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QUESTION 1:

Student.java:

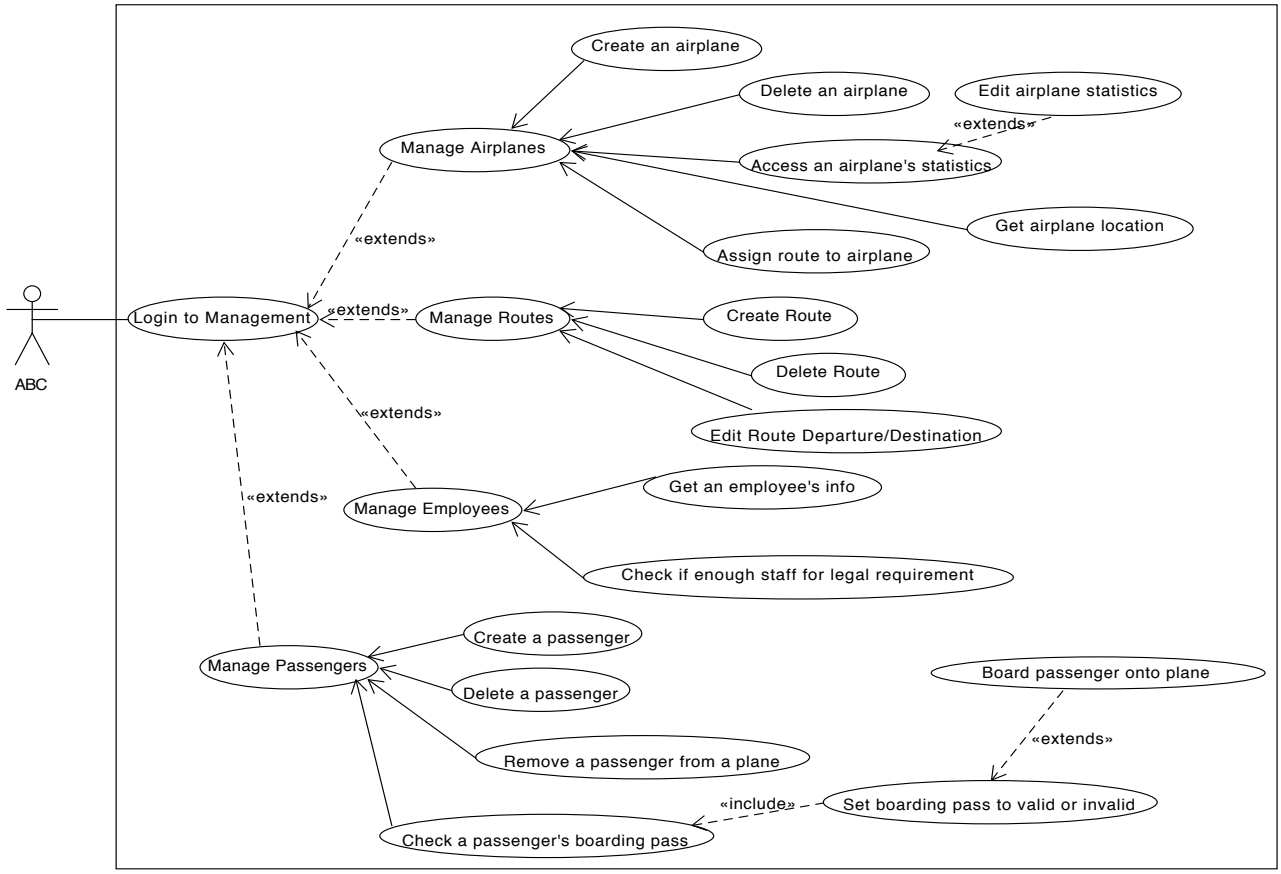
```
/**
 * Class for a student with an age, name, and student ID.
 * @author Alexander Chatron-Michaud
 */
public class Student {

	private int age;
	private String name;
	private int id;

	public Student(int init_age, String init_name, int init_id) {
		if ((init_id > 99999) || (init_id < 10000) || (init_age < 5)) {
			System.out.println("Error: Student ID is not 5 digits or student is under 5 years old");
			throw new IllegalStateException();
		}
		age = init_age;
		name = init_name;
		id = init_id;
	}

	/**
	 *Returns the ID of the student
	 *@return Integer form ID of the student
	 */
	public int get_id() {
		return this.id;
	}

	/**
	 *Returns the age of the student
	 *@return Integer form age of the student
	 */
	public int get_age() {
		return this.age;
	}
```

