

리틀의 법칙

- tally: 사람의 수로 나는 통계값
 - average waiting time, system 체류 시간 등
- time persistant statistic: 시간으로 나는 통계값
 - average queue length 등
- $\lambda_q = \lambda w_q$
- NR: Busy or Idle
- MR: Scheduled or not
- N: in system or not
- Q: wait or not
- $u(t)$: if $M(t) > 0$? $\frac{B(t)}{M(t)}$ else 0
- $B(t)$: busy?
- $M(t)$: scheduled?
- Instantaneius utilization: $\int_0^t u(t)dt * \frac{1}{t}$
- Scheduled utilization: $\frac{\int_0^t B(t)dt}{\int_0^t M(t)dt}$

2 Resource

- ignore: 하던거만 마무리 + 늦어도 제 때 복귀
- wait: 하던거만 마무리 + 늦은 만큼 더 쉬기
- preemt: 하던거 중단 + 제 때 복귀

3 Modeules

Create dialog box for a bus entity. Name: bus, Entity Type: BusHuman. Time Between Arrivals: Type: Random (Expo), Value: 999999999, Units: Minutes. Entities per Arrival: POIS(30), Max Arrivals: 1, First Creation: UNIF(60, 100).

DISC(0.2, 1, 0.5, 2, 0.8, 3, 1.0, 4)

Station dialog box. Name: InTo, Station Type: Station, Station Name: Station 1, Parent Activity Area: , Associated Intersection: . Report Statistics is checked.

Delay Block dialog box. Label: Order Status Delay, Mark Attribute: , Next Label: . Duration: TRIA(2, 3, 4), Storage ID: Order Status Delay Storage, Allocation: Other.

Route dialog box. Name: Go To Restaurant, Route Time: EXPO(0.5), Units: Minutes, Destination Type: Station, Station Name: Station 2.

Process dialog box. Name: order or payment, Type: Standard, Logic: Action: Seize Delay Release, Priority: Medium(2), Resources: Resource: OrderPaymentEmployees, 1, Delay Type: Expression, Units: Minutes, Allocation: Value Added, Expression: TRIA(1, 2, 4) + TRIA(1, 2, 3), Report Statistics is checked.

Resources dialog box. Type: Set, Set Name: Painter, Units to Seize/Release: 1, Selection Rule: Cyclical, Save Attribute: painted.

Set

Name: Product 1 Type: Resource

Member Definition Method:
☒ Manual List ☐ Data File

Members:
 Single Element, Charity
 Single Element, Noah
 Single Element, Moly
 Single Element, Anna
 Single Element, Sammy
 <End of list>

Buttons: Add... Edit... Delete

Buttons: OK Cancel Help

resource가 들어감

Resource

Name: OrderPaymentEmployees Type: Based on Schedule

Schedule Name: EmployeesBreak3 Schedule Rule: Ignore

Costs
 Busy / Hour: 0.0 Idle / Hour: 0.0 Preempt: 0.0

StateSet Name:

Failures:
 <End of list>

Buttons: Add... Edit... Delete

☒ Report Statistics

Buttons: OK Cancel Help

or fixed capacity

Schedule

Name: EmployeesBreak1

Type: Capacity

Time Units: Minutes Scale Factor: 1.0

File Name:

Durations:
 6, 50
 5, 10
 6, 50
 5, 10
 6, 50
 5, 10
 6, 50
 5, 10

Buttons: Add... Edit... Delete

Buttons: OK Cancel Help

Queue

Name: PrimaryCut.Queue

Type: Lowest Attribute Value Attribute Name: Attribute 1

Buttons: OK Cancel Help

shared value도 선택 가능

- variable rows, cols, initial values 선택 가능

Record

Name:

Statistic Definition

Type: Count

Type NOTE: Increments / Decrements the Counter Name by the Value specified

Value: 1 ☐ Record into Set

Counter Name: Attempted Calls

Buttons: OK Cancel Help

Decide

Name: Trunk Line Available? Type: 2-way by Condition

It: Expression

Value: NR(Trunk Line) < MR(Trunk Line)

Buttons: OK Cancel Help

+ ::



Assign

Name: Cut Off Incoming Calls

Assignments:
 Variable, MaxCalls, 1
 <End of list>

Buttons: Add... Edit... Delete

Buttons: OK Cancel Help

Seize

Name: Size Tech Agent Type 1 Allocation: Other Priority: High(1)

Resources:
 Set, Product 1, 1, Specific Member, Tech Agent Index
 <End of list>

Queue Type: Queue Queue Name: Seize Tech Agent Type 1.C

Buttons: Add... Edit... Delete

Buttons: OK Cancel Help

delay는 delay time, units

release는 resource, unit to release 설정 가능

store-delay-unstore: delay block 모듈로 가능