Conceptual Modelling Assignment – <Name, UPI>

Problem Understanding

Identification of Modelling and General Objectives

Modelling Objectives

General Objectives

Defining Input Factors

Defining Output Responses

Model Content

Identifying Entities

Drawing Behavioural Paths

Figure 1: Person Behavioural Path

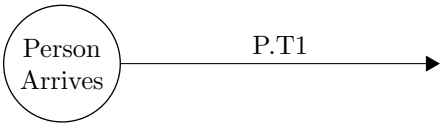

Figure 2: Turnstile Behavioural Path

Model Control – Defining Logic

Logic

Triggered by	Entity
1:	
2:	
3:	
4:	
5:	
6:	
7:	
8:	

Logic

Triggered by	Entity
1:	
2:	
3:	
4:	
5:	
6:	
7:	
8:	

On Start Choose Direction

Triggered by	Person P

```
1:  if P.CurrentSection = P.Section then
2:          Choose Direction.End with P
3:          TRANSITION P.T6 Choose Direction.End to Person Seated with P
4:  else
5:          if P.FirstChoice then
6:
7:          else if (P.CurrentSection = "A") AND (P.Direction = "down") then
                    // Crossing "A" to "X", find best direction from distance
8:                  if (P.Section - "A") < ("X" - P.Section) then
9:                          P.Direction = "up"
10:                 else
11:                         P.Direction = "down"
12:                 end if
13:         else if (P.CurrentSection = "X") AND (P.Direction = "up") then
                    // Crossing "X" to "A", find best direction from distance
14:                 if (P.Section - "A") > ("X" - P.Section) then
15:                         P.Direction = "down"
16:                 else
17:                         P.Direction = "up"
18:                 end if
19:         else
20:                 if  then
21:
22:                 else//
23:
24:                 end if
25:         end if
26:         if  then
27:
28:         else
29:
30:         end if
31: end if
```

Model Data

Data	Source	Identification	Input	Output
				Function of N (defined below)

$$T = \begin{cases} 60 & N < 100 \\ 59 + 1000^{675 \times 10^{-6}(N-100)} & N \geq 100 \end{cases}$$

Model Entities

Note that default attributes CurrentStart and CurrentActivity are omitted for brevity.

	Type	
	Attributes – default value or range in []	[]
		[]
		[]
		[]
		[]
	Type	
	Attributes	[]
		[]
Section	**Type**	Passive
	Attributes	ID [A-X]
		[]
	Type	
	Attributes	[]

Model Transitions

Transitions	From Event	To Event

Model Activities

	Participants		
	Start Event	**Type**	
		State Change	1:
	End Event	**Type**	
		State Changes	1: 2: *// TRANSITION ??? is determined by logic*
	Participants		
	Start Event	**Type**	
		State Change	1:
	End Event	**Type**	
		State Changes	1: 2: 3:

	Participants		
	Start Event	**Type**	
		State Changes	1:
	End Event	**Type**	
		State Changes	1: *// TRANSITION ??? or ??? determined by logic*
	Participants		
	Start Event	**Type**	Controlled
		State Changes	1: 2:
	End Event	**Type**	
		State Changes	1: 2: 3:
	Participants		
	Start Event	**Type**	
		State Change	1:
	End Event	**Type**	Controlled
		State Changes	1: 2: //

Model Events

Simulation Start	**Participant**	None
	Type	
	State Changes	1: 2: 3: 4: 5:
Person Arrives	**Participant**	Person (P), Turnstile (T)
	Type	
	State Changes	1: 2: 3: 4:

	Participant	
	Type	
	State Changes	1:
	Participant	
	Type	
	State Changes	1: T.ID = max(U.ID for U in Turnstiles) + 1 // *Get next ID* 2: 3:
Simulation Finish	**Participant**	None
	Type	Scheduled
	State Changes	1: **for** T ∈ Turnstiles **do** 2: Calculate statistics for T 3: **end for**