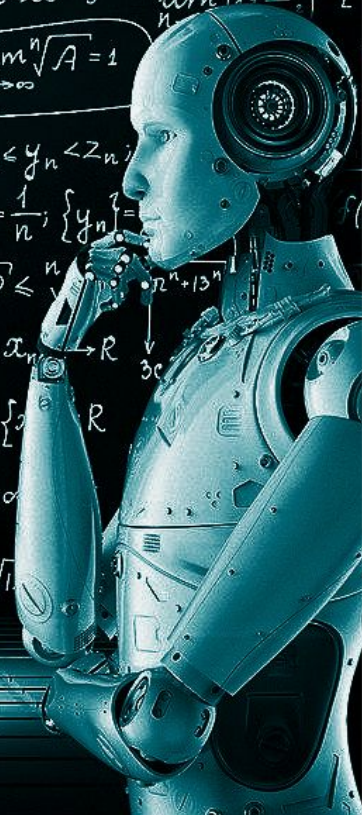


TEAM ELWIZ

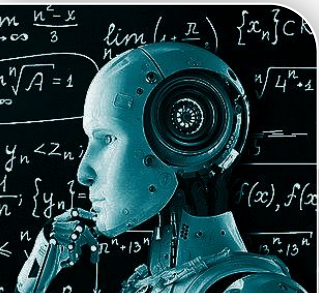
AI BASED COOKING MACHINE

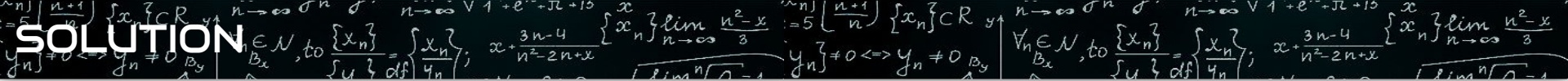
# CUSTOMIZED AI KITCHEN



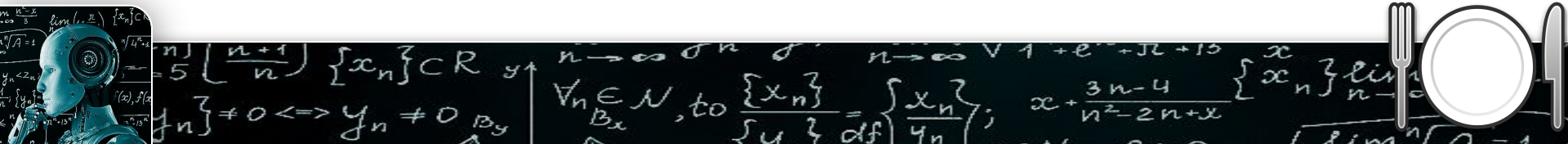
# PROBLEM STATEMENT

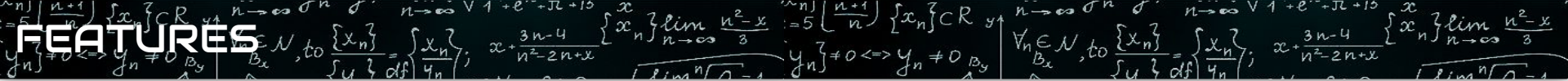
1. To create personalized dishes efficiently.
2. To create a machines that cater to all user preferences and customization.
3. To integrate AI in the exciting kitchen and to make it modernised.
4. To integrate embedded system with ai to control the entire cooking process along with cleaning process.





- **The problems that we planned to solve from the above problem statements**
  - Integrating AI with embedded system for creating personalized dishes efficiently with the available ingredients
  - Alerting ingredient shortage to the user
  - Application interface is created to get the text/voice input of the food dish demand from the user to the machine for making the dish via mobile application



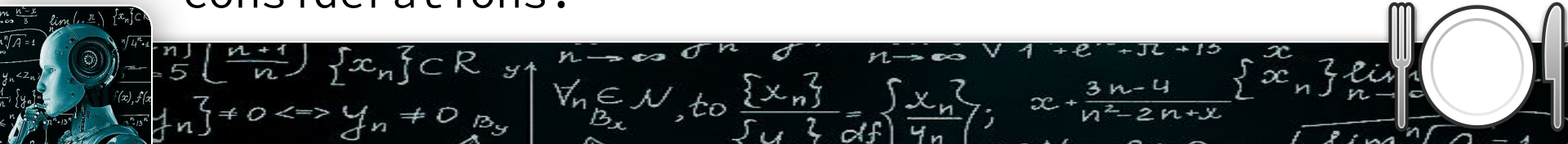


## Smart Ingredient Detection:

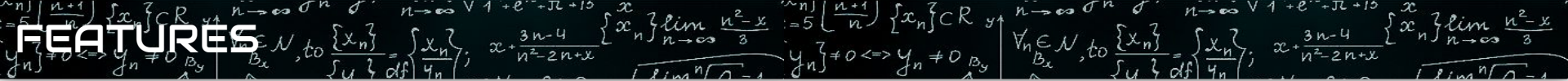
- Image processing to detect and identify raw materials and vessels.
- Real-time recognition and automatic adjustment of recipes.

## Recipe Personalization:

- AI suggests recipes based on available ingredients and user preferences.
- Customizable portion sizes and dietary considerations.





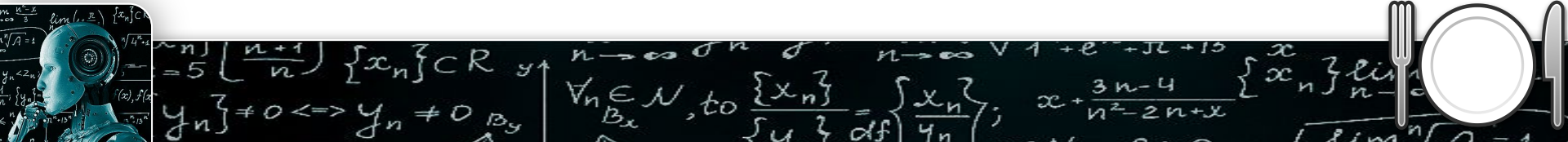


## Automated Vessel Management:

- AI selects appropriate vessels for cooking.
- Integration with a smart dishwasher for automated cleaning.

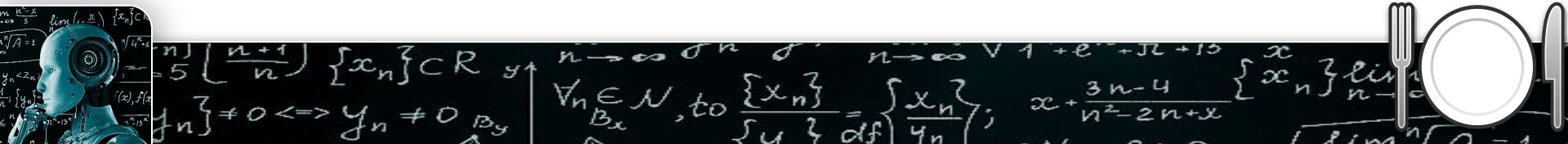
## User-Friendly Interface:

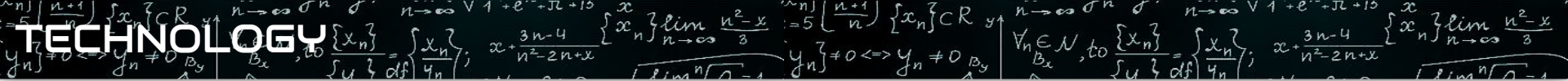
- Intuitive touch screen and voice control for easy interaction.
- Integration with mobile apps for remote control and monitoring.



# PROCESS FLOW

- The AI kitchen project allows users to voice their preferred dish via an app, which uses Google Speech-to-Text.
- The request is sent to a Firebase database, then processed by Gemini AI, which detects ingredients and suggests recipes.
- The Raspberry Pi controls the cooking process, moving ingredients with conveyor belts and robotic arms, and manages induction heating.
- It also automates the dishwasher, ensuring seamless and efficient cooking and cleaning.



