

Week 8 Assignment - DOE and Probability Distributions

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QUESTION 12.1

Describe a situation or problem from your job, everyday life, current events, etc., for which a design of experiments approach would be appropriate.

At my job at the T-Mobile HQ in the Seattle area, my team helps build analytics products and analysis for our network supply chain team. The Supply chain team manages the planning, procurement and logistics of getting the right equipment (radios, antennas etc.) to the right locations so that T-Mobile's network could get built or improved. As part of our process, every week, we have to allocate the material from the available inventory to the short-list of high-priority projects from across regions in the US. The short-listed projects are almost always more than the available inventory. This would be a good design of experience candidate where several combinations of projects from different regions could be tested to make sure 1) the inventory consumption is maximized, 2) the regions get the equal share of projects and 3) the right mix of programs (new sites/towers, enhancements etc.) are picked.

There could be hundreds of combinations from the short-listed projects every week and a factorial design would be good tool to use based on different factors related to the projects (program project is part of, location, material need etc.).

QUESTION 12.2

To determine the value of 10 different yes/no features to the market value of a house (large yard, solar roof, etc.), a real estate agent plans to survey 50 potential buyers, showing a fictitious house with different combinations of features. To reduce the survey size, the agent wants to show just 16 fictitious houses. Use R's FrF2 function

(in the FrF2 package) to find a fractional factorial design for this experiment: what set of features should each of the 16 fictitious houses have? Note: the output of FrF2 is “1” (include) or “-1” (don’t include) for each feature.

The FrF2 function in the FrF2 package

(<https://www.rdocumentation.org/packages/FrF2/versions/2.1/topics/FrF2>) provides an easy ability to do fractional factorial design. I first built a string of 10 possible features of the house and then used the FrF2 function to run a fractional factorial design.

```
library(FrF2)
```

```
set.seed(101)
```

```
features = c("openconcept", "steelappliances", "2cargarage", "largeyard",  
"solarroof", "basement", "goodschools", "bigyard", "gym", "woodfloors")
```

```
FrF2(nruns = 16, factor.names = features)
```

```
##      openconcept steelappliances X2cargarage largeyard solarroof basement  
## 1          -1           -1          -1           1           1           1  
## 2           1           1           1           1           1           1  
## 3           1          -1           1           1          -1           1  
## 4          -1           1           1          -1          -1          -1  
## 5          -1          -1          -1          -1           1           1  
## 6           1          -1          -1           1          -1          -1  
## 7           1          -1           1          -1          -1           1  
## 8          -1           1          -1          -1          -1           1  
## 9           1           1           1          -1           1           1  
## 10          -1           1           1           1          -1          -1  
## 11           1           1          -1           1           1          -1  
## 12          -1          -1           1           1           1          -1  
## 13          -1          -1           1          -1           1          -1  
## 14           1          -1          -1          -1          -1          -1  
## 15           1           1          -1          -1          -1          -1  
## 16          -1           1          -1           1          -1           1  
##      goodschools bigyard gym woodfloors  
## 1           1          -1  1          -1  
## 2           1           1  1           1  
## 3          -1           1 -1          -1  
## 4           1           1 -1           1  
## 5           1           1 -1           1  
## 6           1           1  1           1  
## 7          -1          -1  1           1  
## 8          -1           1  1          -1  
## 9           1          -1 -1          -1  
## 10          1          -1  1          -1  
## 11          -1           1 -1          -1  
## 12          -1          -1 -1           1  
## 13          -1           1  1          -1  
## 14           1          -1 -1          -1  
## 15          -1          -1  1           1  
## 16          -1          -1 -1           1  
## class=design, type= FrF2
```

The output of the function provided different 16 designs based on 10 factors for the house.

QUESTION 13.1

For each of the following distributions, give an example of data that you would expect to follow this distribution (besides the examples already discussed in class).

