Fabián Guzmán Aponte A3 Assignment – Scan & Pay

1. **Identify the problem**

   Buying groceries may seem like a totally safe activity to do, but with COVID-19 being as rampant as it has been, it has actually made grocery stores into one of the many ways that you could be exposed to the deadly virus. While most stores have implemented strict protocols to minimize spread, like frequent cleaning and social distancing, it still depends a lot on employees being able to enforce these guidelines and people being responsible and following them. We know that this is not always the case. Which is why we need to make supermarket trips as quick as possible for minimum exposure. Some stores already have self-checkout machines that can speed up some of the process, but you still need to spend time waiting for your turn and then scan every item one by one, not exactly a quick process. Remember, every minute you're still in the store is another minute you're still exposed, which is why we need a faster and more efficient way to shop and pay for our groceries.

2. **Capture the current state of the situation**

   Right now, social distancing guidelines are being implemented in almost every store, but it leaves much of the responsibility to the employees and customers, so it is not a guarantee that you are safe. Traditional cashiers and self-checkout machines often create unnecessary lines of customers that just want to quickly pay for their stuff and get on with their day risk-free.
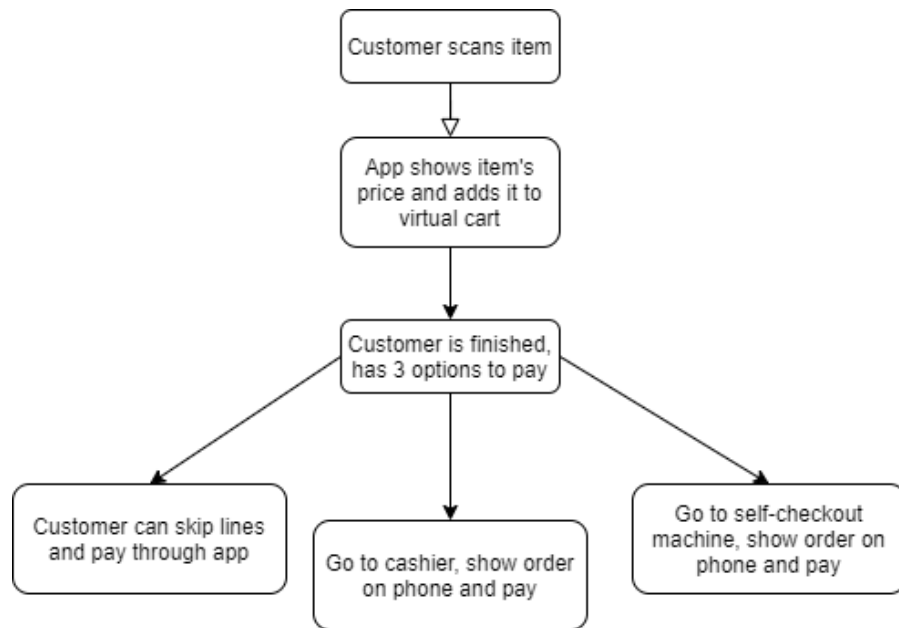
3. **Conduct a root cause analysis**

   Self-checkouts were designed to streamline the process of paying for your products, but for many people this is not always the case. Sometimes you still encounter a long line just like traditional cashiers, and on top of that you still have to spend time scanning each item. Additionally, technical difficulties can also happen, further extending the time.

4. **Devise countermeasures to address root causes**

   We need to implement a faster way to shop for all customers, and we can do that by allowing the customer to scan the items *while* they are shopping, not after. This can be achieved with a mobile application on the customer's smartphone. This app will let customers use the phone's camera to scan the barcode of each item they want, and the app will add it to the customer's virtual cart (while they also add it to their real cart). You can also store payment methods in the app, so when the customer is finished collecting items, they can just simply pay through the app and be on their way. It should also be said that the customer is not limited to paying from their phone, they can still scan the items and proceed to a traditional cashier or self-checkout machine to pay for their stuff, the difference being that the scanning has already taken place and the detailed order is already on the customer's phone, which can speed things up greatly.

5. **Define your target state**

```
┌─────────────────────┐
│  Customer scans item │
└─────────────────────┘
           │
           ▽
┌─────────────────────┐
│    App shows item's │
│  price and adds it to│
│     virtual cart    │
└─────────────────────┘
           │
           ▼
┌─────────────────────┐
│  Customer is finished,│
│  has 3 options to pay │
└─────────────────────┘
    ╱        │        ╲
   ╱         │         ╲
  ▼          ▼          ▼
```

┌─────────────────────┐ ┌─────────────────────┐ ┌─────────────────────┐
│ Customer can skip   │ │   │ │ Go to self-checkout │
│ lines and pay   │ │ Go to cashier, show │ │ machine, show order │
│ through app   │ │ order on phone and │ │ on phone and pay   │
│   │ │ pay   │ │   │
└─────────────────────┘ └─────────────────────┘ └─────────────────────┘

6. **Develop a plan for implementation**
   - Contract software engineers to develop the application.
   - Promote this app to as many grocery stores as possible so they can implement it within their system.
   - Optionally, set up "pay stations", which are basically self-checkout machines without a scanning counterpart that allows those customers without a payment method in their phone to pay for their stuff without having to crowd the other lines.

7. **Develop a follow-up plan with predicted outcomes**
   The store must keep track of how many people are in the store at a time and compare those statistics to see if the new system really makes a difference. There should be a noticeable decrease in long lines. Also, since customers spend less time on the store, the customer capacity of the store is not reached as frequently and should allow for more people to come in and increase sales.

8. **Get everyone on board**
   All store personnel will be thoroughly informed and trained with this new system, and in turn they will inform the customers of these new available options of shopping.

9. **Evaluate results**
   As said previously, the store must closely observe the number of people that are shopping at a time and use those statistics to gauge whether there is an impact or not. Also, the store needs to make sure that the employees and customers feel comfortable using the system and that it does not turn into a burden for either.