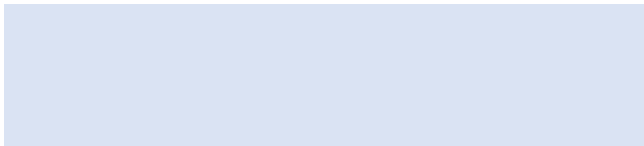# S P A R K P L U G

Case-2
SOLUTION PROPOSED BY LOCALHOST: 5000
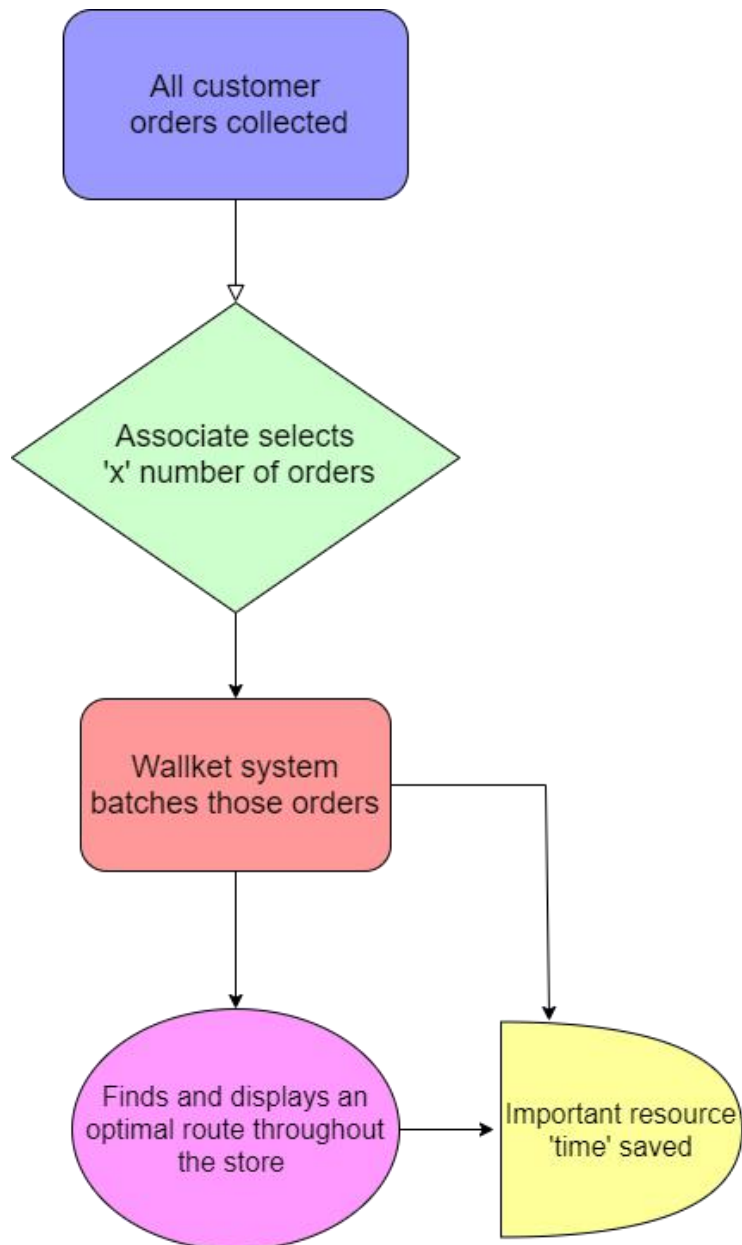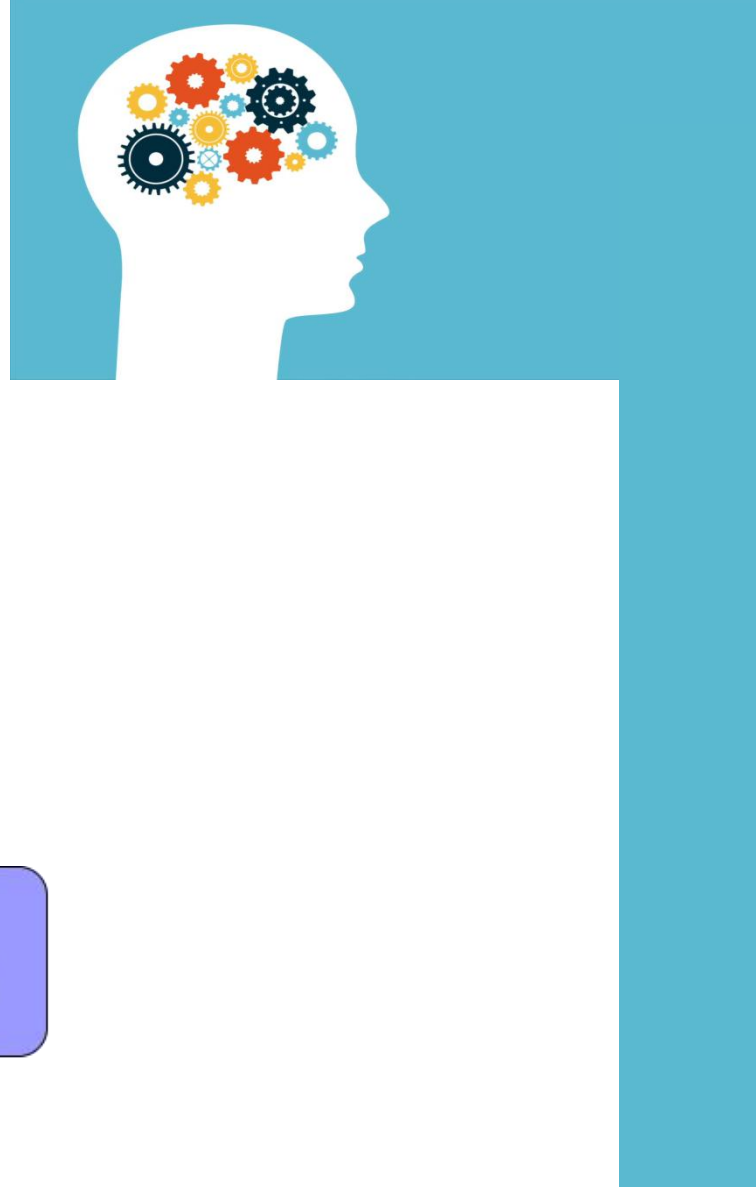
ARYAN SETHI

VIDHU SHIKHAR JOSHI

Problem

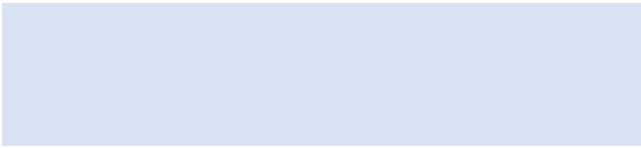Online orders are fulfilled by Wallmart Brick and Mortar stores. The process of individually fulfilling each customer order increases the time and cost involved in delivering the order due to the typical size of Wallmart stores. The associate picking up the orders generally has to take a whole big trip throughout the store just to collect the products from a single order and this causes a lot of time and cost wastage.

Solution:
The smart
Wall-ket system

```
┌─────────────────────┐
│   All customer      │
│  orders collected   │
└─────────────────────┘
          │
          ▽
      ╱─────────╲
    ╱  Associate   ╲
   ╱   selects      ╲
   ╲  'x' number     ╱
    ╲  of orders    ╱
      ╲─────────╱
          │
          ▼
┌─────────────────────┐
│   Wallket system    │─────────┐
│ batches those orders│         │
└─────────────────────┘         │
          │                     │
          ▼                     ▼
   ╭───────────╮        ╭────────────╮
   │ Finds and │        │ Important  │
   │ displays  │───────▶│ resource   │
   │ an optimal│        │ 'time'     │
   │ route     │        │ saved      │
   │ throughout│        ╰────────────╯
   │ the store │
   ╰───────────╯
```

All customer orders collected

Associate selects 'x' number of orders

Wallket system batches those orders

Finds and displays an optimal route throughout the store

Important resource 'time' saved

Plot of our project

We've successfully created a smart python based Wall-ket system. This system simplifies the job of the Wallmart associate picking up the orders. All he has to do now is to select 'x' number of orders from the suitable Wallmart database and our system will show a map of that particular Wallmart store along with the shortest path throughout the store that covers all the orders and saves a lot of time for the associate, everything very quickly and efficiently.

For this, the map of the Wallmart store should once be pre fed to the Wall-ket system and never again until required. We have used Dijkstra's shortest path finding algorithm to make the visual path over the map because it is reliable and efficient.

Explanation

Language/Library:

We majorly used the python's pygame library to solve this problem because it gives us multiple options to create an interactive system to help the Wallmart associate.

```python
base.py ×
1   import pygame
2   import sys
3   import ast
```

Store Items record:

We divided the items in the store according to their types and their locations in the store(in the form of coordinates).

```python
sub_categories = {
    "Eggs": "Meat and Poultry",
    "Fresh Cut Chicken": "Meat and Poultry",
    "Fresh Cut Chicken Legs": "Meat and Poultry",
    "Frozen Nuggets": "Frozen",
    "Tide Detergent 2kg": "Home Items",
    "Coka cola 1L bottle": "Soft Drinks",
    "Red bull Energy Drink": "Soft Drinks",
    "Britania eggless cakes": "Bakery",
    "Large size cello tape": "Stationary",
    "Classmate 200 pages register": "Stationary",
    "Reynolds blue gel pens": "Stationary",
}
```

```python
categories = {
    "Meat and Poultry": (1, 1),
    "Soft Drinks": (1, 19),
    "Alcohol and spirits": (4, 6),
    "Home Items": (9, 4),
    "Stationary": (16, 6),
    "Sea Food": (13, 14),
    "Bakery": (11, 14),
    "Frozen": (20, 11),
    "Grocery": (20, 16),
    "Florist": (10, 1)
}
```

Making the map:

With our system, feeding the store map is as simple as making a maze on the screen with a few clicks. All that's required is putting boxes(by clicking) on the Wallmart store map at those positions that have the aisles and shelves.

It looks something like this; the left picture shows a map that is being fed and the right picture shows a map that as fully fed.

As we click on different coordinates on the screen, they are stored in a separate text file of the project.
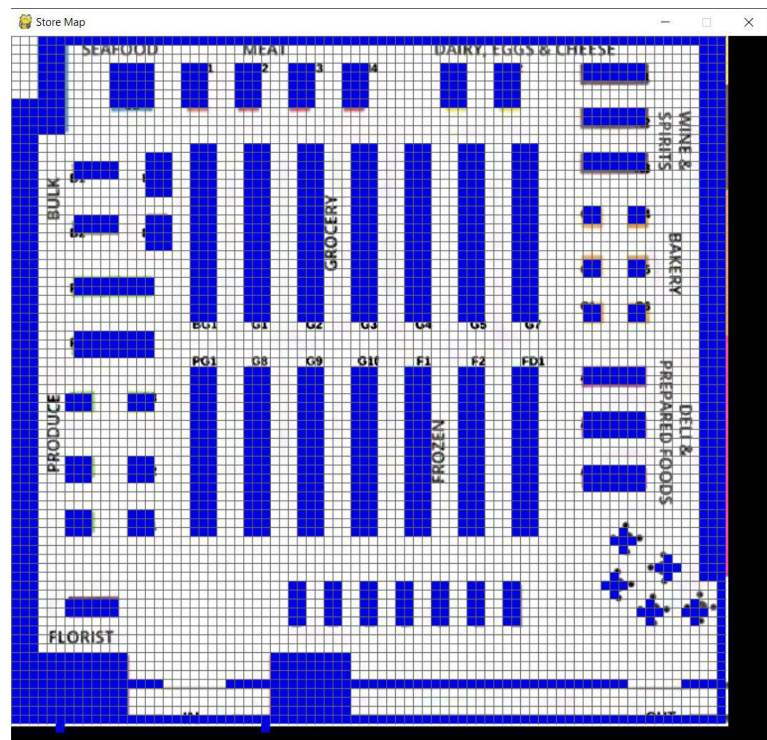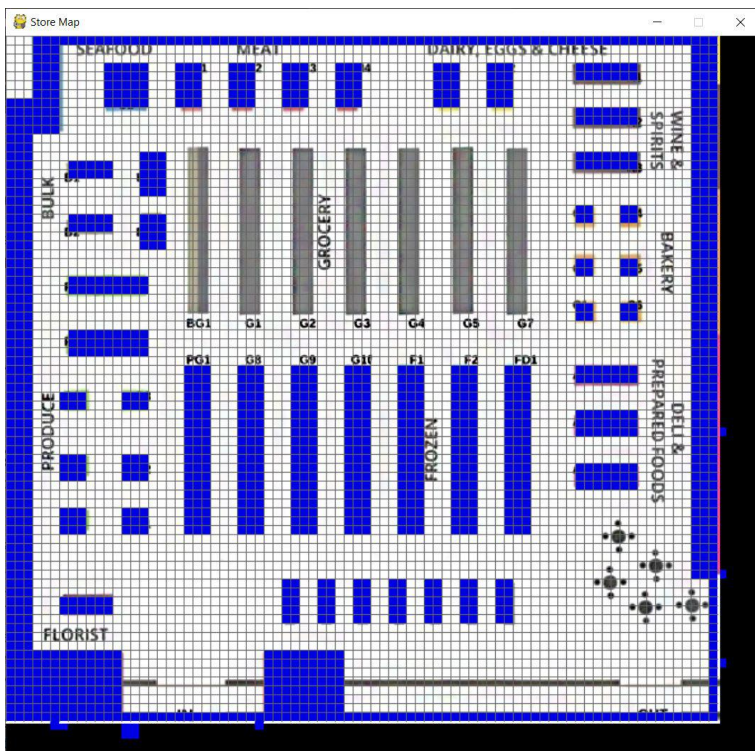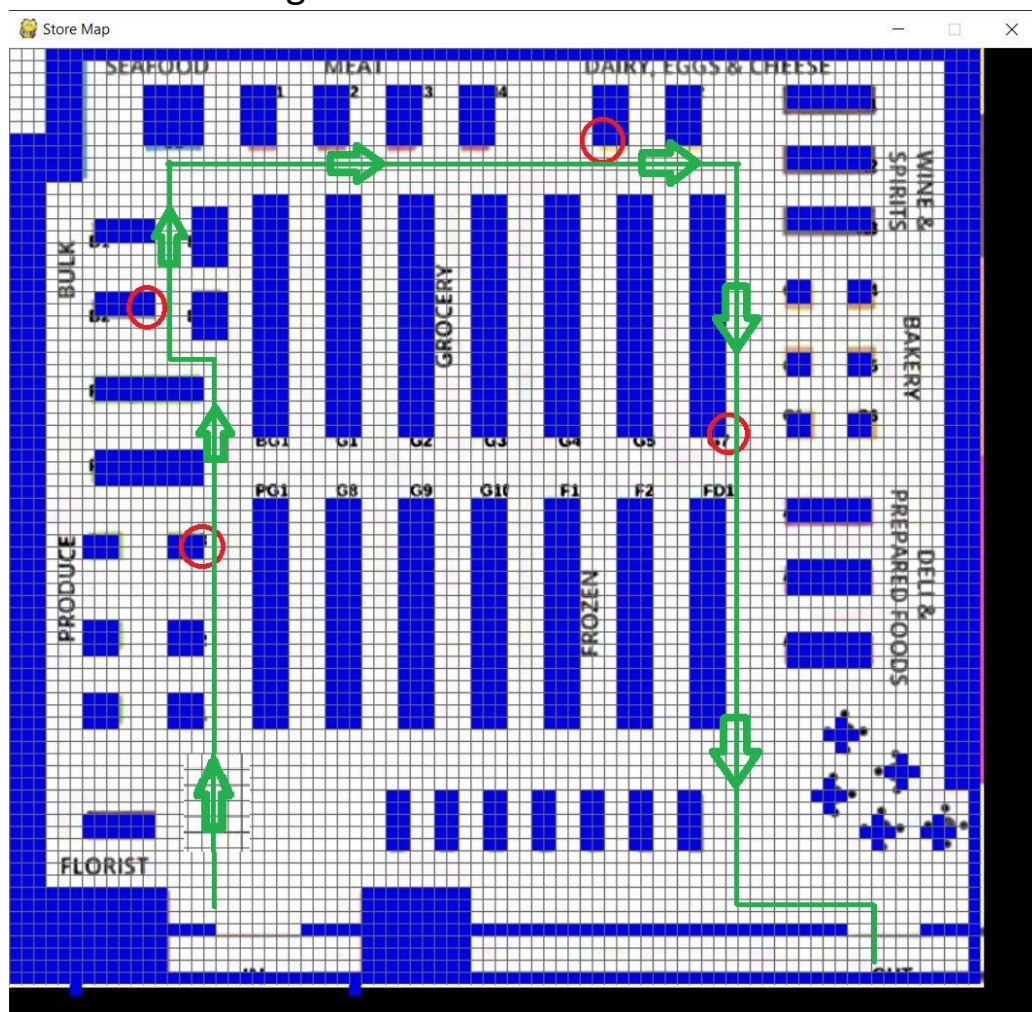
Path Finding:

As the Wallmart associate selects some orders from the Wallmart database, our smart Wall-ket system calculates and shows the most efficient path to cover all the orders and save a lot of time.

End result looks something like this.

Here In the above picture, the red markers show the products from the batched order and the green line shows the shortest path that the associate should take

Future
Avenues

- *We plan on building a headset system for the Wallmart associate which will give directions through speech, so that he/she can use both the hands while the Wall-ket system guides them through the way.*

- *We can also deploy a local indoor GPS system to track and monitor the positions of the Wallmart associate throughout the store, just to make sure there is no funny business going on.*