- **a. Binomial** Binomial distribution is simply the probability of success or failure in an experiment that is repeated multiple times. Lottery is a good example. You either win a lottery or you don't. Let's say if probability of winning on the lottery ticket is 0.30 and 20 lottery tickets are purchases, binomial distribution can tell us the probability of winning at least 1 (or 2 or 3 etc.) lottery tickets.
 - **b. Geometric** Geometric distribution represents number of failures (or successes) before the first success (or failure) in a series of trials. The number days before an accidents or incidents happens at a manufacturing facility would follow a geometric distribution. It would help answer that how many days without an accident (successes) before an accident (failure) happens.
 - **c. Poisson** A Poisson distribution describes the probability discrete events in a time period where the average time between events is known, but the exact timing of events is random. Number of visitors to any website like Google etc. would follow poisson distribution.
 - **d. Exponential** The time between the events mentioned above in Poisson process are described by the exponential distribution. The time between the visitors to a given website from the example above might follow an exponential distribution.
 - **e. Weibull** Weibull distribution helps with time to an event (success or failure). For example, life of a cell phone (or time before the user might have to switch cell phones due to cell phone completely wearing out) might follow a weibull distribution with $k > 1$ given as failure rate would be expected to increase over time as the device ages.
-

QUESTION 13.2

In this problem you, can simulate a simplified airport security system at a busy airport. Passengers arrive according to a Poisson distribution with $\lambda_1 = 5$ per minute (i.e., mean interarrival rate $\frac{1}{\lambda_1} = 0.2$ minutes) to the ID/boarding-pass check queue, where there are several servers who each have exponential service time with mean rate $\mu_2 = 0.75$ minutes. [Hint: model them as one block that has more than one resource.] After that, the passengers are assigned to the shortest of the several

personal-check queues, where they go through the personal scanner (time is uniformly distributed between 0.5 minutes and 1 minute).

Use the Arena software (PC users) or Python with SimPy (PC or Mac users) to build a simulation of the system, and then vary the number of ID/boarding-pass checkers and personal-check queues to determine how many are needed to keep average wait times below 15 minutes. [If you're using SimPy, or if you have access to a non-student version of Arena, you can use $\lambda_1 = 50$ to simulate a busier airport.]

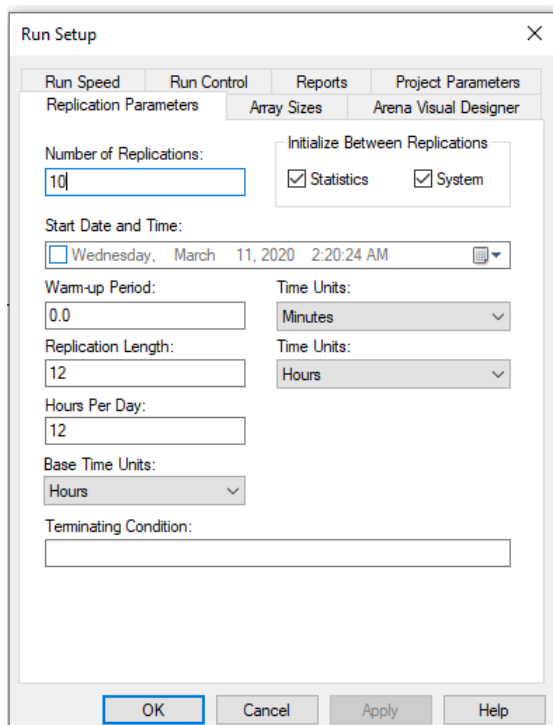
ARENA SOFTWARE

First, I used Arena Software to build the simulation and checked multiple scenarios. Summary of my scenarios is below:

1. 1 ID checking process with 1 resource (4 capacity) and 1 scanner (with 4 capacity)
2. 1 ID checking process with 1 resources (4 capacity) and 2 scanners (with 1 resource ea with 2 capacity) with decision logic to route passenger to shortest scanner queue.
3. And I continued increasing ID checkers and scanners to see when wait time became lower than 15 mins.

Run Set-up:

I used the set-up below for all simulation runs.



The screenshot shows the 'Run Setup' dialog box in Arena software. The 'Replication Parameters' tab is selected. The 'Number of Replications' is set to 10. The 'Start Date and Time' is set to Wednesday, March 11, 2020, 2:20:24 AM. The 'Warm-up Period' is 0.0, and the 'Replication Length' is 12. The 'Hours Per Day' is 12. The 'Base Time Units' are set to Hours. The 'Terminating Condition' field is empty. The 'Initialize Between Replications' section has both 'Statistics' and 'System' checkboxes checked. The 'Time Units' for 'Warm-up Period' and 'Replication Length' are set to Minutes and Hours, respectively. The 'OK' button is highlighted.

Simulation Set-up

System Arrival

The 'Create' dialog box is used to configure a system arrival. It includes fields for Name, Entity Type, Time Between Arrivals (Type, Value, Units), Entities per Arrival, Max Arrivals, and First Creation. The 'OK' button is highlighted.

Name:		Entity Type:	
Arrivals		Entity 1	
Time Between Arrivals			
Type:	Value:	Units:	
Random (Expo)	0.2	Minutes	
Entities per Arrival:	Max Arrivals:	First Creation:	
1	Infinite	0.0	
OK		Cancel	Help

ID Checker Process (did not add resources to the process, rather increased the resource's capacity to get passed free software limit – this guidance was provided in the office hours on Mar 9th)

The 'Process' dialog box is used to configure a process. It includes fields for Name, Type, Logic (Action, Priority), Resources, Delay Type, Units, Allocation, Expression, and a checkbox for Report Statistics. The 'OK' button is highlighted.

Name:		Type:	
ID and boarding pass check		Standard	
Logic			
Action:		Priority:	
Seize Delay Release		Medium(2)	
Resources:		Add... Edit... Delete	
Resource, Resource 1, 1 <End of list>			
Delay Type:	Units:	Allocation:	
Expression	Minutes	Value Added	
Expression:			
EXPO(0.75)			
<input checked="" type="checkbox"/> Report Statistics			
OK		Cancel	Help

Scanner process

Process ? X

Name: Type:

Logic

Action: Priority:

Resources:

Resource, Scanner 1, 1	<input type="button" value="Add..."/> <input type="button" value="Edit..."/> <input type="button" value="Delete"/>
<End of list>	

Delay Type: Units: Allocation:

Minimum: Maximum:

☒ Report Statistics

Leave System

Dispose ? X

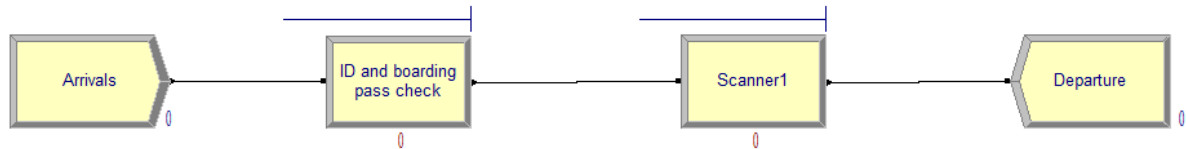
Name:

☒ Record Entity Statistics

Output

- **1 Scanner**

The image of the simulation model and some screenshots from output are shown. Several replications had over 15 mins of wait times. I used capacity of 4 ea for both ID checking and scanner process resources.



Resource - Basic Process				
	Name	Type	Capacity	B
1	Scanner 1	Fixed Capacity	4	0.
2	Resource 1	Fixed Capacity	4	0.

Double click here to add a new row

Summary for Replication 1 of 10

Project: Unnamed Project
Analyst:

Run execution date : 3/11/2020
Model revision date: 3/11/2020

Replication ended at time : 12.0 Hours
Base Time Units: Hours

TALLY VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Observations
Entity 1.VATime	.02511	3.0968E-04	.00848	.12182	3640
Entity 1.NVATime	.00000	.00000	.00000	.00000	3640
Entity 1.WaitTime	.06533	(Corr)	.00000	.18775	3640
Entity 1.TranTime	.00000	.00000	.00000	.00000	3640
Entity 1.OtherTime	.00000	.00000	.00000	.00000	3640
Entity 1.TotalTime	.09043	(Corr)	.00950	.25999	3640
ID and boarding pass check.Queue.WaitingTi	.04730	(Corr)	.00000	.18620	3654
Scanner1.Queue.WaitingTime	.01786	.00437	.00000	.07900	3644

Summary for Replication 3 of 10

Project: Unnamed Project
Analyst:

Run execution date : 3/11/2020
Model revision date: 3/11/2020

Replication ended at time : 12.0 Hours
Base Time Units: Hours

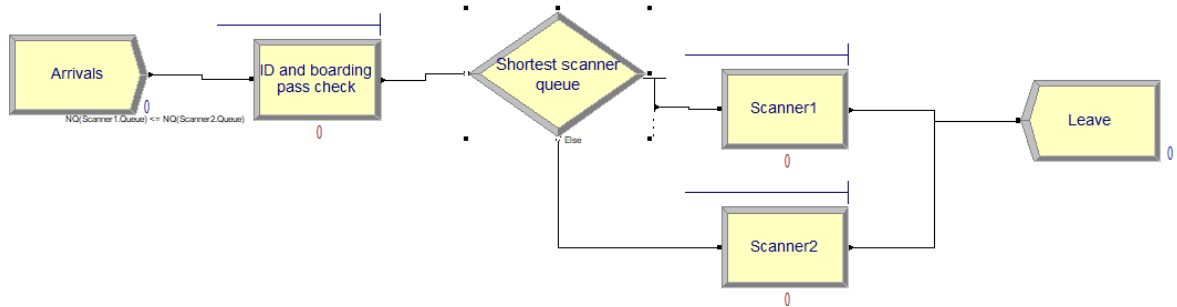
TALLY VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Observations
Entity 1.VATime	.02484	3.5494E-04	.00838	.12981	3643
Entity 1.NVATime	.00000	.00000	.00000	.00000	3643
Entity 1.WaitTime	.05722	(Corr)	.00000	.16513	3643
Entity 1.TranTime	.00000	.00000	.00000	.00000	3643
Entity 1.OtherTime	.00000	.00000	.00000	.00000	3643
Entity 1.TotalTime	.08206	(Corr)	.00964	.25075	3643
ID and boarding pass check.Queue.WaitingTi	.03290	.01025	.00000	.15576	3656
Scanner1.Queue.WaitingTime	.02450	(Corr)	.00000	.09164	3647

Plus 2 other replications had >15mins wait times.

- **2 Scanners**

This option also showed a few >15 min wait times adding the max wait times for ID checker and scanners. Even though the avg wait times were within 15 min, a few >15 mins max values make it a less optimum option. Thus, I ran another option with 3 scanners next. I used capacity of 4 for the ID checker and 2 ea for scanners in this run to get past 150 entities limit.



Decide ? X

Name: Type:

Conditions:

Expression, NQ(Scanner1.Queue) <= NQ(Scanner2.Queue)	Add...
<End of list>	

Edit... Delete

OK Cancel Help

Conditions ? X

If:

Value:

OK Cancel Help

Resource - Basic Process			
	Name	Type	Capacity
1	Scanner 1	Fixed Capacity	2
2	Resource 1	Fixed Capacity	4
3	Scanner 2	Fixed Capacity	2

Summary for Replication 6 of 10

Project: Unnamed Project
Analyst:

Run execution date : 3/11/2020
Model revision date: 3/11/2020

Replication ended at time : 12.0 Hours
Base Time Units: Hours

TALLY VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Observations
Entity 1.VATime	.02464	4.6995E-04	.00842	.14610	3662
Entity 1.NVATime	.00000	.00000	.00000	.00000	3662
Entity 1.WaitTime	.08436	(Corr)	.00000	.25257	3662
Entity 1.TranTime	.00000	.00000	.00000	.00000	3662
Entity 1.OtherTime	.00000	.00000	.00000	.00000	3662
Entity 1.TotalTime	.10900	(Corr)	.01011	.30327	3662
ID and boarding pass check.Queue.WaitingTi	.03840	(Corr)	.00000	.15998	3670
Scanner2.Queue.WaitingTime	.04534	(Corr)	.00000	.15007	1791
Scanner1.Queue.WaitingTime	.04648	(Corr)	.00000	.17077	1875

Summary for Replication 9 of 10

Project: Unnamed Project
Analyst:

