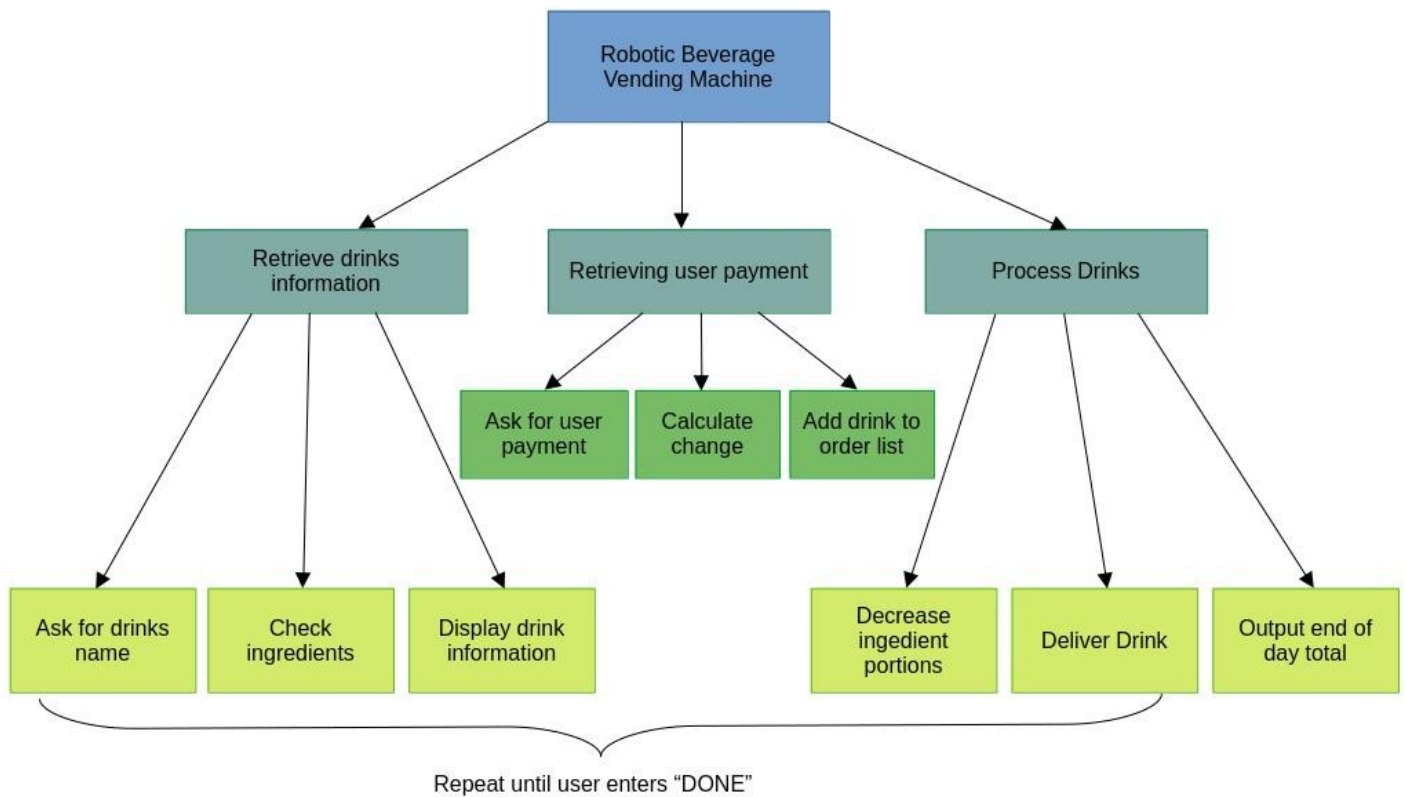


SEN-101 Algorithmic Thinking & Problem Solving
Assessment Activity SEN-101:00010
Turning Verbal Specifications into Algorithms

