IE 3081 MODELLING AND DISCRETE SIMULATION – HW4

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DINING HALL SIMULATION|| UNIVERSITY

OBJECTIVES

- First, person goes to the queue of service point or ATM according to their identity.
- Providing service to academicians from one service points
  Providing service to students from different kind of service points
- Credit control to get meal from dining hall service points. When student has no enough credit, student should go to ATM. Then will go to the different service points
- Providing dining area for all people

SYSTEM COMPONENTS

ENTITIES and ATTRIBUTES:

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

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:

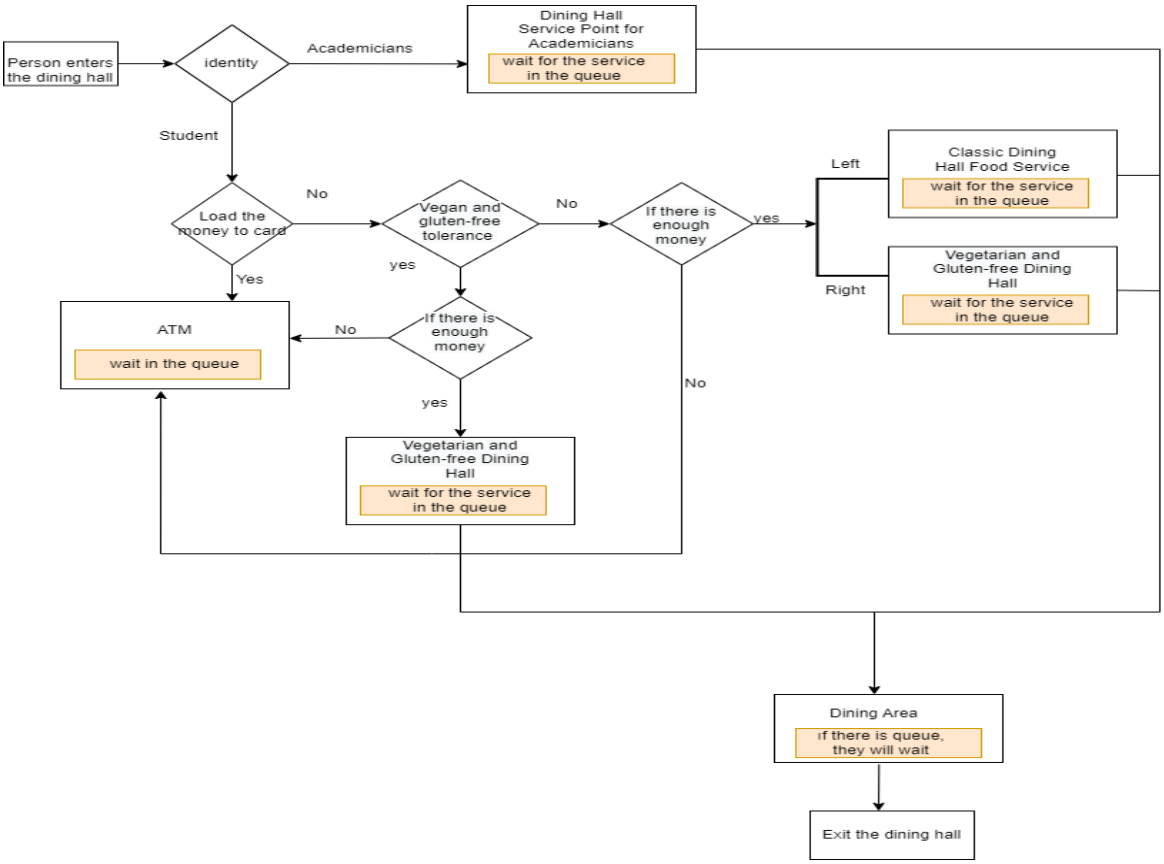
- Students wait in one of the food service queue.
- Students wait in the ATM queue.
- Students wait in the dining area.
- Academicians wait in the food service queue.

PERFORMANCE METRICS

- Number of all people that use dining hall
- Number of students
- Number of academicians
- Number of students who use vegetarian and gluten-free dining hall service point
- Number of students who use classical dining hall service point that has more speed

- Number of students who use classical dining hall service point
- Number of students who use ATM
- Number of total dining hall service
- The total time students waiting in the queue
- The total time academicians waiting in the queue
- The average time students or academicians waiting in the queue
- The average service time of each dining hall service points and ATM and dining area
- Idle time of each dining hall service points and ATM and dining area

CONCEPTUAL MODEL



ALTERNATIVE SYSTEM DESIGN

In this simulation, we will see the number of service points how affect the system. So for the analyze, in alternative scenario, we will decrease the classical service point that servicing to students.