



IE3081 – Modeling and Discrete Simulation Course

Homework-3

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CONTENT

SYSTEM	2
SYSTEM COMPONENTS	2
RELATION BETWEEN SYSTEM COMPONENTS	3

1) SYSTEM: **REFECTORY**

The reason we chose this system is that it is found in almost all modern educational institutions. In addition, it is very suitable for our term project to include at least one or more queues.

2) SYSTEM COMPONENTS

a) ENTITIES

- **Student:** This is the agent that makes up the majority of the system.
- **Personnel:** This is the secondary agent of the system .
- **Staff:** This is the agent who fills the dishes.

b) ATTRIBUTES

- **Capacity:** Number of tables
- **Speed:** Speed of staff

c) ACTIVITIES

- **Eating:** Students and personnels eat their food.
- **Servicing:** Staff fill the dishes.

d) EVENT

- Number of tables below capacity
- Transfer of student to personnel queue
- Refusal of students and personnel to eat
- **Exogenous** – Arrival of a student
- **Endogenous** – Completion of service of student and personnel
- **Endogenous** – Completion of eating of student and personnel

e) STATE VARIABLES

- The number of busy staff
- Student and personnel waiting in the queue
- Status of table (full,empty)

3) RELATION BETWEEN SYSTEM COMPONENTS

- Students and personnel arrival to the system and enter the food service queue.
- Staff complete service according to speed.
- If the student queue gets too long, the students go to the personnel queue because of the number of busy staff.
- The system stops when the number of tables is below the capacity.
- Students and personnel exit the system after eating.