There is a hotel with 10,000 rooms, numbered Room 1, Room 2, ... Room 10000. At the beginning of the day, all the doors are closed. The person in Room 1 leaves the room, and opens every door (to include his own). The person in Room 2 then leaves her room and closes every door that is a multiple of her room number (to include her own). The occupant of all remaining rooms exit (in room number order) and changes the status of their own door and all doors that are a multiple of their room number. For example, the occupant in Room 3 would close his door, open Room 6’s door (since the occupant in Room 2 closed it), close Room 9’s door, open Room 12’s door, ... and close Room 9999’s door. When the occupant of room 10000 leaves her room, she has to open her door. After all occupants have left the hotel, how many doors will be open and how many will be closed?