Queue.java:

```
import java.util.*;

/**
 * Class to manage a lineup of students entering a gym party
 * @author Alexander Chatron-Michaud
 */
```

```
public class Queue {

	private LinkedList<Student> line;

	public Queue() {
		line = new LinkedList<Student>();
	}

	/**
	 *Adds a student to the line if they are a valid student
	 *@param a    the student to be added
	 */
	public void enqueue(Student a) {
		if (isValid(a)) {
			line.addLast(a);
		}
	}

	/**
	 * If there is a student in line, remove the first student in line
	 * so they can enter the party.
	 * @return the student to enter the party, or null if line is empty
	 */
	public Student dequeue() {
		if (line.size() == 0) {
			System.out.println("Error: No students in queue to dequeue");
			throw new IllegalStateException();
		}
		return line.removeFirst();
	}

	/**
	 *Checks if a student is valid to enter the party.
	 *A student is valid if their 5 digit
	 *ID begins with 22 and they are at least 15 years old.
	 *@param a     the student in question
	 *@return True if the student is valid to enter party, False is the student is not valid to enter party
	 */
	public boolean isValid(Student a) {
		if ((a.get_age() >= 15) && (a.get_id() >= 22000) && (a.get_id() < 23000)){
			return true;
		}
		else {
			return false;
		}
	}
}
```

QUESTION 2:



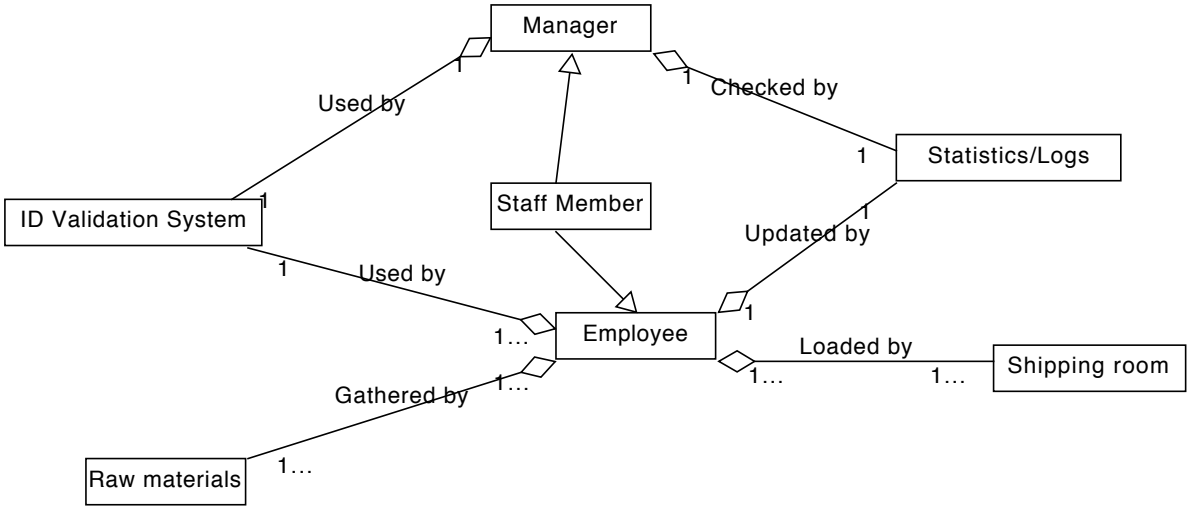
USE CASE TEMPLATE:
Name: ABC boards a passenger onto a plane
Creator: Alexander Chatron-Michaud
Description:

1. Login to Management
2. Access passenger management
3. Check if the passenger has a valid boarding pass
4. Set validity of boarding pass
5. Board passenger onto plane

Special cases:

- Potential failure moving out of step 1 if login failed
- Potential failure if boarding pass is invalid
- When attempting to board a passenger, potential failure cases
    - Not enough employees to run airline legally
    - Plane does not exist
    - Route does not exist
    - Wrong plane or route with respect to boarding pass or plane
    - Plane is not located in airport for departure

QUESTION 3:



QUESTION 4: