Customer Agent

Data

```
List<AgentEvent> events;
AgentEvent event;
enum State { doingNothing, waitingInRestaurant, beingSeated, seated, eating, calledWatier, leaving, doneEating, ordered, checkRequested, paying, wantChange, payingDeferred, deciding }
enum AgentEvent { none, gotHungry, followWaiter, seated, waiterCame, foodCame, doneEating, doneLeaving, reorderRequested, checkCame, paid, changeCame, deferredPaymentRequested, kickedOut, restaurantFull}
Host host;
Waiter waiter;
Menu menu;
Check check;
Cashier cashier;
double cash;
boolean stayIfFull = true;
boolean isDecent = true;
```

Messages

```
gotHungry() {
        events.add(gotHungry);
}
followMe(Menu m, Waiter w) {
        events.add(followWaiter);
        menu = m;
        waiter = w;
}
whatWouldYouLike() {
        events.add(waiterCame);
}
hereIsYourFood() {
        events.add(foodCame);
}
pleaseOrderAgain(Menu menu) {
        this.menu = menu;
        events.add(reorderRequested);
        stateChanged();
}
hereIsCheck( Check c ) {
        this.check = c;
        events.add ( checkCame );
}
hereIsChange( double change ) {
        this.cash += change;//for now, not supported
        events.add(paid);
}
payNextTime() {
        events.add(paid);
}
pleasePayDeferredPayment(Check check) {
        this.check = check;
        events.add(deferredPaymentRequested);
}
getOut() {
        events.add(kickedOut);
}
restaurantIsFull() {
        events.add(restaurantFull);
}
```

Scheduler

```
if events.isEmpty, then
    return false;
event = events.first();

if state == doingNothing and event == gotHungry, then
    goToRestaurant();
    state = waitingInRestaurant;
if sate == waitingInRestaurant and event == deferredPaymentRequested, then
    state = payingDeferred;
    payDeferred();
if state == payingDeferred and event == kickedOut, then
    state = leaving;
    leaveRestaurant();
if state == waitingInRestaurant and event == restaurantFull, then
    state = deciding;
    stayOrLeave();
if state == waitingInRestaurant and event == followWaiter, then
    state = beingSeated;
    SitDown();
if state == beingSeated and event == seated, then
    state = calledWaiter;
    callWaiter();
if state == calledWaiter and event == waiterCame, then
    state = ordered;
    orderFood();
if state == ordered and event == reorderRequested, then
    state = calledWaiter;
    callWaiter(); // brings the customer back to ordering
if state == ordered and event == foodCame, then
    state = eating;
    EatFood();
if state == eating and event == doneEating, then
    state = checkRequested;
    requestCheck();
if state == checkRequested and event == checkCame, then
    state = paying;
    pay();
if state == paying and event == paid, then
```

```
          state = leaving;
          leaveTable();
if state == leaving and event == doneLeaving, then
          state = doingNothing
```

Action

```
goToRestaurant() {
        host.IWantFood(this);
}
SitDown() {
        DoGoSeat();  // animation
}
callWaiter() {
        //timer.schedule(waiter.readyToOrder(), 1000); // 10s to decide menu
        waiter.readyToOrder();
}
orderFood() {
        String choice = menu.getRandom();
        if (isDecent) { // is not decent will order even if he cannot afford
                choice = menu.getRandomAffordable(cash);
                if (choice == null) {
                        leaveTable();
                        state = leaving;
                        return;
                }
        }
        waiter.hereIsMyChoice(choice);
}
EatFood() {
        timer.schedule(new Task() {
                public void run() {
                        events.add(doneEating);
                        stateChanged();
                }
        }, timeOfEating);
}
leaveTable() {
        waiter.leaving();
        DoExitRestaurant(); // animation
}
requestCheck() {
        waiter.doneEating(this);
}
pay() {
        DoGoToCashier(); // animation
        if ( check.getTotal() <= cash )
                cash = cash - check.getTotal();
                cashier.payment(check, check.getTotal(), this);
        else
                cashier.cannotPayBill(check, this);
}
payDeferred() {
        DoGoToCashier(); // animation
        if ( check.getTotal() <= cash )
                cash = cash - check.getTotal();
                cashier.paymentForDeferredPayment(check.getTotal(), this);
                DoGoBackToLine();//Animation
                state = waitingInRestaurant;
        else
                cashier.cannotPayBill(check, this);
}
leaveRestaurant() {
        DoExitRestaurant(); // animation
}
stayOrLeave() {
        host.iAm(stayIfFull, this); // stayIfFull is determined by hack
        if (stayIfFull) {
                state = waitingInRestaurant;
        }else {
                state = leaving;
                leaveRestaurant();
        }
}
```

Waiter

Data

```
class MyCustomer{
        customer c,
        int table,
        CustomerState s;
        String choice;
        Check check;
}
List<MyCustomer> customers;
enum CustomerState = { waiting, seated, askedToOrder, asked, ordered, waitingForFood,
eating, orderOut, doneEating, leaving, checkBeingIssued, checkIssued, checkDelivered }
Cook cook; // only one cook assumed
class MyFood{
        String choice;
        foodState s;
        int table;
}               // this might be developed later for the use of pay, but redundant for now
List<MyFood> foods;
enum FoodState = { toBeServed }// it is redundant for now
Host host;
Cashier cashier;
```

Message

```
sitAtTable(Customer c, int table) {
        customers.add( new MyCustomer(c, table, waiting) );
}
readyToOrder(Customer c) {
        MyCustomer mc = customers.find(c);
        mc.s = askedToOrder
}
hereIsMyChoice(Customer c, String choice) {
        MyCustomer mc = customers.find(c);
        mc.s = ordered;
        mc.choice = choice;
}
orderIsReady(String choice, int table) {
        foods.add(new MyFood(choice, table, toBeServed));
}
doneEating(Customer c) {
        MyCustomer mc = customers.find(c);
        mc.s = doneEating;
}
leaving(Customer c) {
        MyCustomer mc = customers.find(c);
        mc.s = leaving;
}
outOf(String choice, int table) {
        MyCustomer mc = customers.find(c)
                ∍ (mc.choice == choice && mc.table == table)
        mc.s = orderOut;
}
hereIsCheck(Check check, Customer c) {
        MyCustomer mc = customers.find(c);
        mc.check = check;
        mc.s = checkIssued;
}
```

Scheduler

```
if ∃c in customers ∍ c.s = orderOut, then
          requestReorder(c);
if ∃f in foods ∍ f.s = toBeServed, then
          serveFood(f);
if ∃c in customers ∍ c.s = ordered, then
          placeOrder(c);
if ∃c in customers ∍ c.s = doneEating, then
          requestCheck(c);
if ∃c in customers ∍ c.s = checkIssued, then
          bringCheckToCustomer(c);
if ∃c in customers ∍ c.s =leaving, then
          cleanTable(c.table);
if ∃c in customers ∍ c.s = waiting, then
          seatCustomer(c);
if ∃c in customers ∍ c.s = askedToOrder, then
          takeOrder(c);
```

Action

```
notifyHost() { host.readyToWork(this); }
requestBreak() { host.wantToGoOnBreak(this); }
seatCustomer(MyCustomer c) {
        goBackToCounter(); // animation
        c.c.followMe(this, new Menu()); //and tableNumber?
        DoSeatCustomer(c); // animation
        c.s = seated;
}
takeOrder(MyCustomer c) {
        DoGoToTable(c, table); // animation
        c.c.WhatWouldYouLike();
        c.s = asked;
}
placeOrder(MyCustomer c) {
        goBackToCounter(); // animation
        cook.hereIsAnOrder(this, c.choice, c.table);
        c.s.waitingForFood;
}
serveFood(MyFood f) {
        DoGoToCook(); // animation
        BringFoodToTable(f.table); // animation
        ∀c in customers ϶ c.table == f.table && c.choice == f.choice, then
                c.c.hereIsYourFood();
                c.s = eating;
        foods.remove(f) // maybe changed to f.s = served; in later version
}
cleanTable(int table) {
        CleanTable(table); // animation
        ∀c in customers ϶ c.table == table, then
                customers.remove(c);
        host.tableIsFree(table);
}
requestReorder(MyCustomer c) {
        DoGotoTable(c.table); // animation
        menu.removeItemFromMenu(c.choice);
        c.c.pleaseOrderAgain(menu);
        c.s= seated;
}
```

```
requestCheck(MyCustomer c) {
        cashier.produceCheck( c.c, c.choice, this );
        c.s = checkBeingIssued;
}
bringCheckToCustomer(MyCustomer c) {
        c.c.hereIsCheck(c.check);
        c.s = checkDelivered;
}
```

Host

Data

```
List<MyCustomer> customers;
class MyCusomter {
        Customer c;
        CustomerState s;
}
CustomerState = { wantFood, checking, checked, waiting, informed, kickOut }
Collection<Table> tables;
class Table {
        Customer occupiedBy;
        int tableNumber;
}
List<MyWaiter> waiters;
class MyWaiter {
        Waiter w;
        WaiterState s;
}
WaiterState = { available, breakRequested, onBreak };
Cashier cashier;
boolean isRestaurantOpen = false;
```

Message

```
IWantFood(Customer c) {
        customers.add(new MyCustomer(c, wantFood));
}
tableIsFree(int table) {
        ∀t in tables ∍ t.tableNumber == table
                t.occupiedBy == null;
}
readyToWork(Waiter w) {
        if ∃mw ∍ mw.w = w, then
                mw.s = available;
                waiters.remove(mw);
                waiters.add(0, mw);
        else
                waiters.add(0, new MyWaiter(w, available));
        /* 0 is mechanism to select new waiter rather than waiters who were working */
}
wantToGoOnBreak(Watier w) {
        MyWaiter mw = watiers.find(w);
        mw.s = breakRequested;
}
customerClear(Customer c, boolean clear) {
        MyCustomer mc = customers.find(c);
        if (clear) { mc.s = checked; }
        else {  mc.s = kickOut; }
}
iAm(boolean staying, Customer c) {
        if(staying) {
                state = waiting;
        }else {
                customers.remove(c);
        }
}
takeCustomers() {
        isRestaurantOpen = true;
}
```

Scheduler

```
if ! isRestaurantOpen, then
    return false;
if ∃w in waiters ∋ w.s == breakRequested, then
    acceptOrDenyBreak(w);
if ∃c in customers ∋ c.s == checked, then
    informAvailabiltiy(c);
if ∃t in tables ∋ t.occupiedBy == null and ∃c in customers ∋ c.s = waiting and
                ∃w in waiters ∋ w.s == available, then
    takeCustomerToTable(c, table);
if ∃c in customers ∋ c.s = wantFood, then
    requestHistoryCheck(c);
if ∃c in customers ∋ c.s = kickOut, then
    kickOutCustomer(c);
```

Action

```
takeCustomerToTable(MyCustomer c, Table t, MyWaiter w) {
        t.occupiedBy = c.c;
        w.sitAtTable(c.c, t);
        customers.remove(c);
        waiters.remove(w);  // this makes sure the same waiter does not get
        waiters.add(w);     // overloaded by work when other waiters are free
}
acceptOrDenyBreak(MyWaiter w) {
        count = 0;
        ∀mw in waiters ∍ mw.s = available
                count ++;
        if count > 0,
                w.s = onBreak;       //accepted
        else                         // notice I do not notify decision to waiter
                w.s = available;     //denied
requestHistoryCheck(MyCustomer c) {
        cashier.historyCheck(c.c);
        c.s = checking;
}
kickOutCustomer(MyCustomer c) {
        c.c.getOut();
        customers.remove(c);
}
informAvailability(MyCustomer c) {
        if ∃t in tables ∍ t.occupiedBy == null, then
                c.s = waiting; // if available, he's on line
        else
                c.s = informed;
                c.c.restaurantIsFull();
}
```

