IE-3081-Homework#5

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System Component

System: Modern Study Areas

Entities: People (who want to study in this area), Officer, Ticket Controller,

WaitingRoomQueue, StudyRooms, PaymentOperation

Attributes: Study rooms, ticket machine
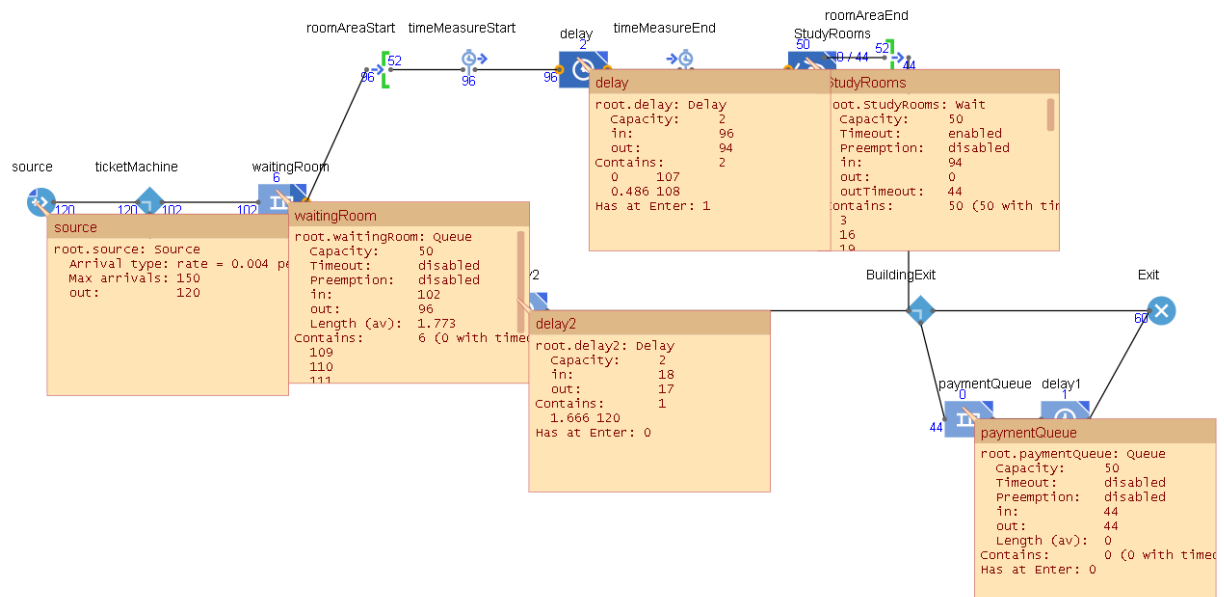
Activities: Study, work or meeting

Events: Getting ticket from ticket machine, studying in the room, paying the officer when

leaving, leaving at building

State Variables: Number of study rooms, number of people who want to use the room at the

queue, number of people looking for an empty room, number of occupied and empty rooms.
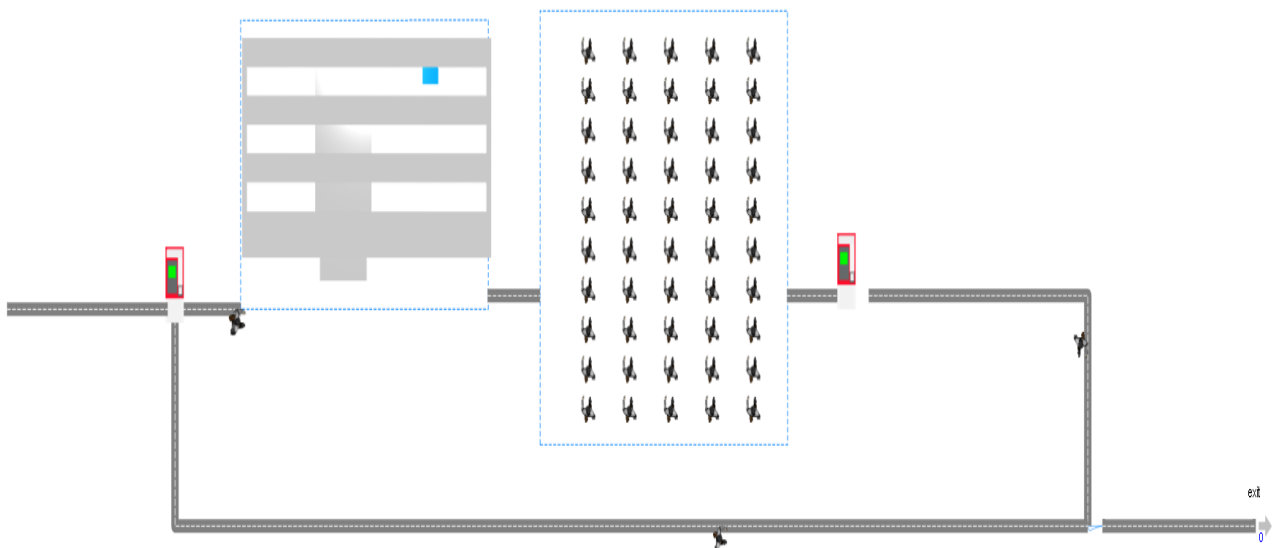
Relations Between System Components

