Finite State Machine

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Description

The customer will queue to get an order of dining. After being called, the customer can order dishes according to the menu, an order information consists of an OrderId, a TableId, an OrderRef, a DishRef, Quantity of dishes ordered, and a Status will be generated.

If the status of the order is Ordered, then the customer is allowed to modify the order by adding and deleting dishes.

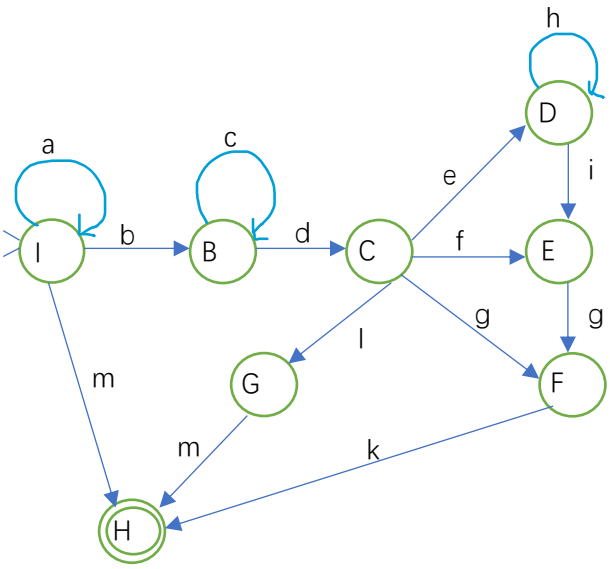
If the status of the order is Preparing, then the customer is not allowed to modify the order by adding and deleting dishes.

If the status of the order is Served, the customer can finish the food and make the payment, and then leave the restaurant.

If the status of the order is Cancelled, the customer can leave the restaurant directly.

It is possible that the restaurant serves more than one customer with different order status concurrently.

Finite State Machine Diagram



Inputs: **S** = {a, b, c, d, e, f, g, h, i, j, k, l, m, n}

States: **Q** = {I, B, C, D, E, F, G, H}

Final states: **F** = {H}
Initial state: **q0** = I

Meaning of Inputs S and States Q:
a: No seats or waiter is available
b: Seats and waiter are available
c: It is during the process of order
d: Confirm the order
e: Turn to the order status
f: Start to prepare the order
g: The dishes is prepared
h: Adding/deleting dishes to/from the order
i: The dishes are during preparation
k: Pay the bill
l: Cancel the order
m: Leave the restaurant

I: Queue
B: Order
C: Order Information Generated
D: Order Updated
E: Waited
F: Eating
G: Order Cancelled
H: Left

State Transition Table

States/Inputs	a	b	c	d	e	f	g	h	i	k	l	m
I	I	B	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	H
B	*Φ*	*Φ*	B	C	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*
C	*Φ*	*Φ*	*Φ*	*Φ*	D	E	F	*Φ*	*Φ*	*Φ*	G	*Φ*
D	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	D	E	*Φ*	*Φ*	*Φ*
E	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	F	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*
F	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	H	*Φ*	*Φ*
G	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	H
H	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*	*Φ*