Customer Agent

Data

List<AgentEvent> events;
AgentEvent event;
enum AgentEvent { none, gotHungry, followWaiter, seated, waiterCame, foodCame, doneEating, doneLeaving }
enum State { doingNothing, waitingInRestaurant, beingSeated, calledWatier, leaving, seated, eating, doneEating, ordered }
Host host;
Waiter waiter;
Menu menu;

Messages

```
gotHungry() {
        events.add(gotHungry);
}
followMeToTable(m, w) {
        events.add(followWaiter);
        menu = m;
        waiter = w;
}
whatWouldYouLike() {
        events.add(waiterCame);
}
hereIsYourFood() {
        events.add(foodCame);
}
```

Scheduler

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

if state == doingNothing and event == gotHungry, then
        goToRestaurant();
        state = waitingInRestaurant;
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 == foodCame, then
        state = eating;
        EatFood();
if state == eating and event == doneEating, then
        state = leaving;
        leaveTable();
```

Action

```
goToRestaurant() {
        host.IWantFood(this);
}
SitDown() {
        DoGoSeat(); // animation
}
callWaiter() {
        timer.schedule(waiter.readyToOrder(), 1000); // 10s to decide menu
}
orderFood() {
        String choice = menu.getRandom();
        waiter.hereIsMyChoice(choice);
}
EatFood() {
        timer.schedule(new Task() {
                public void run() {
                        events.add(doneEating);
                        stateChanged();
                }
        }, timeOfEating);
}
leaveTable() {
        waiter.doneAndLeaving();
        DoExitRestaurant(); // animation
}
```

Waiter

Data

```
class MyCustomer{
        customer c,
        int table,
        CustomerState s;
        String choice;
}
List<MyCustomer> customers;
enum CustomerState = { waiting, seated, askedToOrder, asked, ordered,
waitingForFood, eating, doneAndLeaving }
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;
```

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));
}
doneEatingAndLeaving(Customer c) {
        MyCustomer mc = customers.find(c);
        mc.s = doneAndLeaving();
}
```

Scheduler

```
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 = doneAndLeaving, 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

```
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(); // going off-screen animation
        cook.hereIsAnOrder(this, c.choice, c.table);
        c.s.waitingForFood;
}
serveFood(MyFood f) {
        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);
}
notifyHost() {
        host.readyToWork(this);
}
```

Host

Data

```
List<Customer> waitingCustomers;
Collection<Table> tables;
class Table {
        Customer occupiedBy;
        int tableNumber;
}
List<MyWaiter> waiters;
class MyWaiter {
        Waiter w;
        WaiterState s;
}
WaiterState = { available };
```

Message

```
IWantFood(Customer c) {
        waitingCustomers.add(c);
}
tableIsFree(int table) {
        ∀ t in tables ϶ t.tableNumber == table
                t.occupiedBy == null;
}
readyToWork(Waiter w) {
        waiters.add(0, new MyWaiter(w, available));
        /* 0 is mechanism to select new waiter rather than waiters who were working */
}
```

Scheduler

if ∃ t in tables ϶ t.occupiedBy == null and ∃ c in waitingCustomers and
∃ w in waiters ϶ w.s == available, then
takeCustomerToTable(c, table);

Action

```
takeCustomerToTable(Customer c, Table t, MyWaiter w) {
        t.occupiedBy = c;
        w.sitAtTable(c, t);
        waitingCustomer.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
}
```

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,
}
```

