**Group Roles:**

We each introduce our part

**Diagrams Overview:**

**[I will introduce this so you can mostly do the diagram explanation.]**

In our case, a state diagram assists us in showing the life cycle the RFID card takes. From creation to deactivation. This helps us break down the life of the card and identify any errors or flaws in the system.

A sequence diagram shows the order of messages/ interactions between actors and objects in the sequential order. This is much needed for our key card because it can break down the steps.

**State Diagram**

We learned this in class but I am going to give a brief overview. (show how example diagram is constructed)

Step 1 – see how the object works

Step 2 – take note of the states that present from the previous state

Step 3 – find the events and triggers that will result in transitions.

Step 4 – show the transitions with arrows on the diagram

Step 5 – include the initial and final states in the diagram.

**Our state diagram:**

States that are discovered (created, used, expired, invalid, reactivated, deactivated)

Created – staff creates the card for use in hotel

Used – guest uses the card and it operates correctly

Expired – card expires after guest’s reservation is over

Invalid – card does not work with a certain door (either a different room or a staff room)

Reactivated – staff reactivates card due to malfunction or guest extending stay

Deactivation – staff deactivates card once turned in at the end of the stay or once reservation is over

**State Diagram**

It shows the action of based on events. This helps understand security control. It helps to understand any exceptions.

**Creating a Sequence Diagram:**

This is a new concept and diagram that we did not cover in class so let's dive in.

The first part is to locate the actors which are the external items. Then you can locate the objects that are parts of the system. These are going to be the rectangles in our diagram. Lifelines are going to be going to be the vertical dashed lines. This represents the lifetime of each actor/object. The messages show the relationships between them. The activation bars are the rectangles on the lifelines. This means if they are active or passive. The return messages are dashed arrows that show return statements from call functions.

**Parts of our sequence diagram (fix checkout and returned statement)**

Actors (2 people that interact)

* Guest
* Staff

Objects (Physical interaction)

* Front Desk System
* Admin Backenend
* Key Card
* Room Lock

Messages (interactions)

* RequestCheckIn
* EnterGuestDetails
* CreateKeyCard
* WriteCardData
* SwipeCard
* ValidateCard
* requestCheckOut
* CheckoutGuest
* DeactivateCard
* expireCard

Return Messages

* CardCreated
* AccessGranted
* accessDenied
* cardDeactivated

**Sequence Diagram:**

This truly breaks down the understanding of the process and not just the design. It is able to bridge the gap between people and technology. It breaks down the process from the first step to the very last step.