**The ODD Protocol for Model v3:**

**Overview:**

1. **Purpose**

This model is designed to demonstrate the real-time university cafeteria environment. So that we can examine the actual situation and handle expected issues.

1. **Entities, state variables and scales**

Agents:
 Males

Females

Servers

Waiters

1. **Process overview and scheduling**

Students including males and females will enter cafe and sit down on available and selected table by walking between tables. No male and female will be seated together. They will be seated in opposite direction on the table. The students will leave the cafe after random interval of time.

Students will give orders at counter and then come back to their sitting positions. Then Students will go back for picking up their orders after an estimated time. Average serving time by counter is adjustable through slider. The value of gender ordering slider will determine what percentage of Males and Females will give orders.

Now the Students can give orders and come back to their Seats for waiting. Waiters will provide the ordered dishes to Students at their Respective Seats and will also pickup used dishes after departure of Students from their tables. The number of Waiters is adjustable through “Number of Waiters” Slider.

**Design Concepts:**

1. **Emergence**

The arrival of students, their seating around tables by passing through specific area and their departure will generate amazing Emergent Patterns.

The phenomena of giving orders and then again picking by students from counters will also generate Emerging behaviour and will depends upon values of “Average Serving Time” and “Gender Ordering” sliders.

The phenomena of serving order at tables and then collecting dishes back by Waiters will generate Emerging Behaviour as number of Waiters is also adjustable through Slider.

1. **Adaptation/Adaptive Traits?**

Fitness of agents will depend upon their performance as per decided rules within model.

1. **Prediction**

Agents will predict results of their decisions by learning.

1. **Sensing**

Agents are assumed to know their location while taking decisions.

1. **Interaction**

Agents (Students including Males and Females) will cooperate with each other while sitting on the Same Table as they must sit in an opposite direction.

Agents (Servers) will cooperate with Students by taking orders and delivering them the right dishes.

Agents (Waiters) will cooperate with both of Servers and Students. They will pick dishes from Servers and deliver them to students at their respective tables.

1. **Stochasticity**

The movement and sitting of agents will be randomly decided and they will be seated for a random time.

1. **Collectives**

Groups of same nature or different nature will be formed depending upon their natural linking.

1. **Observation**

Date will be collected through behaviour space of multiple executions of the model for analysis.

**Details:**

1. **Initialization**

Initially

* 50 Males and 50 Females will be ready to enter Cafeteria at t=0.
* Average waiting time will be 10 minutes.
* Average serving time will be 5 minutes.
* The value of gender order slider will be 50%.
* The value of number of waiter’s slider will be 3.
1. **Input Data**

Number of Males and Females along with value of 4 other sliders can be inputted by user.

1. **Sub-models**

There is only One main model.