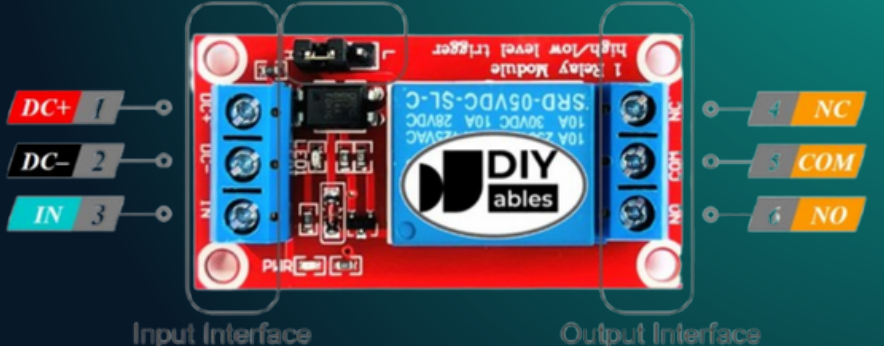
I/O Devices

**Others (1)**

Others (2)



Limit Switch



Mechanical Relay



Paper Feed Roller



Power Supply

System UI

Tools

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints

Microcontrollers

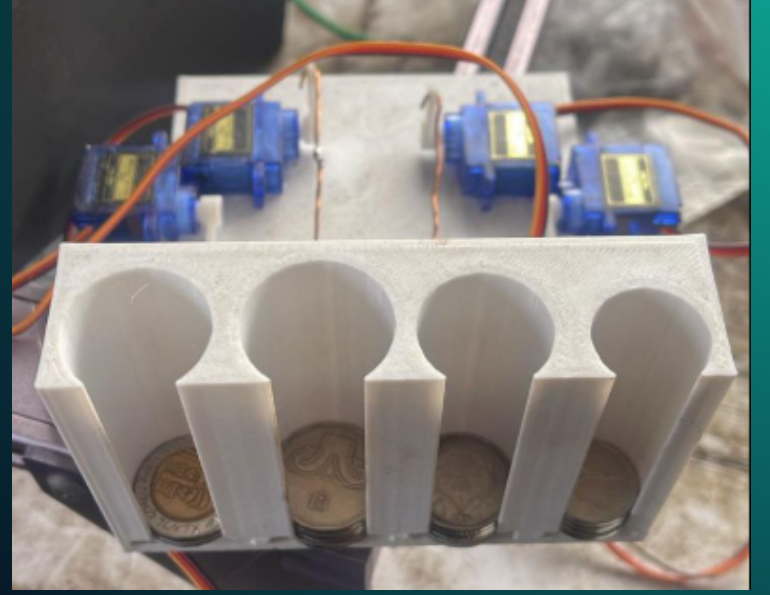
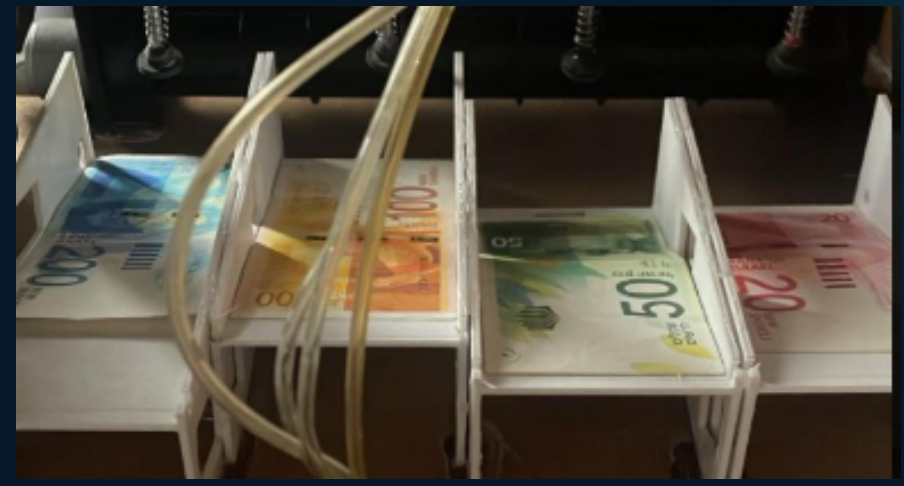
Motors

