

INFO 7215 Assignment 3-1

001879372 Chenyang Huang

1. Machine

The invariants of this part of code are:

1. the food number will not exceed the capacity of the machine
2. when cooking the food, the capacity of machine remains occupied

The pseudo-code for the machine of certain kind of food:

IF the food list is empty:

 Wait for the order

Else:

 IF there are room for food:

 Cook food;

 Wait for the food to be done:

 Release the room for the food;

 Notify the customer to get their food;

 Else:

 Wait for the available capacity;

2. Customer

The invariants of this part of code:

1. customer will not exceed the capacity of the coffee shop;
2. two customers will not share the same order number

The pseudo-code for each customer:

IF there is table available:

 order the food

 wait for the food

 get the food from the cook, eat and leave the shop

 release the table

ELSE: Wait for the table,

3. Cook

The invariants of this part of code are:

1. Each cook can only cook for one order at a time;

2. Two Cooks will not cook for the same order;

The pseudo-code for each cook:

Put all the order into a priority queue

If the queue is empty:

 Wait for the new order

ELSE :

 IF the machine is not available:

 Wait for the machine

 ELSE:

 Put the food on the machine

 WAIT for all the food done:

 Send the foods to the customer;

 Go to Next Order

4. Synchronize needed

1. table available

 Ensure that two customers will not take same table.

 Customer will not exceed the capacity of the shop

2. Order

 Customer will have the unique order number

3. Machine Capacity

 Make sure food number will not exceed the machine capacity, make sure when machine capacity updating there just have one access to it

4. Cook

 Cooks should finish the current order before going to the next one, so lock the cook when he is cooking or waiting for the machine.