Relations Between System Components Our system is a modern study room. The people

will come to this building with their friends and try to find an empty room to study, work or

meeting. There is a ticket machine at the entrance of the building where people will get their

tickets while entering building. When they are leaving there is an officer which will get the

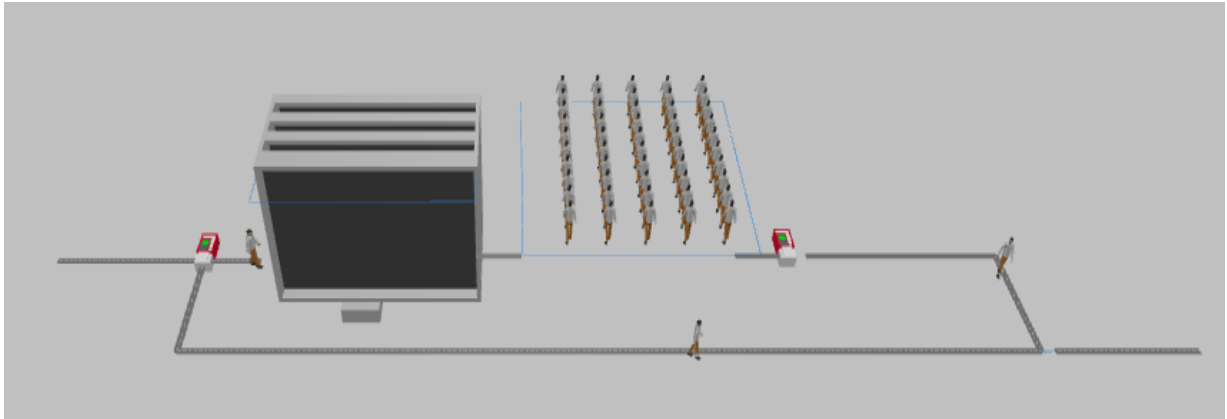money from the people based on their stay in the room

Generation Of Random Veriates

roomAreaStart timeMeasureStart

delay timeMeasureEnd

roomAreaEnd
StudyRooms

```
delay
root.delay: Delay
   Capacity:      2
   in:           96
   out:          94
Contains:         2
   0    107
   0.486 108
Has at Enter: 1
```

```
StudyRooms
root.StudyRooms: wait
   Capacity:     50
   Timeout:      enabled
   Preemption:   disabled
   in:           94
   out:          0
   outTimeout:   44
ontains:     50 (50 with tir
   3
   16
   19
```

source ticketMachine waitingRoom

```
source
root.source: Source
   Arrival type: rate = 0.004 pe
   Max arrivals: 150
   out:         120
```

```
waitingRoom
root.waitingRoom: Queue
   Capacity:      50
   Timeout:       disabled
   Preemption:    disabled
   in:            102
   out:           96
   Length (av):   1.773
Contains:         6 (0 with time
   109
   110
   111
```

BuildingExit

Exit

```
delay2
root.delay2: Delay
   Capacity:      2
   in:            18
   out:           17
Contains:         1
   1.666 120
Has at Enter: 0
```

paymentQueue delay1

```
paymentQueue
root.paymentQueue: Queue
   Capacity:      50
   Timeout:       disabled
   Preemption:    disabled
   in:            44
   out:           44
   Length (av):   0
Contains:         0 (0 with time
Has at Enter: 0
```

2D View of The Model

exit

3D View of The Model

The input variables

Decision variables: Number of people entering the system

Uncontrollable variables: Number of people who don't want to wait in queue

The type and the values of input variables
People

The output variables
Total people in queue

Total people in system

Total people in study room

Total people in waiting room

Output values and responses
Number of waiting people