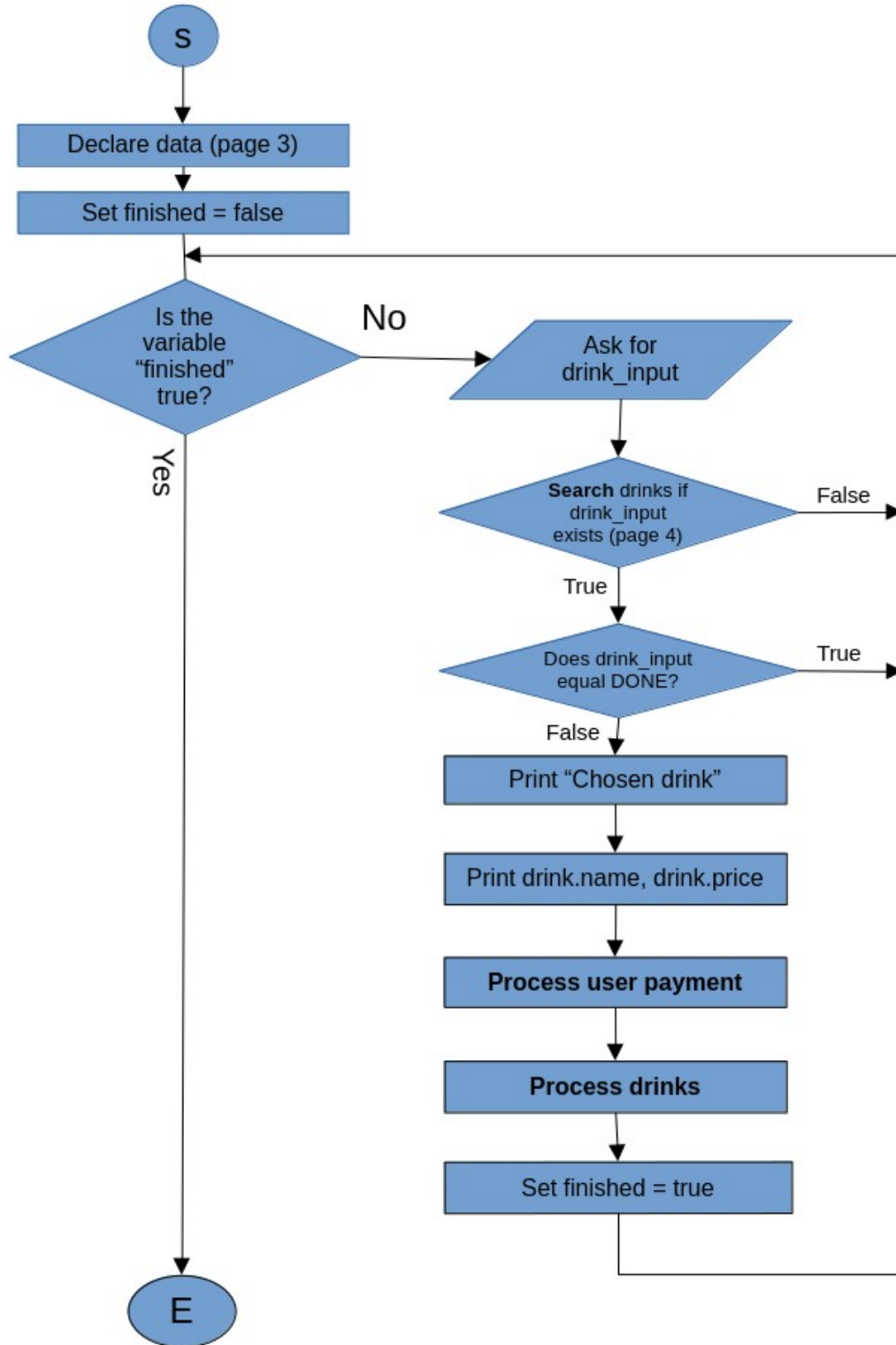
Name: (Win) Thanawin Pattanaphol

Student ID: 01324096

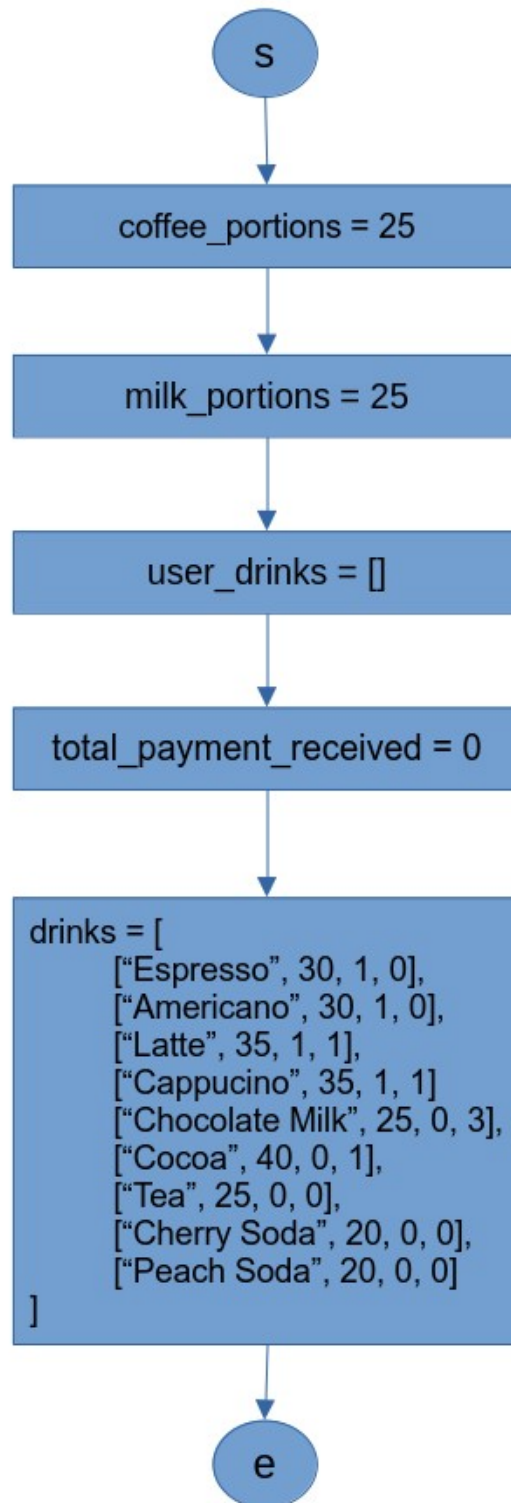
Successive Refinement Diagram



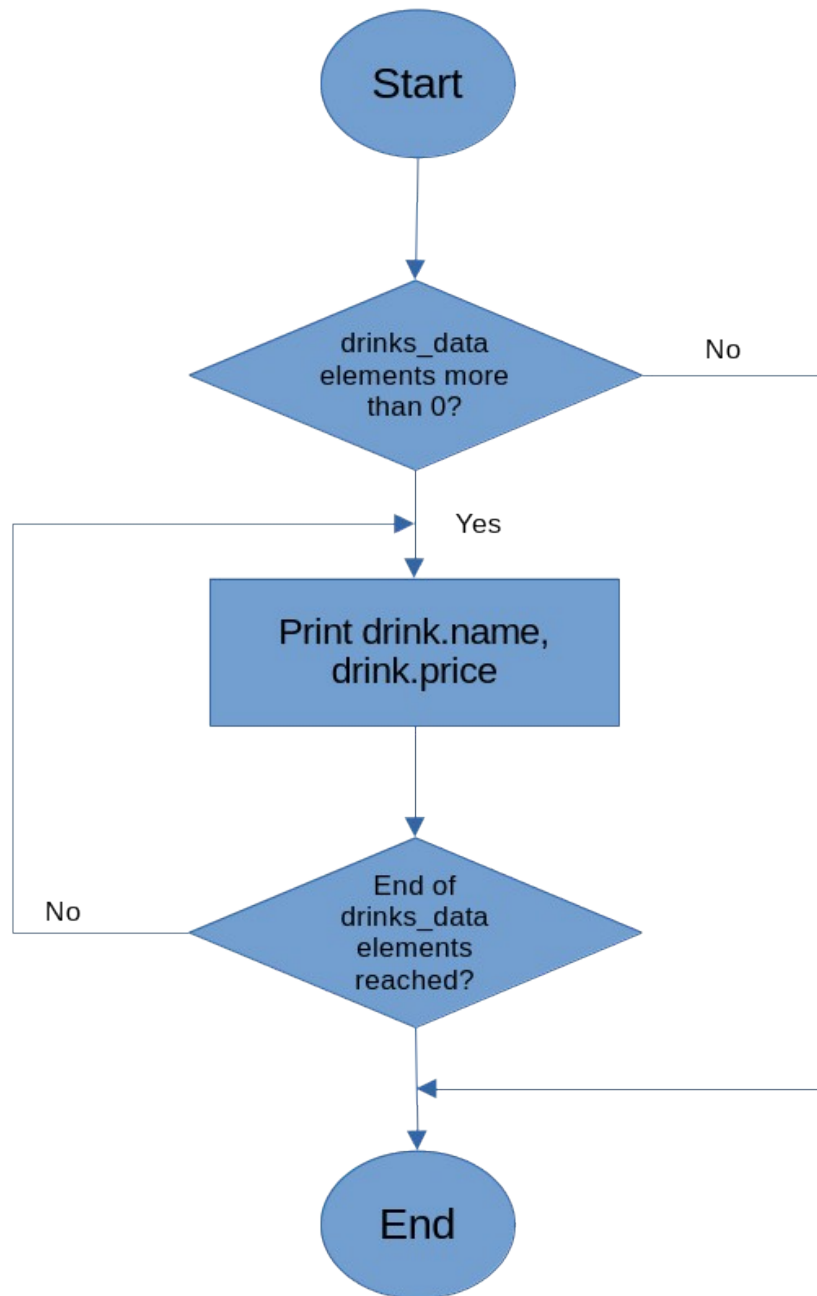
Top Level Algorithm



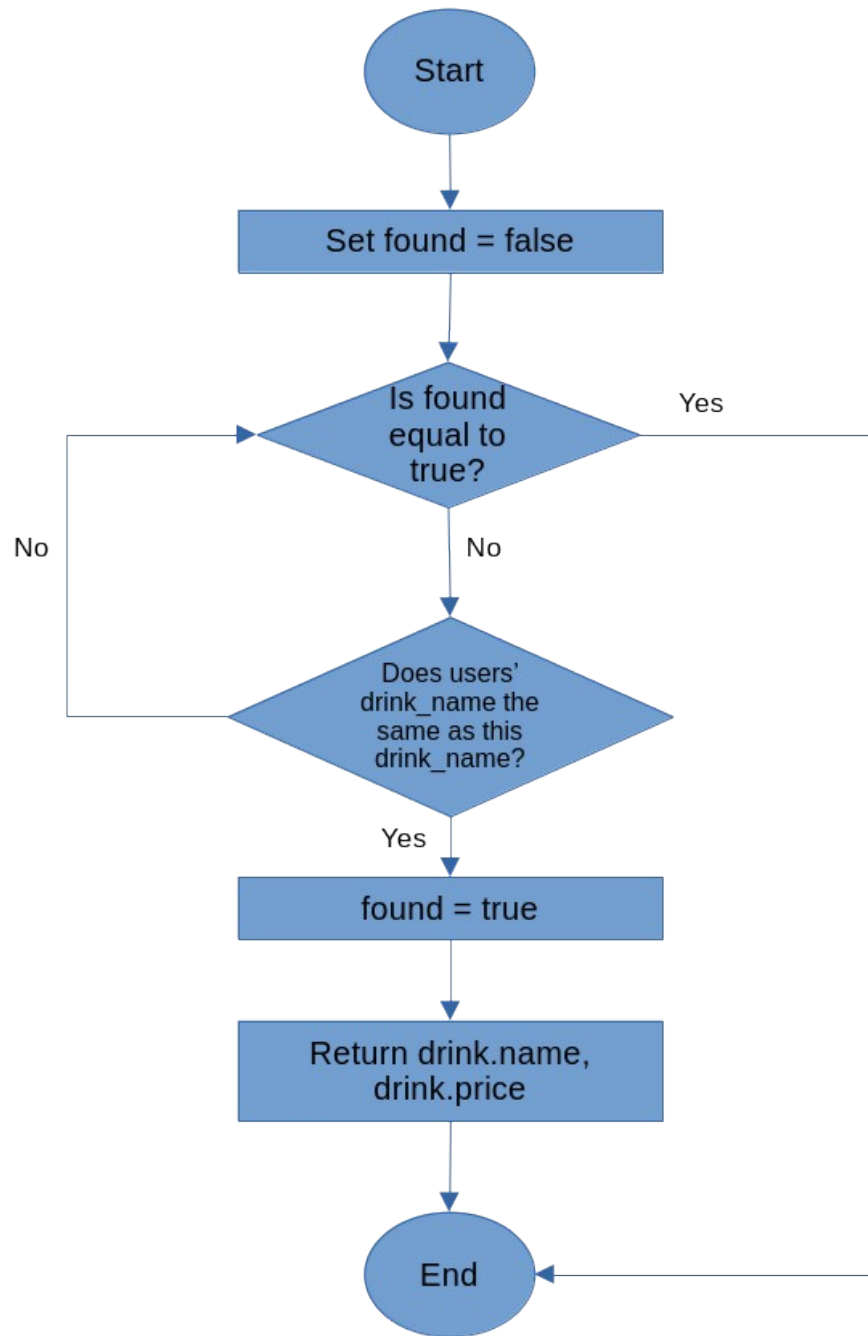
Declare data



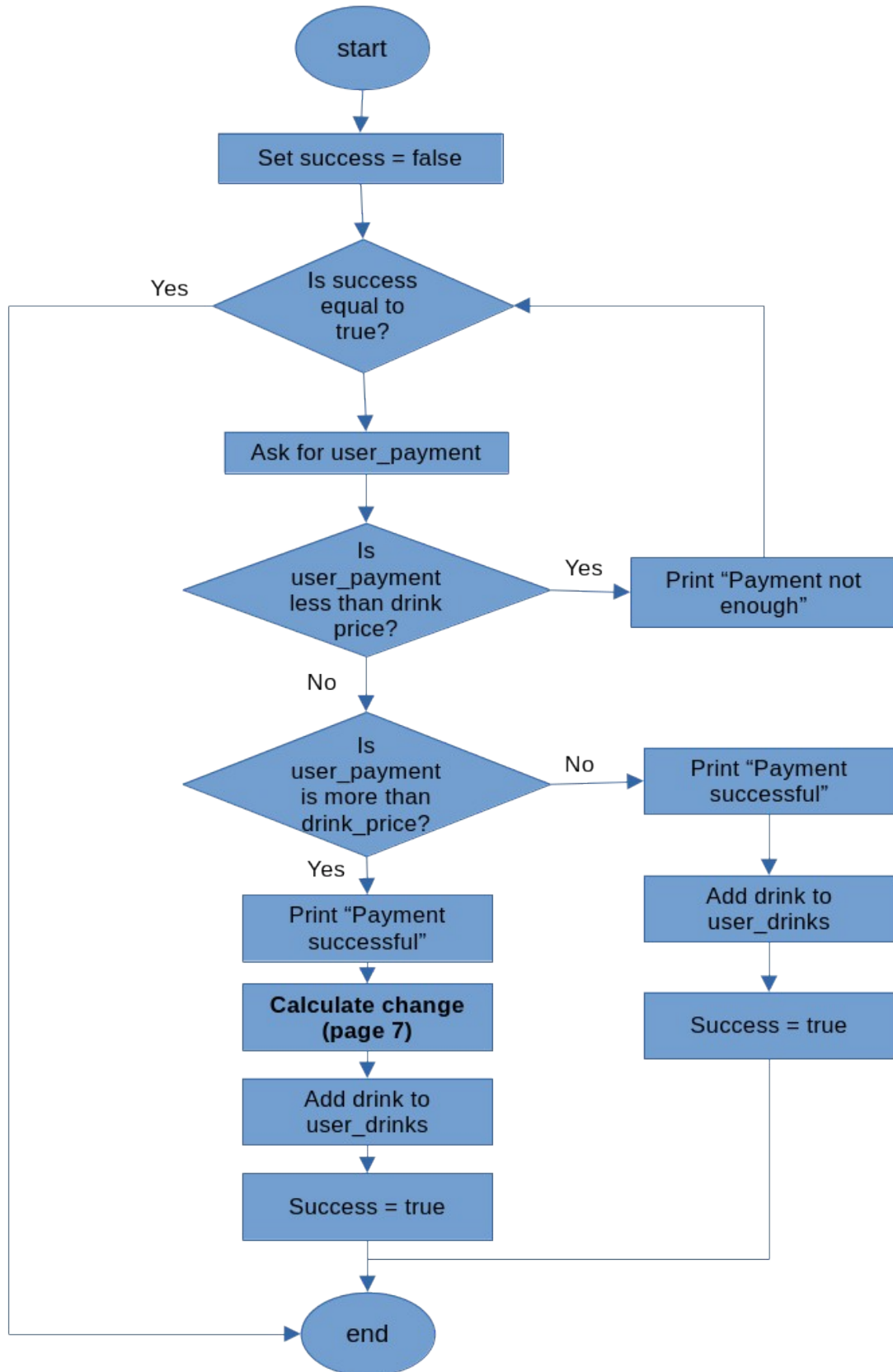
Display drink menu



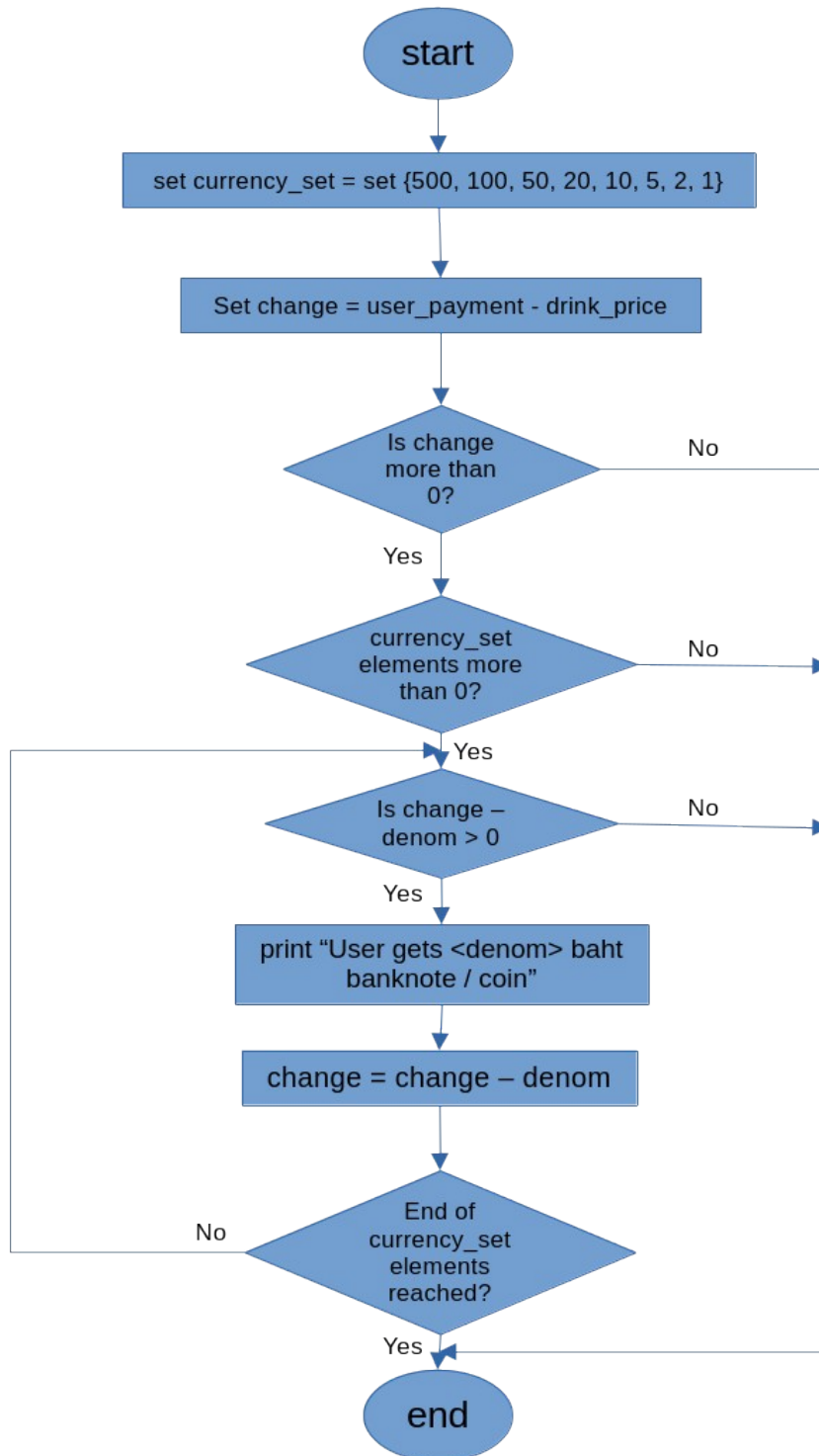
Search for drink



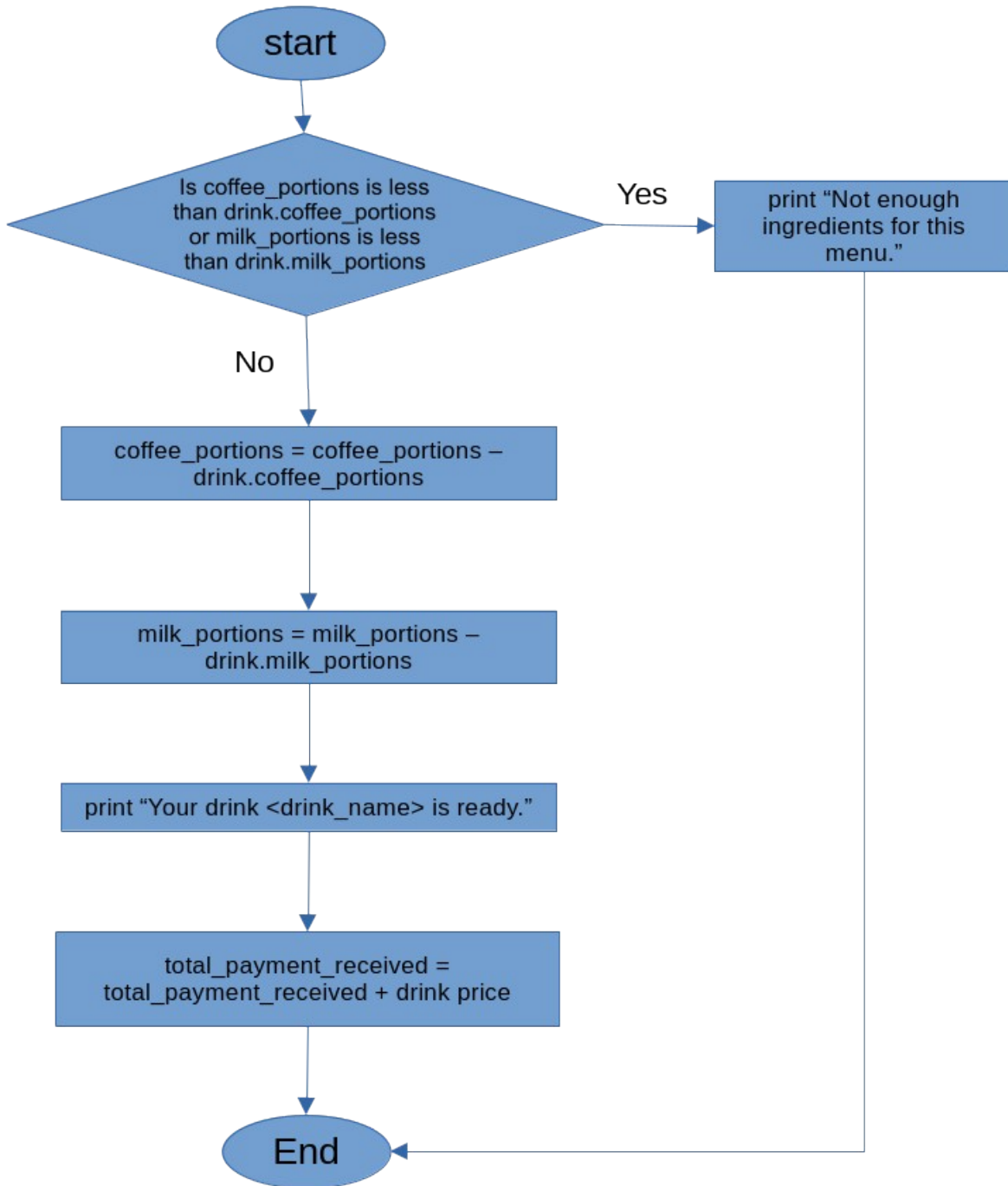