Sensors

I/O Devices

Others (1)

Others (2)



Vacuum



Coin Acceptor CH-926

System UI

Tools

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

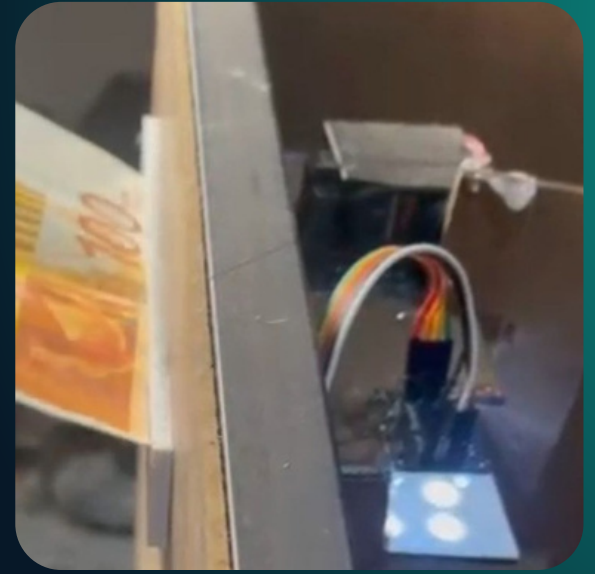
Constraints

Banknotes

Coins

1

Input from the thin horizontal slot



2

The **color sensor** detects the banknote



3

A **servo motor** rotates **110°**



System UI

Tools

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints

Banknotes

Coins

1

Coin Acceptor  
CH-926



Coin Acceptor CH-926

System UI

Tools

Input Mechanism

**Currency Detection**

Processing Transaction

Output Mechanism

Mobile Application

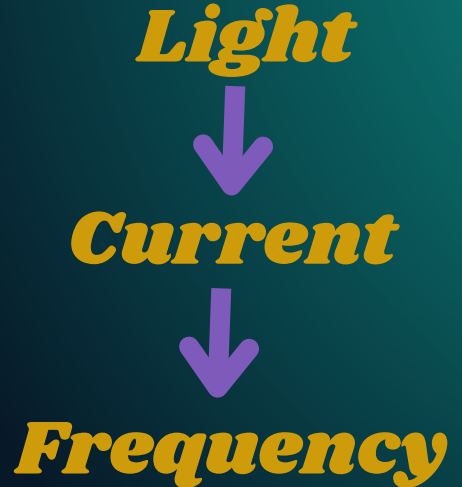
Constraints

Banknotes

Coins



TCS230/TCS3200  
Color Sensor



<b>Currency</b>	<b>Red</b>	<b>Green</b>	<b>Blue</b>
<b>200 ILS</b>	70 - 80	55 - 70	35 - 45
<b>100 ILS</b>	40 - 50	60 - 70	55 - 65
<b>50 ILS</b>	55 - 65	50 - 60	55 - 65
<b>20 ILS</b>	40 - 50	50 - 60	40 - 50