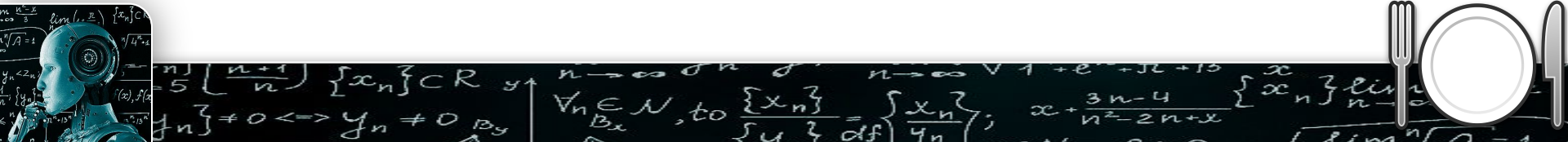


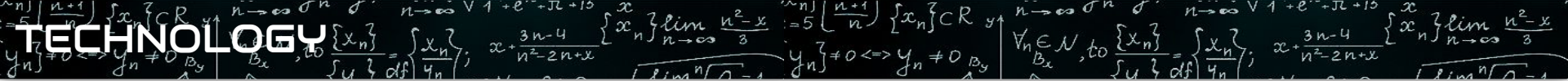
## 1. Raspberry Pi:

- **Role:** Central control unit for coordinating various components.
- **Purpose:** Manage processing tasks, sensor data integration, and communication with other devices.

## 2. Gemini AI:

- **Role:** AI platform for image processing and machine learning.
- **Purpose:** Detect and identify ingredients, customize recipes, and enhance user interaction.



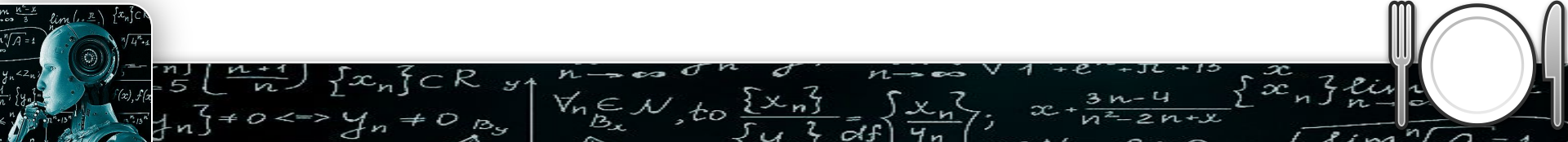


### 3. Stepper Motor:

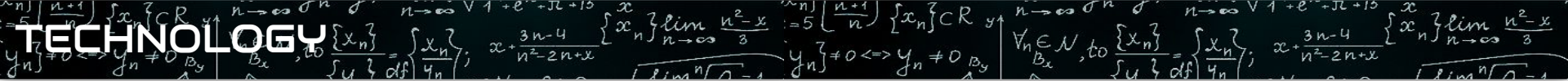
- **Role:** Actuator for precise movement control.
- **Purpose:** Operate robotic arms and conveyor belts for handling ingredients and vessels.

### 4. Conveyor Belt:

- **Role:** Automated transportation system.
- **Purpose:** Move ingredients and vessels to different stations within the kitchen.







## 7. Induction Coil with Drivers and Microcontroller:

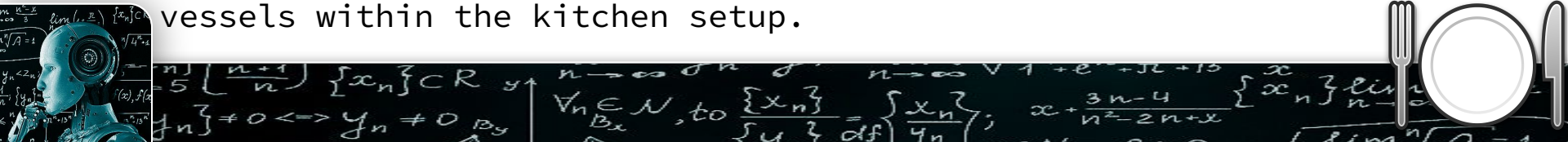
- **Role:** Heating element.
- **Purpose:** Provide precise and efficient heating for cooking processes.

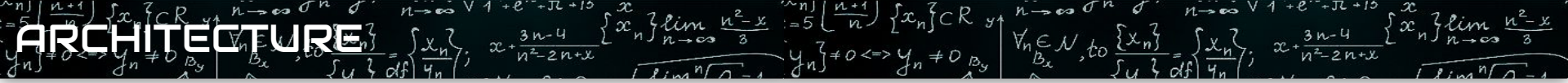
## 8. Ultrasonic Sensor:

- **Role:** Measurement tool.
- **Purpose:** Detect volume and weight of ingredients with high accuracy.

## 9. LDR (Light Dependent Resistor):

- **Role:** Sensor for location detection.
- **Purpose:** Determine the presence and position of ingredients and vessels within the kitchen setup.





Google  
Speech to  
text



Firestore  
Realtime  
Database for  
transmission



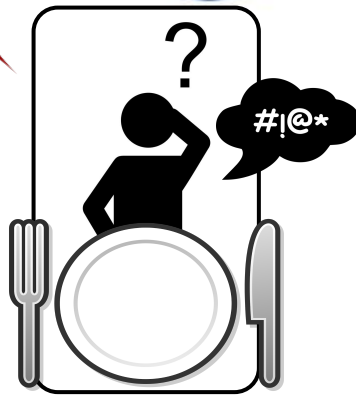
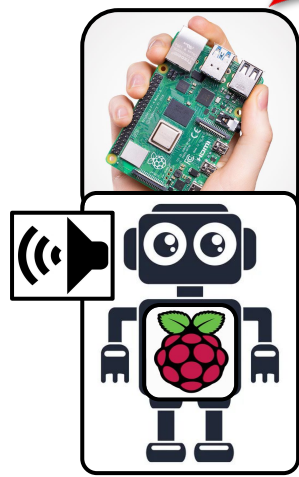
Ai integrated  
rule based  
python script



User preference  
+  
Prompt for  
response in  
python dict  
format

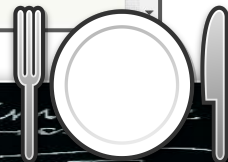
Response like  
cook process,  
time, ingredient

```
fruitDict = {  
  "fruit": "Apple",  
  "healthy": True,  
  "calories": 95,  
  "colors": ["red",  
  ]  
}
```




PREFERRED DISH OR  
ASKING SUGGESTION

# TECHNOLOGY - MOBILE APPLICATION - FRONTEND



# TECHNOLOGY - MOBILE APPLICATION - BACKEND

 Projects ▾ Connect ▾ Build ▾ Settings ▾ Help ▾

My Projects View Trash Guide Report an Issue English ▾ zumana1942005@gmail.com ▾

ai\_kitchen

Screen1 ▾ Add Screen ... Remove Screen Project Properties Publish to Gallery

Designer Blocks

Built-in

- Control
- Logic
- Math
- Text
- Lists
- Dictionaries
- Colors
- Variables
- Procedures

Screen1


- HorizontalArrangement1
  - TextBox1
  - Button1
  - FirestoreDB1

Any component

Rename Delete

Media

Viewer



when Button1 .Click

do

- call FirestoreDB1 .StoreValue
  - tag "user\_order"
  - valueToStore TextBox1 .Text

0

0


Show Warnings

🔍

+

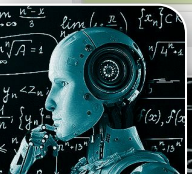
-

🗑️













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
# TECHNOLOGY - FIREBASE DATABASE FOR DATA TX/RX


 AI KITECHEN ▾




## Realtime Database

[Data](#) [Rules](#) [Backups](#) [Usage](#) [Extensions](#)

 Protect your Realtime Database resources from abuse, such as billing fraud or phishing [Configure App Check](#) 

<https://ai-kitechen-default-rtdb.firebaseio.com> 

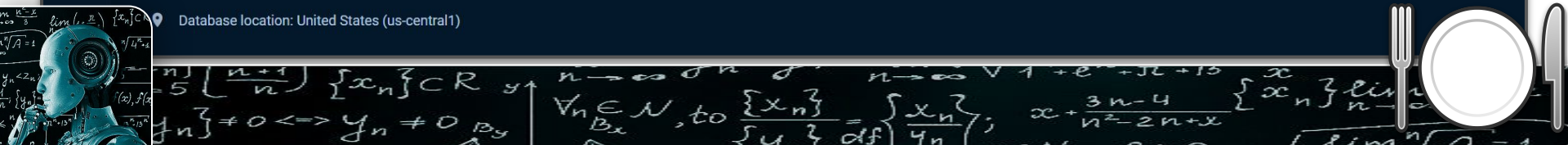
 Your security rules are defined as public, so anyone can steal, modify or delete data in your database [Learn more](#) [Dismiss](#)

<https://ai-kitechen-default-rtdb.firebaseio.com/>  

user\_order: "i need a spicy watery noodle with chilli flakes "

ABC ▾

✕





$$\begin{aligned} & \lim_{n \rightarrow \infty} \frac{n+1}{n} = 1 \\ & \lim_{n \rightarrow \infty} \frac{n^2 - x}{n} = \lim_{n \rightarrow \infty} \frac{n^2}{n} - \frac{x}{n} = \lim_{n \rightarrow \infty} n - \frac{x}{n} = \infty \\ & \lim_{n \rightarrow \infty} \frac{3n-4}{n^2-2n+x} = 0 \\ & \lim_{n \rightarrow \infty} \frac{n^2 - x}{n} = \lim_{n \rightarrow \infty} \frac{n^2}{n} - \frac{x}{n} = \lim_{n \rightarrow \infty} n - \frac{x}{n} = \infty \\ & \lim_{n \rightarrow \infty} \frac{n^2 - x}{n} = \lim_{n \rightarrow \infty} \frac{n^2}{n} - \frac{x}{n} = \lim_{n \rightarrow \infty} n - \frac{x}{n} = \infty \end{aligned}$$

# AI - RESPONSE

Thonny - E:\ZUMANA WORK FILES\AI KITCHEN\ai-kitchen\AI\_KITCHEN.py @ 1:1

File Edit View Run Tools Help

AI\_KITCHEN.py \* x

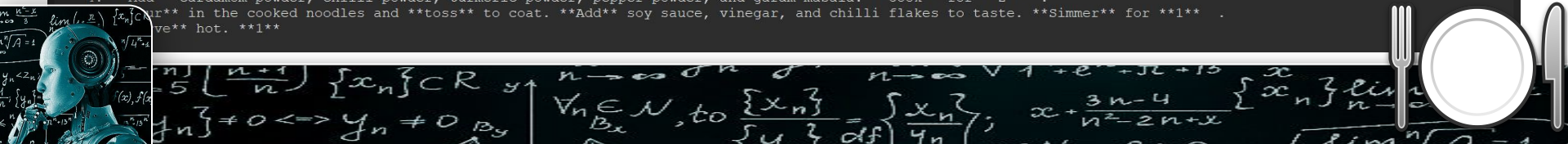
```
1 import google.generativeai as genai
2 import os
3 import orjson
```

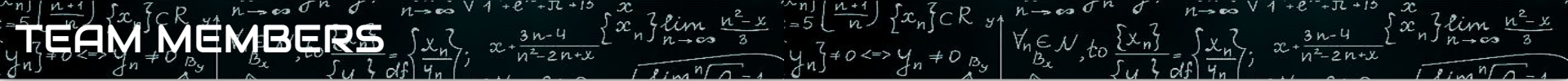
Shell x Exception x

>>> %Run AI\_KITCHEN.py

```
<pyrebase.pyrebase.Database object at 0x0000024042EFFC40>
"I need a spicy watery noodle with chilli flakes "
tomato potato carrot ladysfinger raddish cardomom_powder chilli_powder turmeric_powder pepper_powder garam_masala rice egg noodles water oil
Ingredients:
- Tomato
- Potato
- Carrot
- Ladyfinger
- Radish
- Cardamom Powder
- Chilli Powder
- Turmeric Powder
- Pepper Powder
- Garam Masala
- Rice
- Egg Noodles
- Water
- Oil
- Soy Sauce
- Vinegar
- Chilli Flakes
```

```
Steps:
- 1. **Boil** water in a pot and add egg noodles. **Cook** for **2** .
- 2. **Drain** the noodles and **set aside** **1** .
- 3. **Heat** oil in a wok or large pan. **Add** chopped tomato, potato, carrot, ladyfinger, and radish. **Sauté** for **3** .
- 4. **Add** cardamom powder, chilli powder, turmeric powder, pepper powder, and garam masala. **Cook** for **2** .
- 5. **Add** rice, egg noodles, water, oil, soy sauce, vinegar, and chilli flakes to taste. **Simmer** for **1** .
- 6. **Serve** hot. **1**
```





TEAM NAME	ELWIZ	
LEADER NAME	ZUMANA BEGUM I	ECE IInd YEAR
MEMBER 2 NAME	SHIVA.P	ECE IInd YEAR
MEMBER 3 NAME	MOHAMMED SAMEER.M	ECE IInd YEAR
MEMBER 4 NAME	VIDHYA.K	ECE IInd YEAR
MEMBER 5 NAME	SHARANYA.P	ECE IInd YEAR

