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SP20-BSE-010

Schemas

Formal methods

Assignment 03

1: TotalRooms (ROOM) (introducing sets)

2: ROOM_STATUS ::= VACANT | OCCUPIED

RESPONSE ::= success | already-added | already-occupied | already-vacant | not-In-System
(declaring free types)

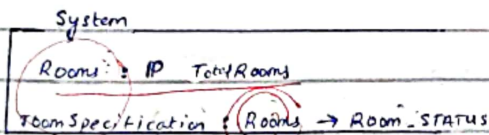
3: (use case scenarios)

∴ Commission $\hat{=}$ commission OK \vee already-added

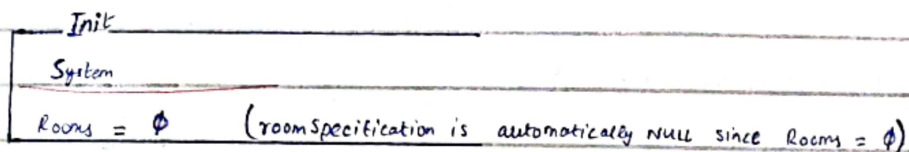
∴ occupy $\hat{=}$ occupyOK \vee not-In-System \vee already-occupied

∴ vacate $\hat{=}$ vacateOK \vee not-In-System \vee already-vacant

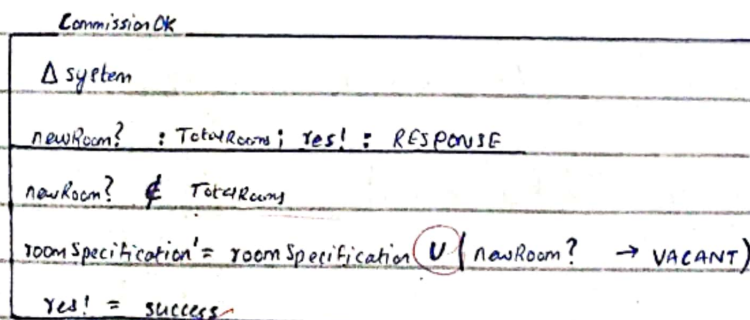
4: (state schema)



5: (Init state) Rooms = dom RoomSpecification

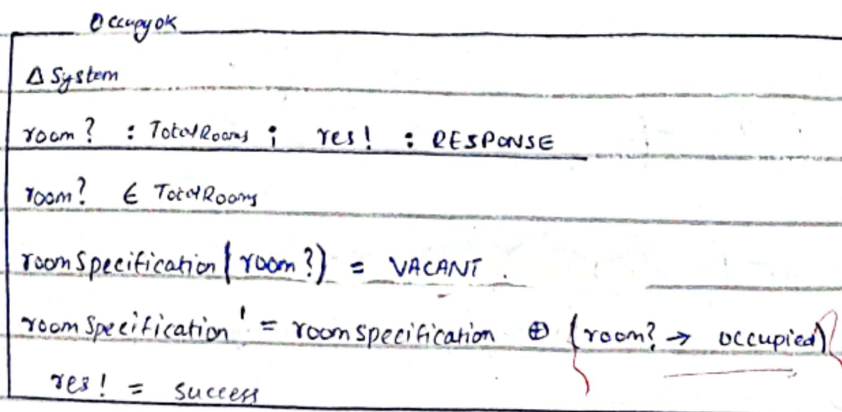


6: (use case : commission)



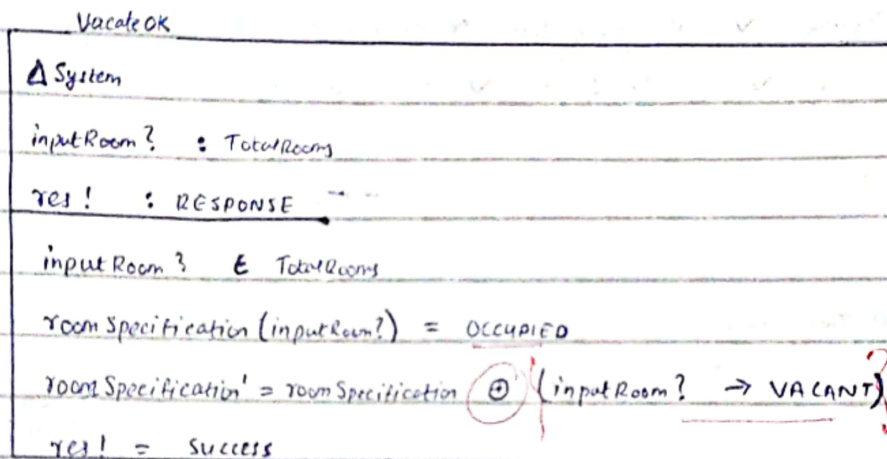
7.

(usecase : occupy)



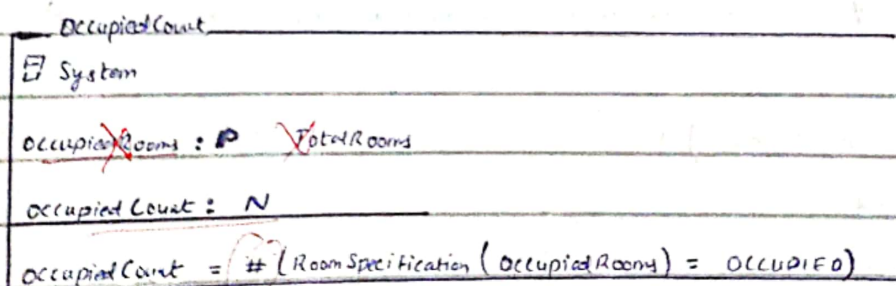
8.

(usecase : vacate)



9.

(query to count occupied rooms)



$$\text{OccupiedCount} = \# \{ \text{room} \in \{ \text{OCCUPIED} \} \}$$

Error Scenarios :

1:

Already Added

System

room? : Total Rooms

yes! : RESPONSE

room? ∈ Total Rooms

yes! = Already Added

2:

not In System

System

room? : Total Rooms

yes! : RESPONSE

room? ∉ Total Rooms

yes! = not In System

3:

Already Vacant

System

room? : Total Rooms

yes! : RESPONSE

RoomSpecification (room?) = VACANT

yes! = Already Vacant

4:

Already Occupied

System

room? : Total Rooms

yes! : RESPONSE

RoomSpecification (room?) = OCCUPIED

yes! = already occupied