# Meet Our Team

**Najat Mansour**

Computer Engineering



**Mohammad Alawneh**

Computer Engineering



System UI

Tools

Input Mechanism

**Currency Detection**

Processing Transaction

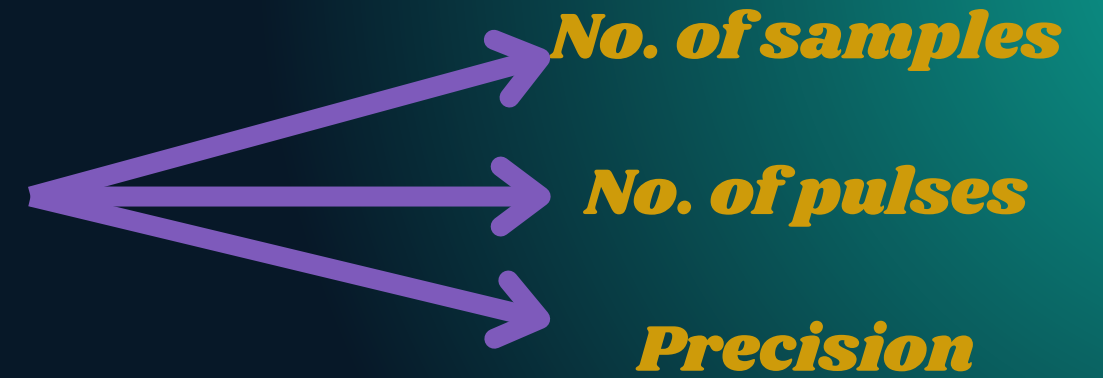
Output Mechanism

Mobile Application

Constraints

Banknotes

Coins



Coin Acceptor CH-926

<b>Currency</b>	<b>No. of samples</b>	<b>No. of pulses</b>	<b>Precision</b>
<b>10 ILS</b>	15	5	6
<b>5 ILS</b>	15	4	6
<b>2 ILS</b>	15	3	6
<b>1 ILS</b>	15	2	6



System UI

Tools

Input Mechanism

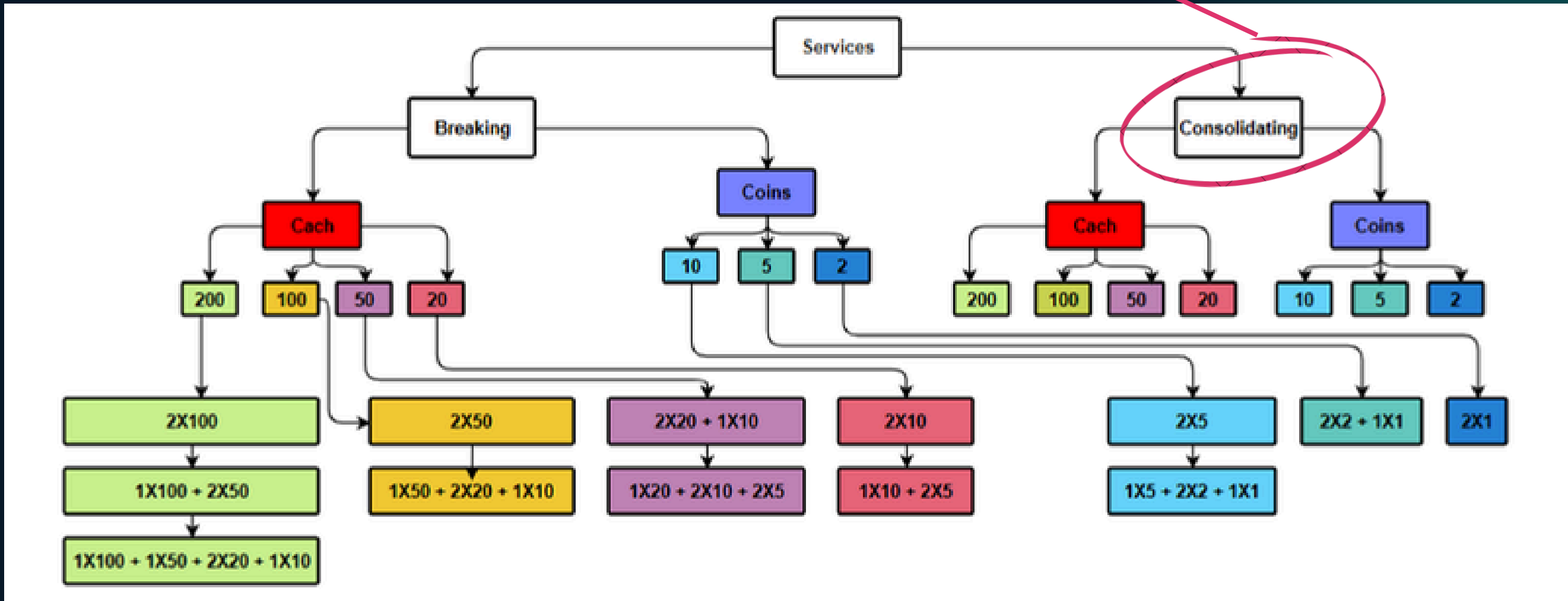
Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints



System UI

Tools

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints

Banknotes

Coins

1

A **DC motor** operates the 4 vacuums

2

A **stepper motor** connectd to gear-box moves 1100 steps

3

A **mechanical realy** will enable the corresponding vacuum

4

The **activated vacuum** pick up a banknote

5

A **stepper motor** connectd to gear-box moves 1100 steps

6

The banknote will be passed to an output slot by a **paper feed roller** connected to **another DC motor**



System UI

Tools

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints

Banknotes

Coins



System UI

Tools

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints

Banknotes

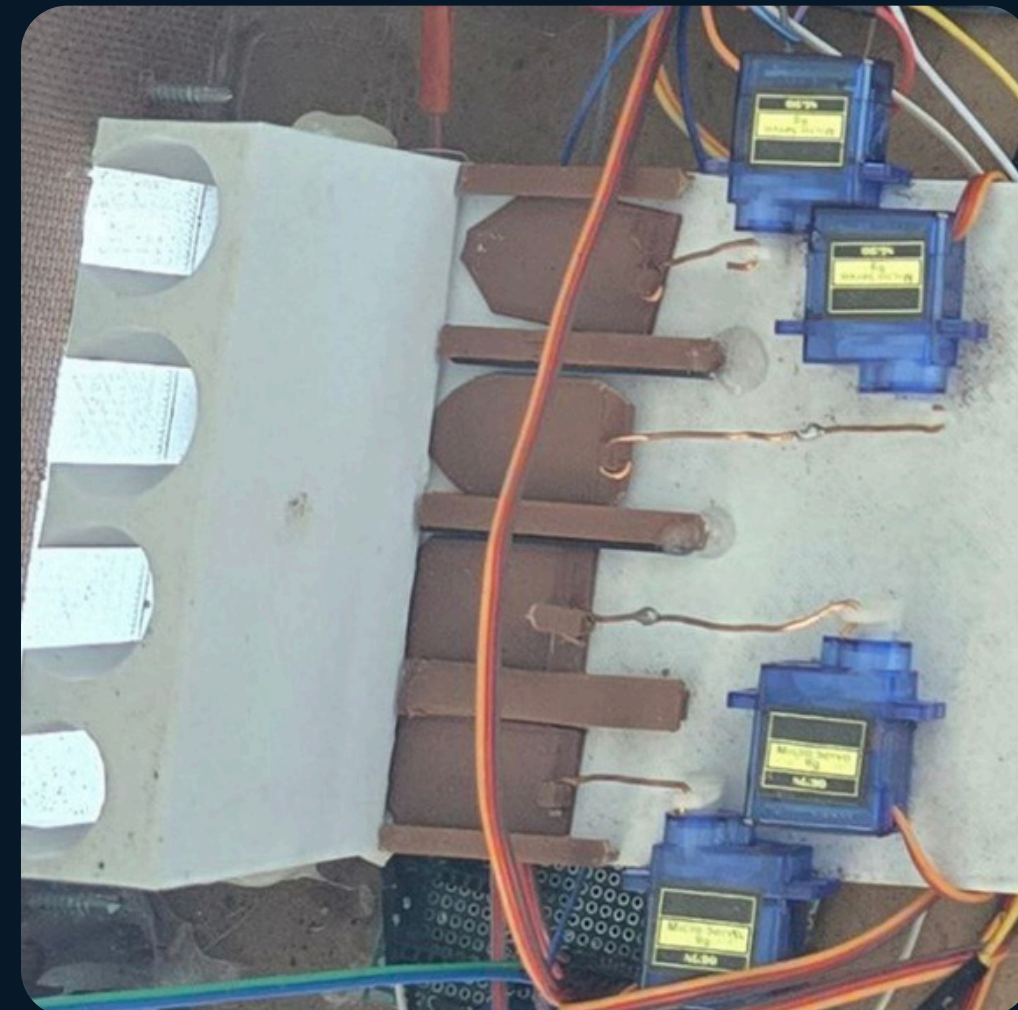
Coins

1

One of the 4 servo motors will rotate 180° to push the barrier

2

The coin will go outside from the coin slot





System UI

Tools

Input Mechanism

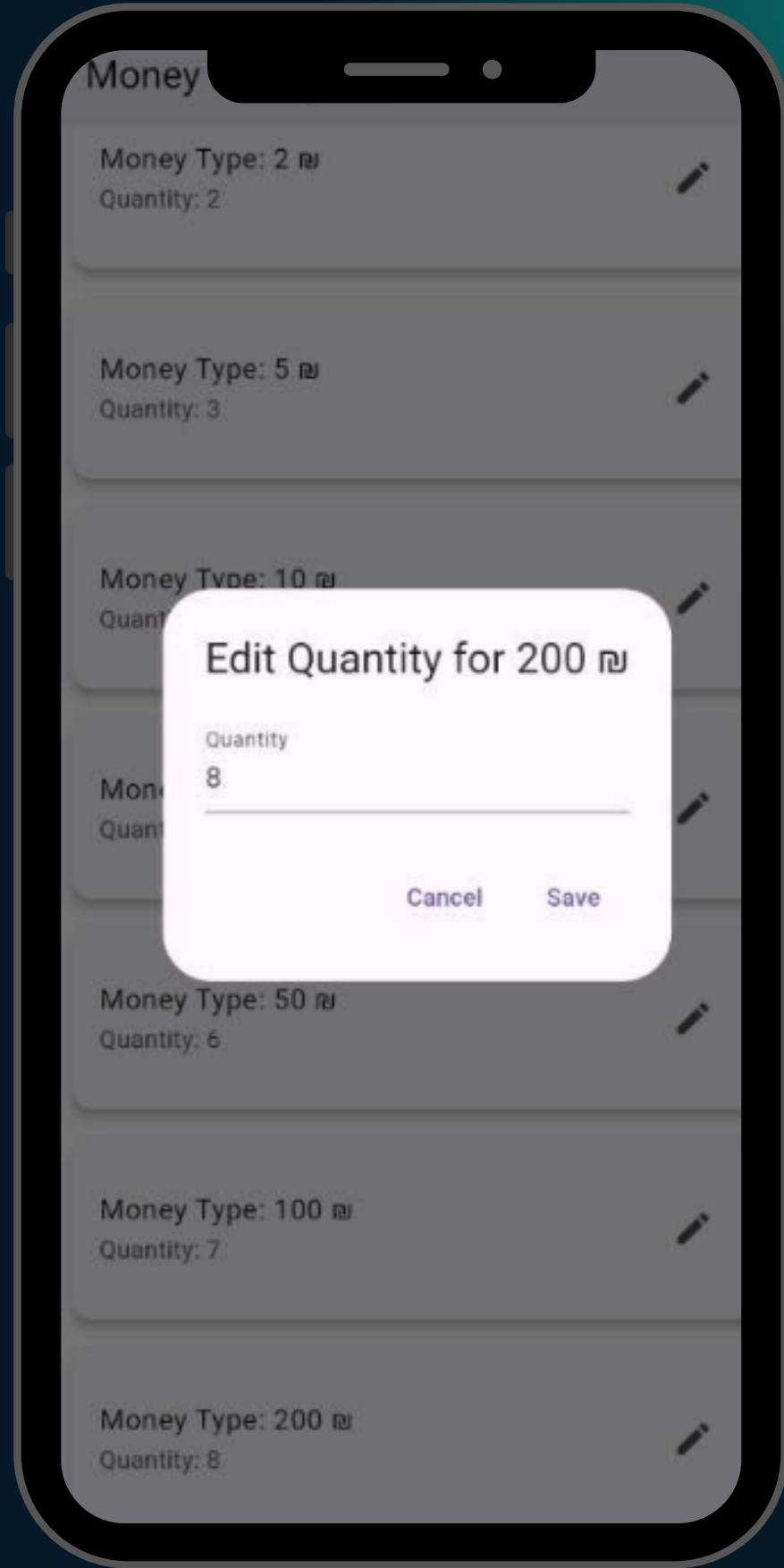
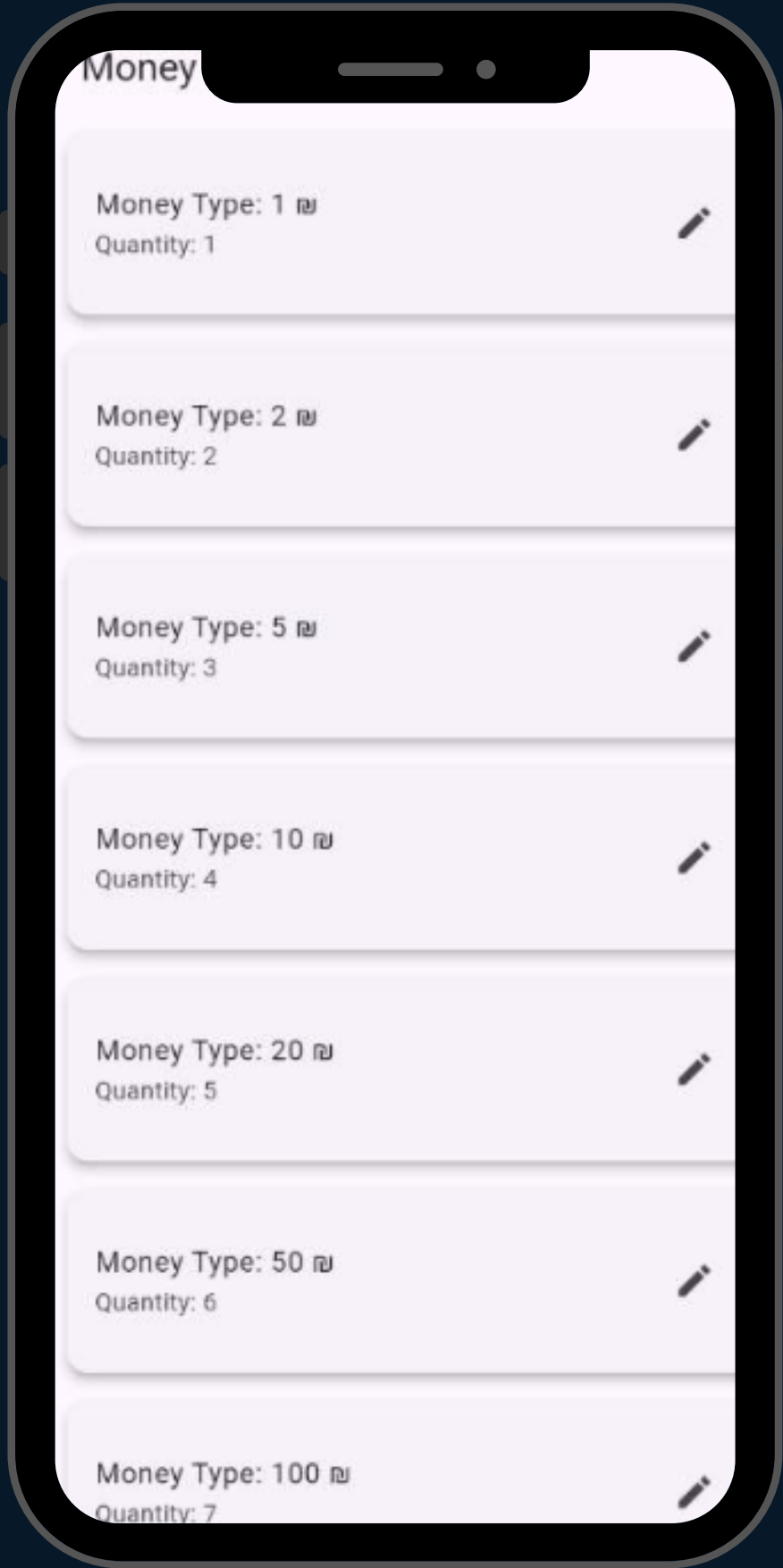
Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints



System UI

Tools

Input Mechanism

Currency Detection

Processing Transaction

Output Mechanism

Mobile Application

Constraints



**Deteriorated  
Banknotes**  
Output  
Mechanism

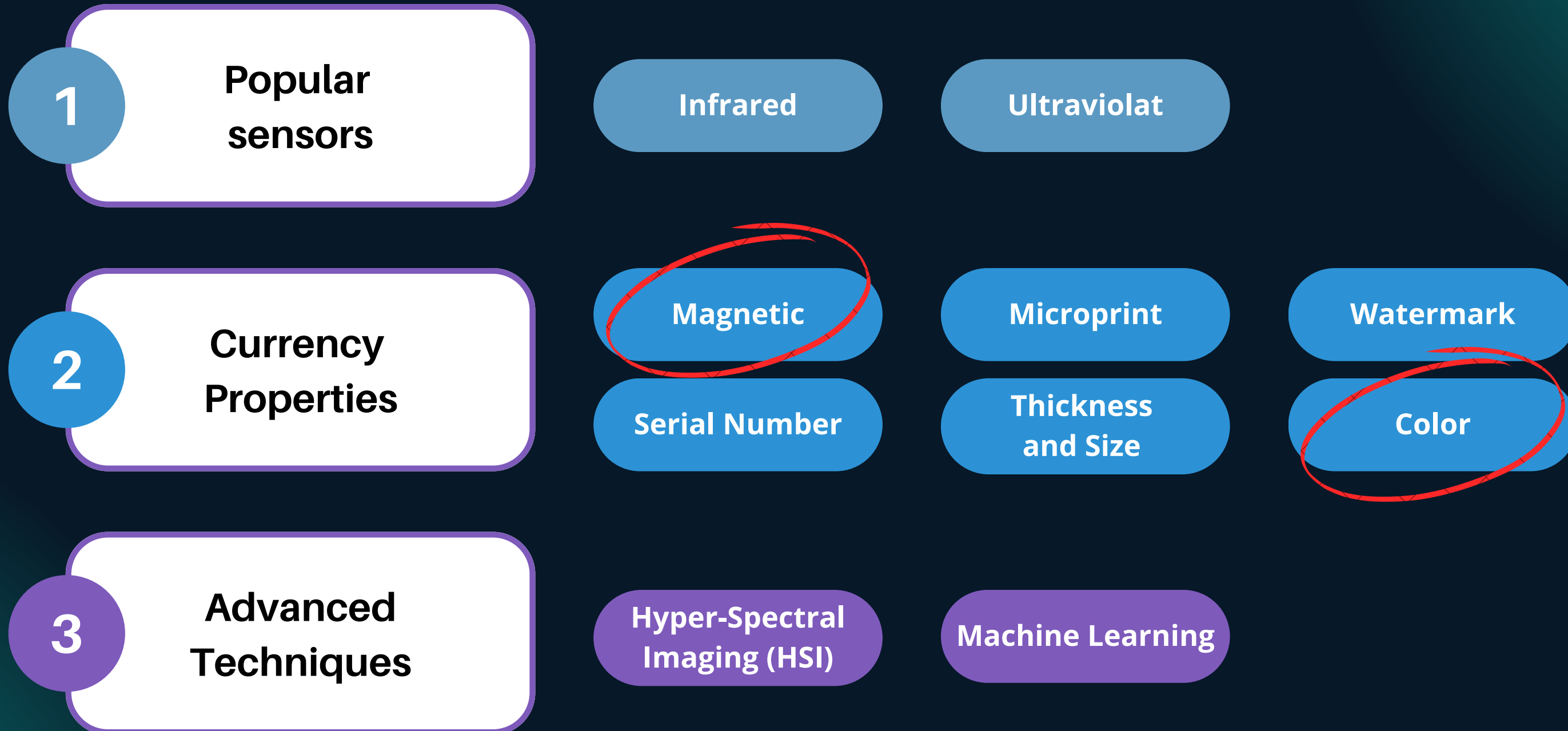


**Counterfeit  
Banknotes**  
Detection  
Mechanism

# **Technical Discussion**



# Currency Detection Techniques



# Future

# Work



# Future Work!

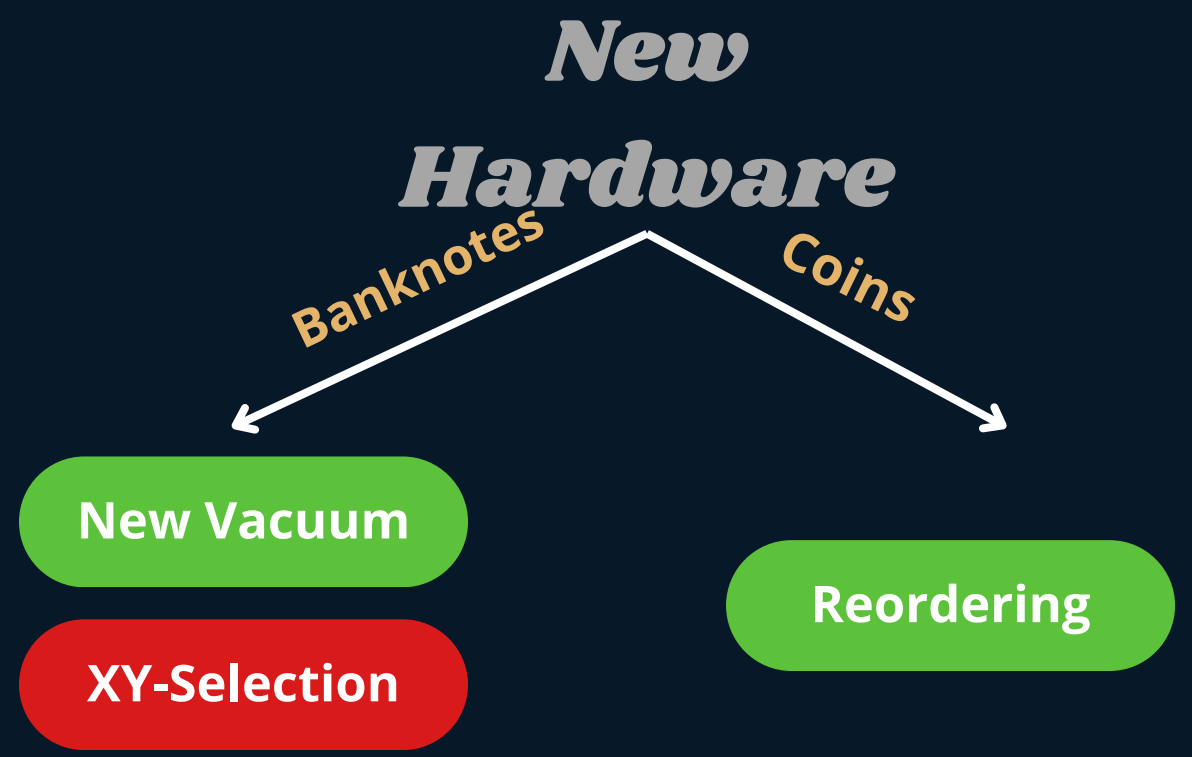
**01**

**Counterfeit Banknotes**

*New Detection Mechanism*

**02**

**Sorting System**



**03**

**More Breaking Options**

**Dynamic Transactions**

**Database !**

# Questions