Process User Payment



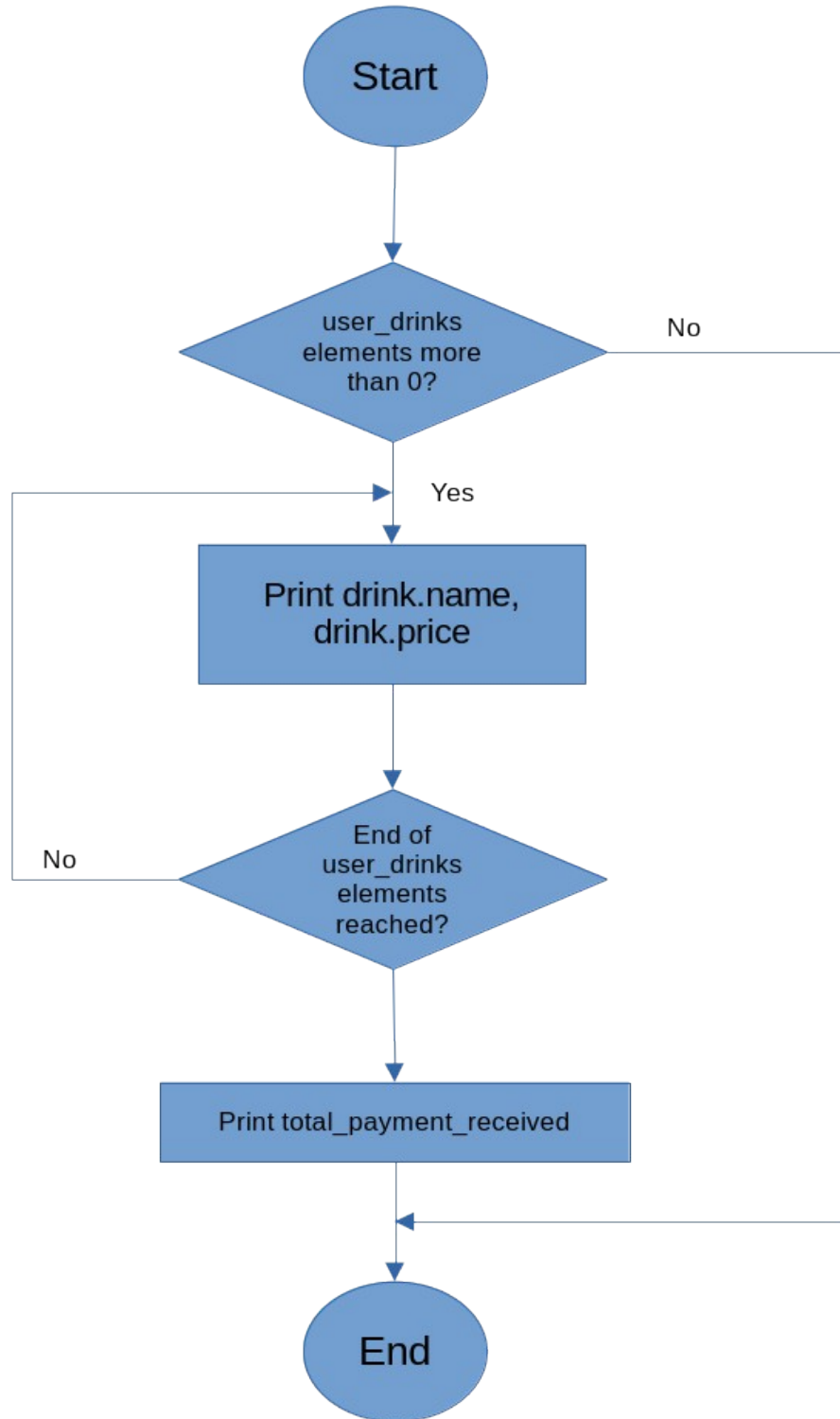
Calculate Change



Process Drink



Output Summary



Pseudocode

Declare data (page 9)

```
set finished = false
repeat until finished is true
    Display drink menu (page 10)
    ask for drink_input

    if Search drink_input (page 10) is false
        print "Drink not available"
    else if drink_input is "DONE"
        finished = true
    else
        print "Chosen drink: "