Message

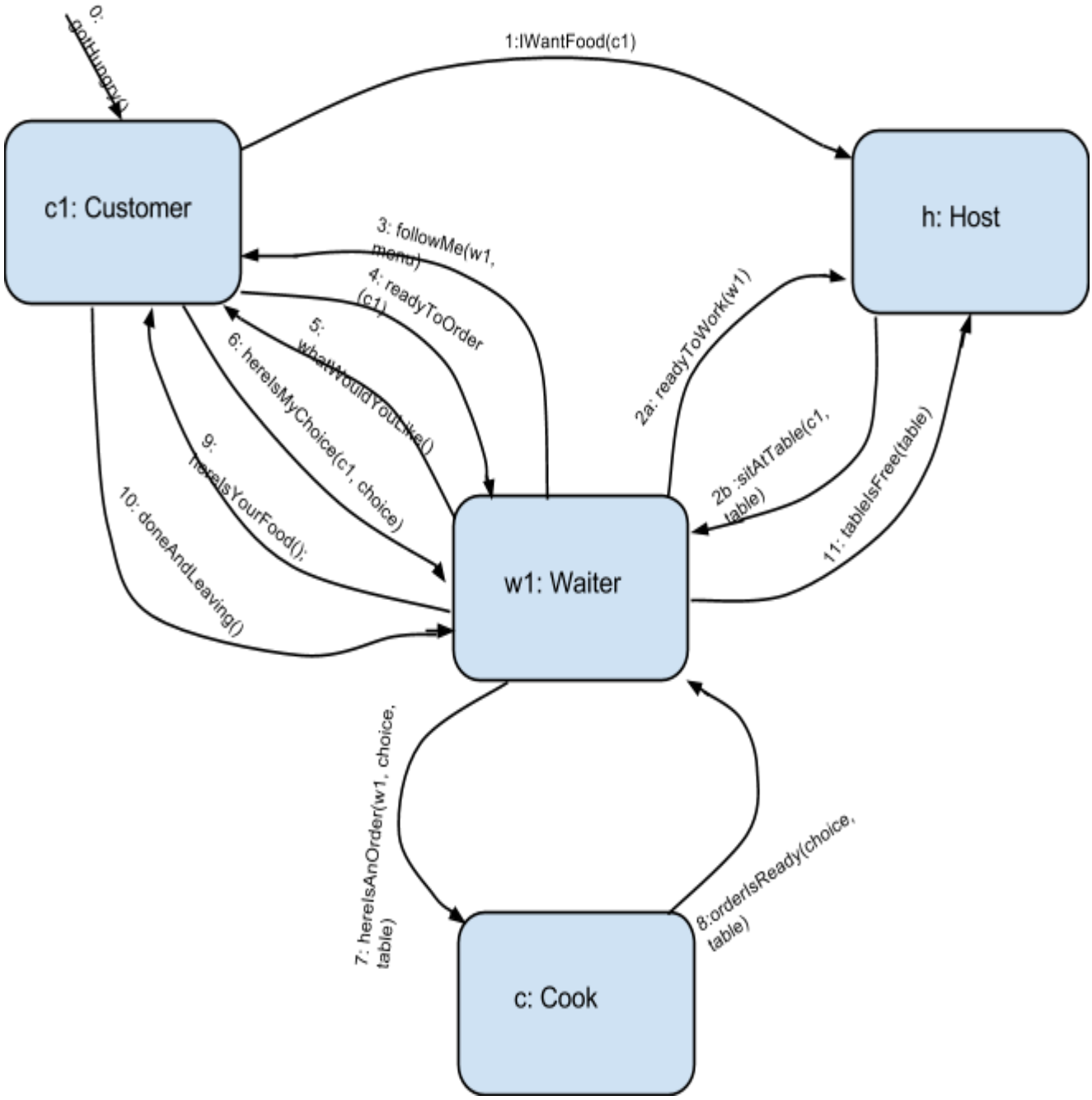
```
hereIsOrder(Waiter w, String choice, int table) {
        orders.add(w, choice, table, pending);
}
foodDone(Order o) {
        o.s = done;
}
```

Scheduler

if ∃ o in orders ϶ o.s = done, then
    plateIt(o);
if ∃ o in orders ϶ o.s = pending, then
    cookIt(o);

Action

```
cookIt(Order o) {
        DoCooking(o); //animation
        o.s = cooking;
        timer.start( run(foodDone(o)), foods.get(o.choice).cookingTime);
}
plateIt(Order o) {
        DoPlating(o); //animation
        o.w.orderIsReady(o.choice, o.table);
        orders.remove(o);
}
```


0: goImHungry()
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)
c: Cook