Case Study 1 – Steps 1-4

Step 1 – Understand the problem

Assuming this is a staffed POS system, the users will be the staff working at the café. The POS system should be able to keep track of the menu items, prices, and quantity of items selected. Once the transaction is complete, via 2 different payment methods – Cash or Card – the system will be able to print a receipt that itemises the items ordered.

Features:

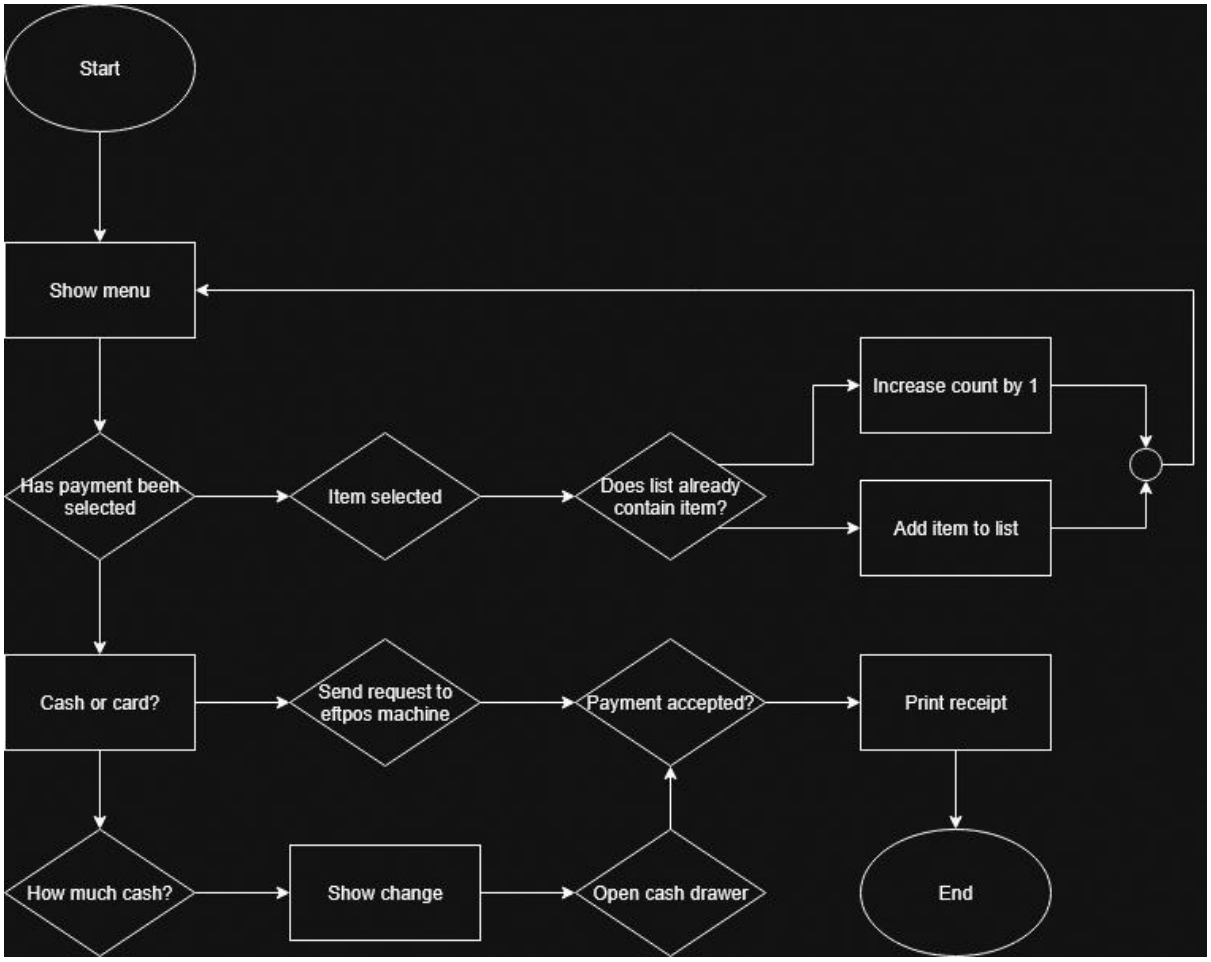
- Menu of all items that will be sold at the café
- Price tracking for each item
- Ability to keep track of quantities and calculate the price of a single item and multiple items
- Able to keep track of the entire selection
- Calculate discounts for (e.g. 5% discount for students)
- Ability to print a receipt showing subtotal, tax (10%), etc

Inputs and Outputs:

- System shows the menu showing all items
- User selects item
- Does selection already contain x item?
- What payment method will be used
- A receipt to be printed at the end of the transaction

Possible assumptions

- In today's day and age, possible the café will only accept card payments
- The menu may need to be updated
- The menu is split into categories (Food and Drink)
- The POS system could be self-serve vs being used by a member of staff
    - If self-serve, can items out of stock be struck from the menu
- Are multiple sizes of items required?



Step 2 – Organise and describe the problem

Input types:

- Menu
- Add item to list
- Check to see if the item is in the list already
- Does a discount apply
- Payment method

Outputs

- Add item to the list
- If item exists in list, increase count by 1
- If paying cash, output required change if any
- Print a receipt showing subtotal, tax (10%), items (and quantity)

Sample values and operational constraints

- If menu item active, show on menu
    - Will out-of-stock items be greyed out, or invisible?

- Is there a maximum number of items that can be added?
- Will more categories be required in future?
- Are there different menus depending on time of day?
- If the printer is out of paper and doesn't alert the POS system, can the receipt be re-printed after paper is replaced?

Step 3 – Plan the solution

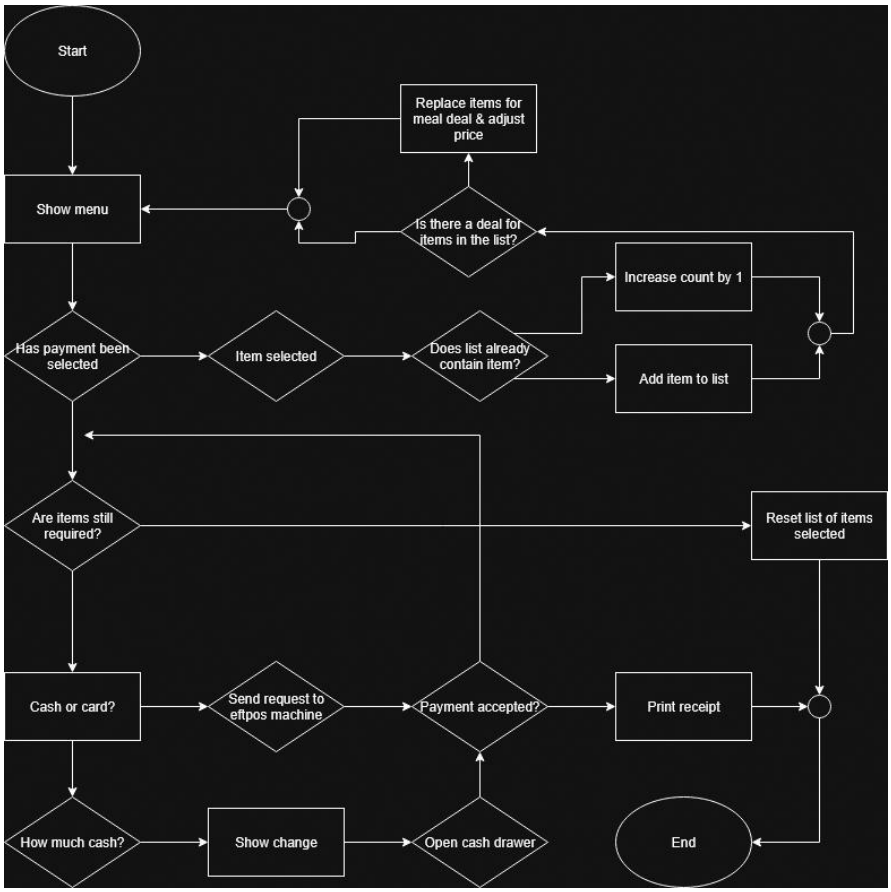
Create decision logic

- Show menu
- If item from menu selected, add item to list
    - If item exists on list, increase count by 1
- If remove selected, ask item
    - When item input, remove item from list
- Does a deal exist for a combination of items?
    - Replace items in the list with the deal and adjust price
- If payment selected, confirm cash or card
    - If cash, input amount of cash received, and display change
    - If card, send request to eftpos machine to accept payment
- When payment accepted, print receipt
- If items no longer required
    - Reset list of items selected

Error detection

- If payment declines, return to payment type

- Potential to add a confirmation screen if the user adds more than >=10 of 1 item to make sure they didn't add them by mistake



#Pseudocode sketch

Selection[]

BEGIN
  MENU LOOP
  show menu -> dict{}
    If item selected
      Add -> Selection[]
    If remove requested
      remove -> Selection[]
    If item + item -> deal
      Remove both items (price)
      Add deal (price)

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    Payment
      break loop

  Discount
    If yes
      Student -> total - 5%
      Goto payment
    If no
      Goto payment
  If user -> Clear
    Remove all items from Selection[]
  Payment selected
    If cash selected -> ask amount
      amount received – total
    If card
      Send request and amount to eftpos
  If payment accepted
    Print receipt
      Selection[] -> New line per item w/ quantity
      Subtotal
      tax (10%)
  Elseif payment declined
    Goto Payment

END
```