        print drink.name, drink.price
        Process user payment (page 10)
        Process Drinks (page 11)
        finished = true
    endif
endrepeat
```

Output summary (page 11)

Declare Data

```
set coffee_portions = 25
set milk_portions = 25
set user_drinks = []
set total_payment_received = 0
set drinks = [
    ["Espresso", 30, 1, 0],
    ["Americano", 30, 1, 0],
    ["Latte", 35, 1, 1],
    ["Cappucino", 35, 1, 1],
    ["Chocolate Milk", 25, 0, 3],
    ["Cocoa", 40, 0, 1],
    ["Tea", 25, 0, 0],
    ["Cherry Soda", 20, 0, 0],
    ["Peach Soda", 20, 0, 0]
```

Display drink menu

```
foreach drink in drinks_data
    print drink.name, drink.price
endfor
```

Search for drink

```
set found = false
repeat until found is true
    if input drink_name is the same as this drink_name
        found = true
        return drink.name, drink.price
    endif
endrepeat

return false
```

Process User Payment

```
set success = false
repeat until success is true
    ask for user_payment
    if user_payment is less than drink_price
        print "Payment not enough"
    else if user_payment is more than drink_price
        print "Payment successful"
        Calculate change (page 11)
        add drink to user_drinks
        success = true
    else
        print "Payment successful"
        add drink to user_drinks
        success = true
    endif
endrepeat
```

Calculate Change

```
set currency_set = set {500, 100, 50, 20, 10, 5, 2, 1}
set change = user_payment - drink_price
repeatwhile change > 0
    foreach denom in currency_set
        repeat while change - denom > 0
            print "User gets <denom> baht banknote / coin"
            change = change - denom
        endrepeat
    endfor
endrepeat
```

Process Drinks

```
if coffee_portions is less than drink.coffee_portions or
    milk_portions is less than drink.milk_portions
    print "Not enough ingredients for this menu."
else
    coffee_portions = coffee_portions - drink.coffee_portions
    milk_portions = milk_portions - drink.milk_portions

    print "Your drink <drink_name> is ready."
endif
```

```
total_payment_received = total_payment_received + drink price
```

Output Summary

```
foreach drink in user_drinks
    print drink name, drink price
endfor
print total_payment_received
```