IE 3081 MODELLING AND DISCRETE SIMULATION - HW3

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DINING HALL SIMULATION|| UNIVERSITY

DEFINITION

Our aim in this project is to simulate the dining hall system of universities. In this system, there are two classical dining hall food service points for students, one vegetarian and gluten-free food service point and 1 ATM. There is one dining hall food service point for academicians.

People passing through the dining hall food service point proceed to the dining area. If there is a queue here, they wait in that queue.

In our simulation; after entering the dining hall, if the person is an academician, they go to the dining hall food service point for the academicians. If he or she is a student, he or she goes to one of the classical dining hall food service points or vegetarian dining hall food service point or ATM.

After the dining hall food service point, students with insufficient balance can go to the ATM again.

People passing through the dining hall food service points go to a common dining area where they wait in line if there is a queue. Then the system is logged out.

Of the 2 classical dining hall food service points for students, the one on the right serves faster than the one on the left.

SYSTEM COMPONENTS

ENTITIES and ATTRIBUTES:

- Student
- Academician
- Staff
- Classic Dining Hall Food Service Points for Students (Speed: Equal Speed, Probability: 6/10)
    - Classic Service Left-side (Speed: slow by classic service)
    - Classic Service Right-side (Speed: fast by classic service)
- Vegetarian and Gluten-free Dining Hall Food Service Point for Students (Speed: Equal Speed, Probability: 1/10)
- Dining Hall Service Point for Academicians (Speed: Equal Speed, Probability: 2/10)
- Dining Area
- ATM Machine (Probability: 1/10)

NOTE: Speed and probability are their attribute for each.

ACTIVITIES:

- Student may go to classic dining hall food service points.
- Student may go to vegetarian and gluten-free dining hall food service point.
- Student may go to ATM.
- Academicians go to dining hall service point.
- After the dining hall food service, everyone goes to the dining area.
- After loading money from the ATM, everyone goes to one of the dining hall food services.

EVENTS:

- Students or academicians arrival to the dining hall.
- Students may or may not pass dining hall service points according to their balance.

- Serve food.

STATES:

- Busy
- Idle

DELAYS:

- Students wait in one of the food service queue.
- Students wait in the ATM queue.
- Students wait in the dining area.
- Academicians wait in the food service queue.

RELATIONS BETWEEN SYSTEM COMPONENTS

- According to the possibilities, the academician or student arrive the dining hall.
- The student goes to ATM or classic or vegetarian, gluten-free food service depending on the possibilities. If there is a queue, they wait in line.
- If the student went to the ATM, he/she enters the food service queue after the ATM.
- Students leaving the food service points stand in line in case of a queue at the dining area.
- The academician goes directly to the academician food service point. If there is a queue, they wait in line.
- Academicians who leave the food service point go to the dining hall. If there is a queue, they wait.