Cook

Data

```
List<Order> orders;
class Order = {
        Watier w,
        String choice,
        int table,
        OrderState s;
}
enum OrderState = { pending, cooking, done }
Timer timer;
Map<String, Food> foods;
class Food {
        String type,
        int cookingTime,
        int amount,
        int low,
        int restockAmount,
        boolean isOrdered;
        int incomingStock;
}
List<MyMarket> markets;
class MyMarket {
        Market m;
        List<String> availableList; // initialized with all foods
        List<MarketOrder> orders;
}
class MarketOrder { // incoming order that market approved
        String choice;
        int quantity;
        DeliveryState s;
}
enum DeliveryState = { onDelivery, confirmed, delivered }
enum AgentState = { sleeping, atWork, openingRestaurant, initStocked, opened }
AgentState state = sleeping;
Host host;
```

Message

```
hereIsOrder(Waiter w, String choice, int table) {
    orders.add(w, choice, table, pending);
}
foodDone(Order o) {
    o.s = done;
}
weAreOutOf(String choice, Market m) {
    if ∃myM in markets ∋ myM.m == m, then
        myM.availableList.remove( choice );
}
deliveryScheduled(String choice, int quantity, Market m) {
    if ∃myM in markets ∋ myM.m == m, then
        myM.orders.add ( new MarketOrder ( choice, quantity, onDelivery ));
}
deliveryFor(String choice, Market m) {
    if ∃myM in markets ∋ myM.m == m, then
        myM.orders.get(choice).s = delivered;
}
openRestaurant(){
    state = atWork;
}
```

Scheduler

```
if state == atWork, then
    openRestaurant();
if state == initStocked, then
    tellHostToTakeCustomers();
if ∃o in orders ∍ o.s = done, then
    plateIt(o);
if ∃o in orders ∍ o.s = pending, then
    cookIt(o);
if ∃m in markets ∍ (! m.orders.isEmpty() && ∃o in m.orders ∍ o.s = onDelivery), then
    confirmOrder(m);
if ∃m in markets ∍ (! m.orders.isEmpty() && ∃o in m.orders ∍ o.s = delivered), then
    restock(m);
```

Action

```
cookIt(Order o) {
    Food f = foods.get(o.choice);
    if ( f.amount <= f.low && !f.isOrdered) {   //send out order to every market
        f.incomingOrder = 0;
        f.isOrdered = true;
        ∀m in markets ∍ m.availableOrder has f.choice
            orderFor(f.choice, f.restockAmount);
    }else if ( f.amount == 0 ) {
        o.w.outOf(o.choice, o.table);
        orders.remove(o);
        return;
    }
    f.amount--;

    DoCooking(o); //animation
    o.s = cooking;
    timer.schedule( run(foodDone(o)), f.cookingTime);
}
plateIt(Order o) {
    DoPlating(o); //animation
    o.w.orderIsReady(o.choice, o.table);
    orders.remove(o);
}
confirmOrder(MyMarket m) {
    ∀o in m.orders ∍ o.s == onDelivery, then
        Food f = foods.get(o.choice);
        if (o.quantity <= f.restockAmount - f.incomingOrder)
            f.incomingOrder += o.quantity;
            o.s = confirmed;
            m.m.confirmation(true, o.choice);
        else
            m.orders.remove(o);
            m.m.confirmation(false, o.choice);
}
restock(MyMarket m) {
    ∀o in m.orders ∍ o.s = delivered
        Food f = foods.get(o.choice);
        f.amount = f.amount + o.quantity;
```

```
                f.isOrdered = false;
                m.orders.remove(o);
        if state == openingRestaurant, then
                state = initStocked;
}
openRestaurant() {
        state = openingRestaurant;
        boolean nothingToRestock = true;
        ∀t in Menu.Type
                Food f = foods.get(t.toString());
                if ( f.amount <= f.low && !f.isOrdered) {   //send out order to every market
                        nothingToRestock = false;
                        f.incomingOrder = 0;
                        f.isOrdered = true;
                        ∀m in markets ∍ m.availableOrder has f.choice
                                orderFor(f.choice, f.restockAmount);
                }
        if (nothingToRestock) {
                tellHostToTakeCustomers();
        }
}
tellHostToTakeCustomers() {
        state = opened;
        host.takeCustomers();
}
```

Market

Data

```
List<Order> orders;
class Order = {
        String choice;
        int quantity;
        OrderState s;
}
OrderState = { orderReceived, preparing, toBeDelivered }
Map<String, Item> inventory;
class Item= {
        String type;
        int stockAmount;
        int deliveryTime;
}
List<Payment> payments;
class Payments {
        Check check;
        Cashier c;
        Cash cash;
        PaymentState s;
        double interest;
}
PaymentState = { pending, paid, complete, unpaid, deferred }
Timer timer;
Cook cook;
Cashier cashier;
```

Messages

```
orderFor (String choice, int quantity) {
    orders.add( new Order( choice, quantity, orderReceived ) );
}
confirmation (boolean approval, String choice) {
    if (approval) {
        if ∃o in orders ∍ o.s = preparing && o.choice = choice, then
            o.s = toBeDelivered;
    }else {
        if ∃o in orders ∍ o.s = preparing && o.choice = choice, then
            orders.remove(o);
    }
}
hereIsPayment(Check check, double cash, Cashier c) {
    payments.add( new Payment( check, cash, c, paid );
}
iAmShort(Check check, Cashier c) {
    Payment p = new Payment( check, c, unpaid);
    p.interest = 0.5;
    payments.add (p);
}
```

Scheduler

```
if ∃o in orders ∋ o.s = orderReceived, then
        processOrder(o);
if ∃o in orders ∋ o.s = toBeDelivered, then
        deliver(o);
if ∃p in payments ∋ p.s = pending, then
        requestPayment(p);
if ∃p in payments ∋ p.s = paid, then
        processPayment(p);
```

Action

```
processOrder( Order o ) {
    Item i = inventory.get(o.choice);
    if ( i.stockAmount <= 0) {
        cook.weAreOutOf(o.choice);
        orders.remove(o);
    }else if ( i.stockAmount > 0) {
        o.s = preparing;
        if ( i.stockAmount < o.quantity )
            cook.deliveryScheduled(o.choice, i.stockAmount);
            i.stockAmount = i.stockAmount - i.stockAmount;
        else
            cook.deliveryScheduled(o.choice, o.quantity);
            i.stockAmount = i.stockAmount - o.quantity;
    }
}
deliver( Order o ) {
    orders.remove(o);
    Check check = new Check();
    check.addItem(o.choice, o.quantity);
    final fc = check;
    timer.schedule (
        cook.deliveryFor(o.choice, this),
        payments.add( new Payment( fc, cashier, pending );
        , Inventory.get(o.choice).deliveryTime );
}
requestPayment( Payment p ) {
    for ( p1 in payments ∍ p1.s = unpaid ) {
        if ( p1.c == p.c ) {
            p.check.appendCheckWithInterest(p1.check, p1.interest);
            payments.remove(p1);
            // notice that interest gets huge as cashier keeps on not paying
        }
    }
    p.c.hereIsCheck( p.check, this );
    payments.remove(p);
}
processPayment( Payment p ) {
    marketBudget += p.cash;
```

```
        p.s = complete;
}
```

Cashier

Data

```
List<CheckOrder> checkOrders;
class CheckOrder {
        Customer c;
        String choice;
        Waiter w;
        CheckOrderState s;
}
CheckOrderState = {
        requested,
}
List<Payment> payments;
class Payment {
        Check check;
        double cash;
        Customer c;
        PaymentState s;
        Market m;
}
PaymentState = {
        pending, paid, unpaidPending, unpaid, unpaidRevisit, unpaidProcessing,
        unpaidPaid, unpaidPendingAgain, marketPending,
}
Host host;
List<Customer> cleanCustomers;
double restaurantBudget;
```

Messages

```
produceCheck(Customer c, String choice, Waiter w) {
        checkOrders.add ( new checkOrder(c, choice, w, requested) );
}
payment(Check check, double cash, Customer c) {
        payments.add( new Payment ( check, cash, c, pending ) );
}
cannotPayBill(Check check, Customer c) {
        if ∃p in payments ∍ p.c = c and p.s = unpaidProcessing, then
                p.s = unpaidPendingAgain;
        else
                payments.add( new Payment ( check, 0, c, unpaidPending) );
}
historyCheck(Customer c) {
        if ∃p in payments ∍ p.c = c and p.s = unpaid, then
                p.s = unpaidRevisit;
        else
                cleanCustomers.add(c);
}
paymentForDeferredPayment(Customer c, double cash) {
        if ∃p in payments ∍ p.c = c and p.s = unpaidProcessing, then
                p.cash = cash;
                p.s = unpaidPaid;
}
hereIsCheck(Check check, Market m) {
        payments.add( new Payment ( check, m, marketPending ) );
}
```

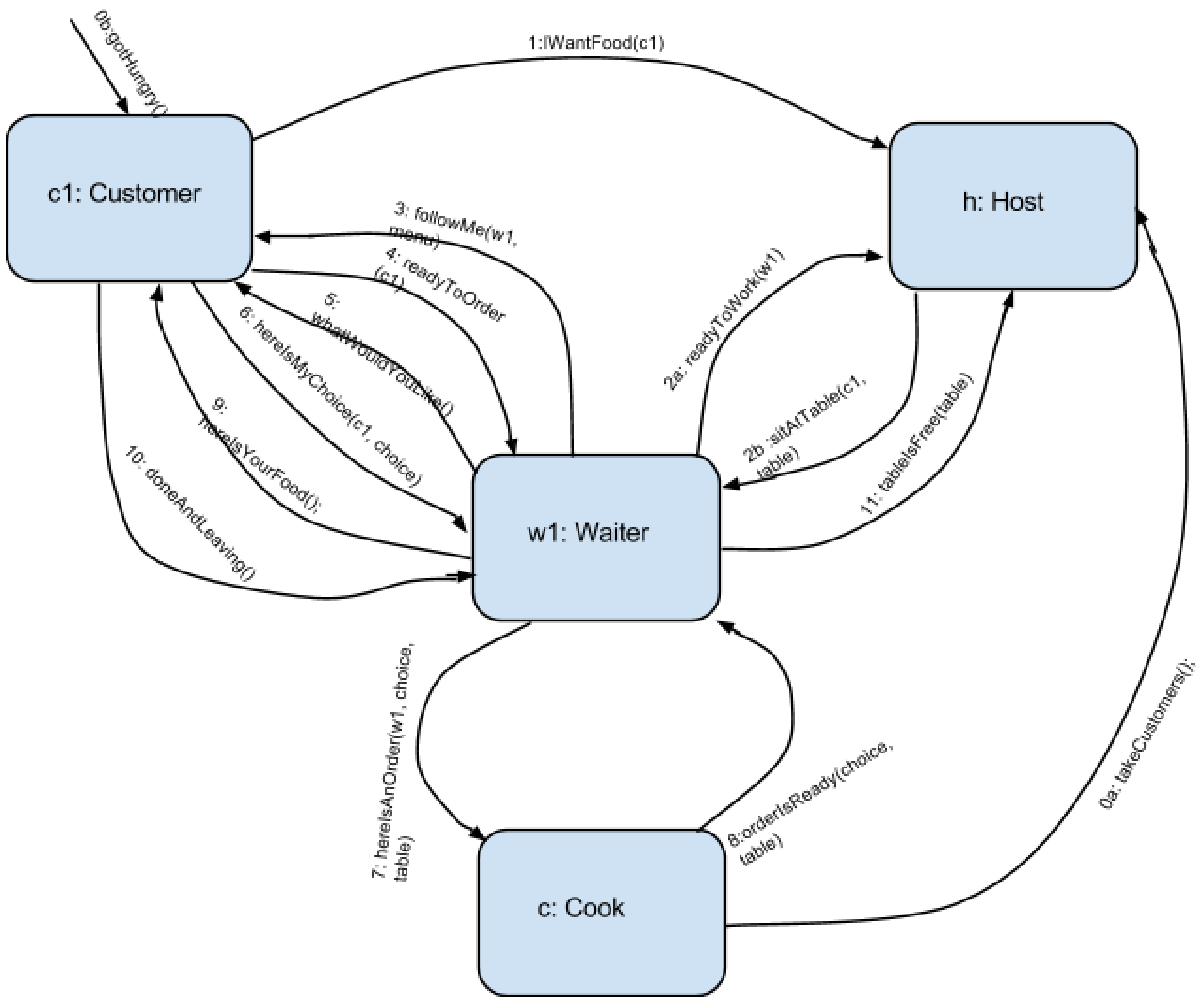
Scheduler

```
if !cleanCustomers.isEmpty, then
        clearCustomer(cleanCustomers.remove(0));
if ∃o in checkOrders ∍ o.s = requested, then
        deliverCheck(o);
if ∃p in payments ∍ p.s = pending, then
        processPayment(p);
if ∃p in payments ∍ p.s =unpaidPending || p.s = unpaidPendingAgain, then
        payNextVisit(p);
if ∃p in payments ∍ p.s = unpaidRevisit, then
        requestDeferredPayment(p);
if ∃p in payments ∍ p.c = c and p.s = unpaidPaid, then
        processDeferredPayment(p);
if ∃p in payments ∍ p.c = c and p.s = marketPending, then
        makePaymentToMarket(p);
```

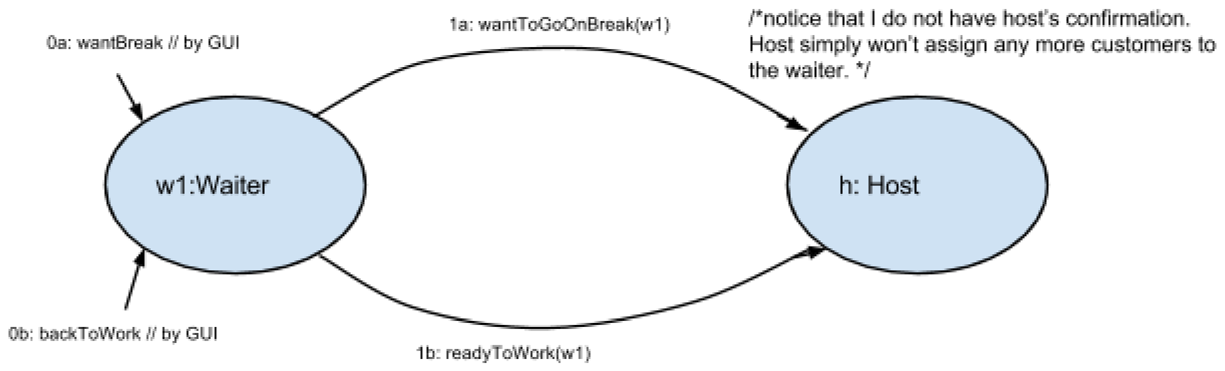
Actions

```
deliverCheck(checkOrder o) {
        check = new Check();
        check.addItem( o.choice );
        o.w.hereIsCheck( check, o.c );
        checkOrders.remove( o );
}
processPayment(Payment p) {
        double change = p.check.getTotal() - p.cash;
        p.c.hereIsChange(change);
        p.s = paid;
}
payNextVisit(Payment p) {
        if (p.s = unpaidPendingAgain)
                host.customerClear(p.c, false);
        p.s = unpaid;
        p.c.payNextTime();
}
requestDeferredPayment(Payment p) {
        p.s = unpaidProcessing;
        p.c.pleasePayDeferredPayment(p.check);
}
processDeferredPayment(Payment p) {
        double change = p.check.getTotal() - p.cash;
        p.c.hereIsChange(change);
        p.s = paid;
        host.customerClear(p.c, true);
}
clearCustomer(Customer c) {
        host.customerClear(c, true);
}
makePaymentToMarket(Payment p) {
        if ( restaurantBudget < p.check.getTotal() ) {
                p.m.iAmShort( p.check, this);
                payments.remove(p);
        }else {
                p.m.hereIsPayment( p.check, p.check.getTotal(), this);
                restaurantBudget -= p.check.getTotal();
                p.s = paidMarket; // do not remove payment made, it is record
```

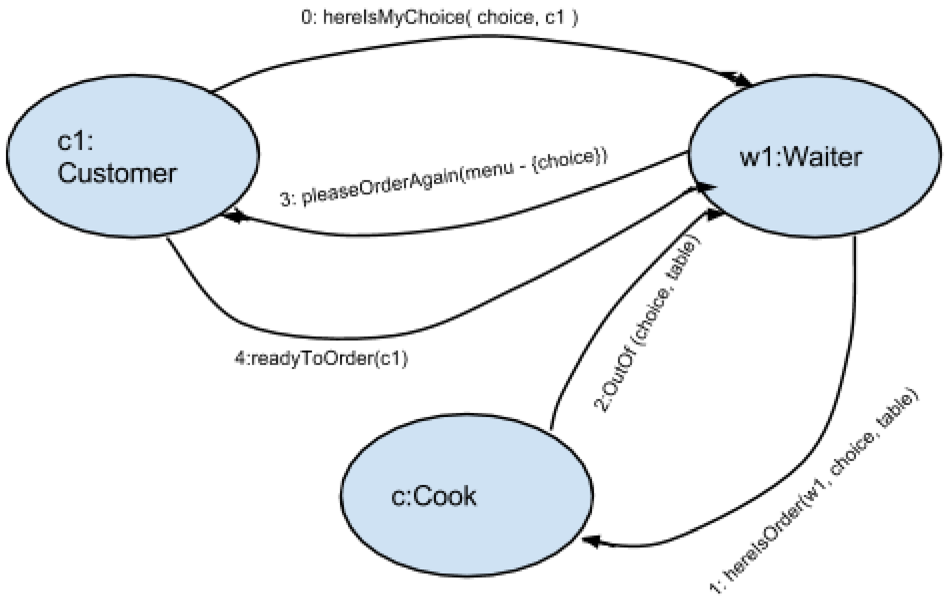
```
          }
  }
```


0b:gotHungry()
1:IWantFood(c1)
c1: Customer
h: Host
3: followMe(w1, menu)
4: readyToOrder (c1)
5: whatWouldYouLike()
6: hereIsMyChoice(c1, choice)
9: hereIsYourFood();
10: doneAndLeaving()
2a: readyToWork(w1)
2b :sitAtTable(c1, table)
11: tableIsFree(table)
w1: Waiter
7: hereIsAnOrder(w1, choice, table)
8:orderIsReady(choice, table)
0a: takeCustomers();
c: Cook

Waiter Going On Break and Coming Back To Work From Break

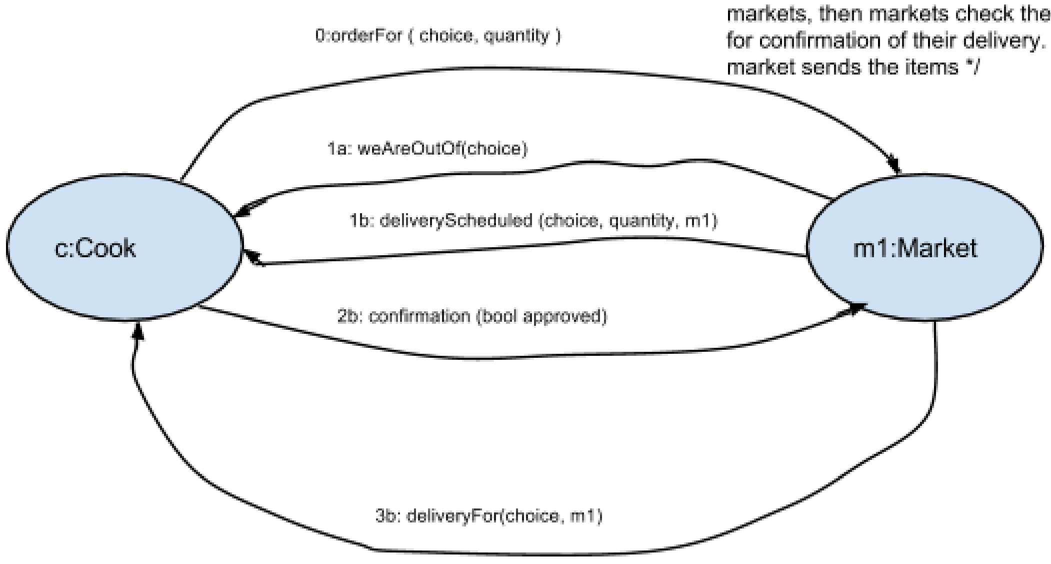

0a: wantBreak // by GUI
1a: wantToGoOnBreak(w1)
/*notice that I do not have host's confirmation. Host simply won't assign any more customers to the waiter. */
w1:Waiter
h: Host
0b: backToWork // by GUI
1b: readyToWork(w1)

Out of Food Scenario

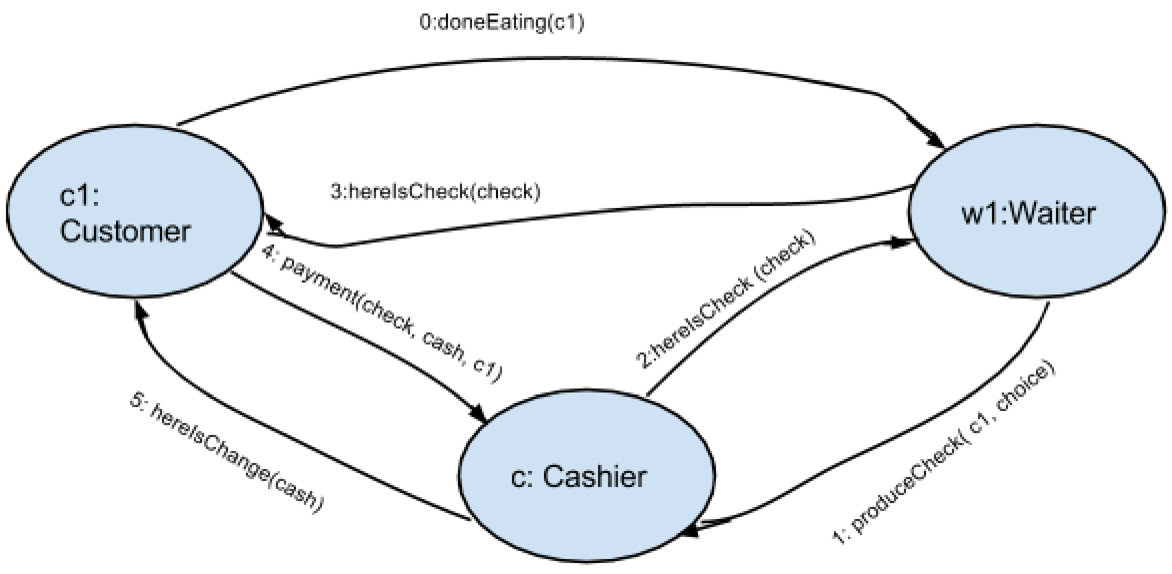

0: hereIsMyChoice(choice, c1)
c1: Customer
w1:Waiter
3: pleaseOrderAgain(menu - {choice})
4:readyToOrder(c1)
2:OutOf (choice, table)
1: hereIsOrder(w1, choice, table)
c:Cook

Market - Cook

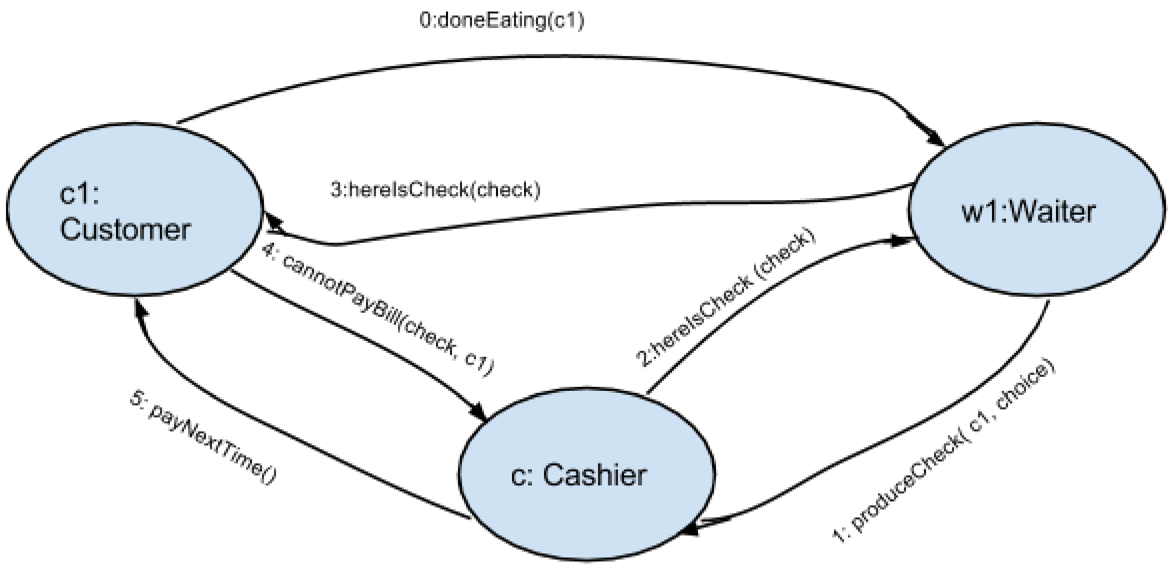
/* in my design, the cook sends out orders to all markets, then markets check their inventory, ask for confirmation of their delivery. If confirmed, then market sends the items */


0:orderFor (choice, quantity)
1a: weAreOutOf(choice)
1b: deliveryScheduled (choice, quantity, m1)
c:Cook
m1:Market
2b: confirmation (bool approved)
3b: deliveryFor(choice, m1)

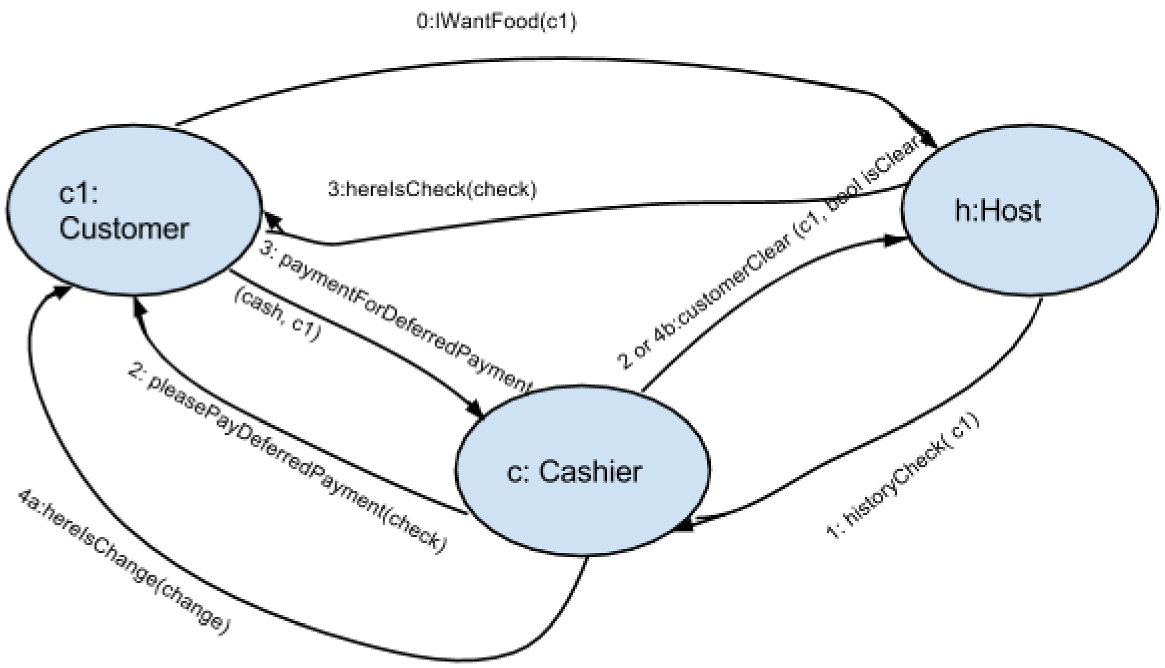
Cashier - Waiter - Customer : normative paying scenario



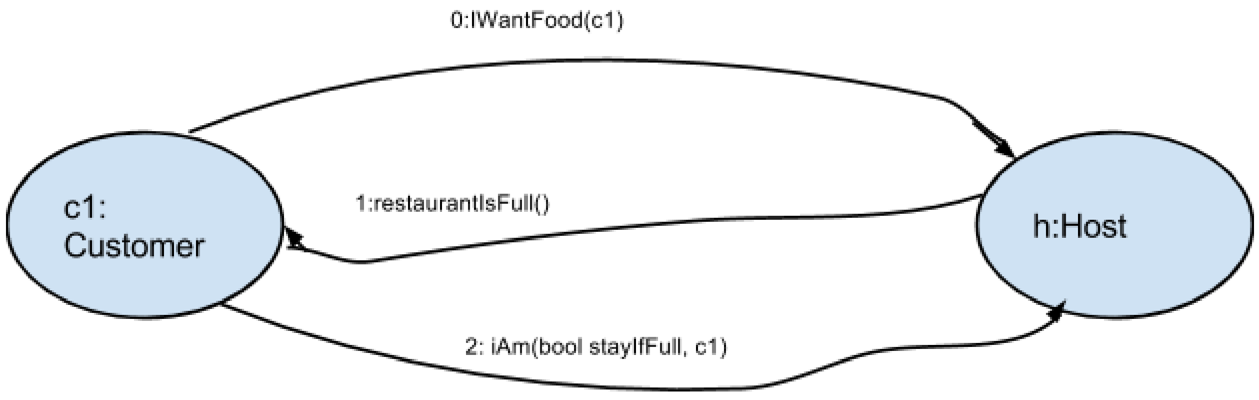
Customer does not have enough money to pay for his meal



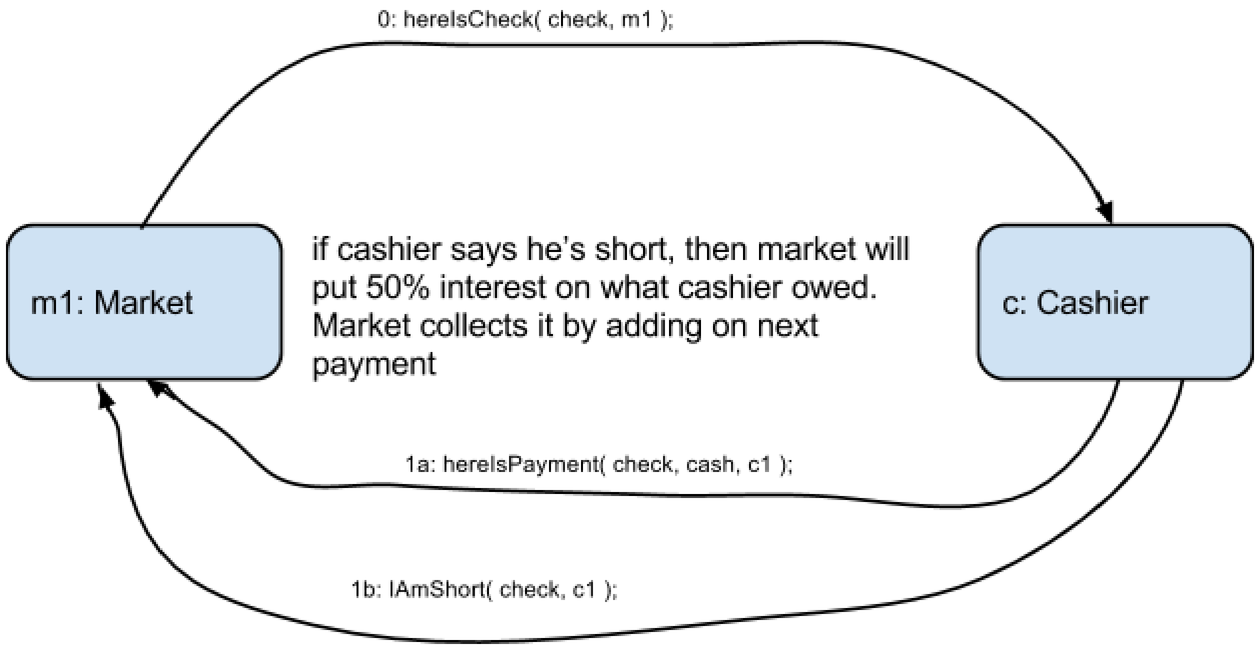
Customer who hasn't paid bill is back to restaurant


0:IWantFood(c1)
c1: Customer
3:hereIsCheck(check)
h:Host
2 or 4b:customerClear (c1, bool isClear)
3: paymentForDeferredPayment (cash, c1)
2: pleasePayDeferredPayment(check)
c: Cashier
1: historyCheck(c1)
4a:hereIsChange(change)

restaurant is full, customer leaves or stays



cashier pays the money to market


0: hereIsCheck(check, m1);
m1: Market
c: Cashier
1a: hereIsPayment(check, cash, c1);
1b: IAmShort(check, c1);

if cashier says he’s short, then market will put 50% interest on what cashier owed. Market collects it by adding on next payment