Run execution date : 3/11/2020
Model revision date: 3/11/2020

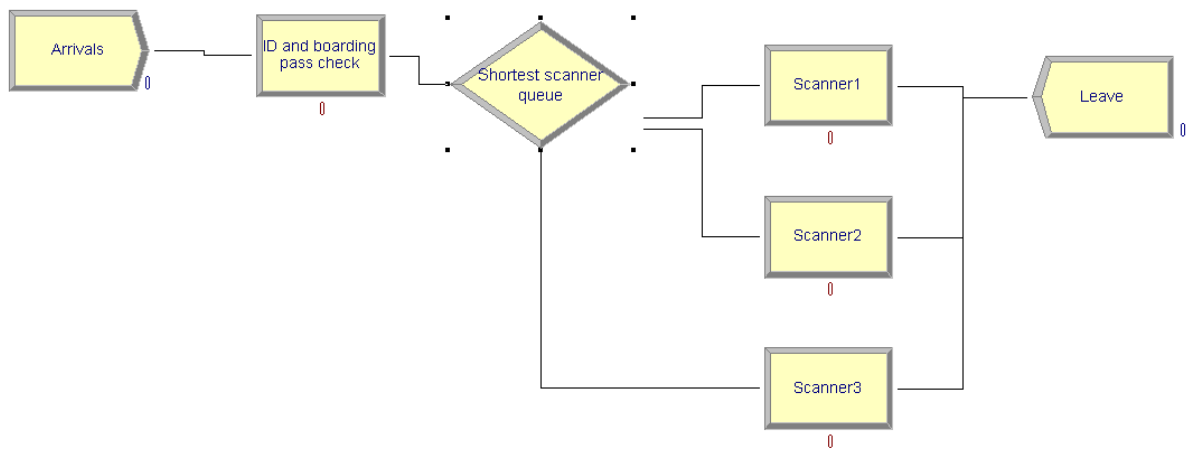
Replication ended at time : 12.0 Hours
Base Time Units: Hours

TALLY VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Observations
Entity 1.VATime	.02509	4.1454E-04	.00846	.10851	3678
Entity 1.NVATime	.00000	.00000	.00000	.00000	3678
Entity 1.WaitTime	.10510	(Corr)	.00000	.23798	3678
Entity 1.TranTime	.00000	.00000	.00000	.00000	3678
Entity 1.OtherTime	.00000	.00000	.00000	.00000	3678
Entity 1.TotalTime	.13019	(Corr)	.00872	.30300	3678
ID and boarding pass check.Queue.WaitingTi	.06638	(Corr)	.00000	.19619	3704
Scanner2.Queue.WaitingTime	.03786	(Corr)	.00000	.16375	1789
Scanner1.Queue.WaitingTime	.03894	(Corr)	.00000	.16025	1893

• 3 Scanners

I ran this simulation with 3 scanners. I used capacity of 4 for the ID checker and 2 ea for 2 of the scanners and 1 for the 3rd one to get past 150 entities limit.



Decide 1 ? X

Name: Shortest scanner queue Type: N-way by Condition

Conditions:

Expression, NQ(Scanner1.Queue) <= NQ(Scanner2.Queue) && NQ(Scanner2.Queue) <= NQ(Scanner3.Queue)
<End of list>

Add...
View...
Delete

OK Cancel Help

Conditions ? X

If: Expression

Value: NQ(Scanner1.Queue) <= NQ(Scanner2.Queue) && NQ(Scanner3.Queue)

OK Cancel Help

Conditions

If:

Expression

Value:

NQ(Scanner2.Queue) <= NQ(Scanner3.Queue)

OK Cancel Help

Resource - Basic Process				
	Name	Type	Capacity	B
1	Scanner 2	Fixed Capacity	2	0.
2	Resource 1	Fixed Capacity	4	0.
3	Scanner 1	Fixed Capacity	2	0.
4	Scanner 3	Fixed Capacity	1	0.

The average wait times were all less than 15 mins for this run. Details output file is attached to this assignment.

Thus, final simulation reveals that 1 ID/boarding pass check post with capacity of 4 and 3 scanners gets us lower than 15 min wait times on average.

Finally, I tried Poisson $\lambda = 50$ (50 arrivals per minute or 0.02 mean interarrival rate) on my final model and even with increasing the capacity many folds, I could not make the model to run due to 150 entities limit on the trial version (I am not an OMSA student yet so could not get that license). Logic says that increasing arrival rate 10 folds will increase the number of ID/boarding pass and scanners needed many folds as well (probably to 35-40).

ARENA Simulation Results
Authorized User

Summary for Replication 1 of 10

Project: Unnamed Project
Analyst: Authorized User

Run execution date : 3/11/2020
Model revision date: 3/11/2020

Replication ended at time : 12.0 Hours
Base Time Units: Hours

TALLY VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Observations
Entity 1.VATime	.02497	4.0355E-04	.00852	.11501	3586
Entity 1.NVATime	.00000	.00000	.00000	.00000	3586
Entity 1.WaitTime	.03270	.00778	.00000	.11405	3586
Entity 1.TranTime	.00000	.00000	.00000	.00000	3586
Entity 1.OtherTime	.00000	.00000	.00000	.00000	3586
Entity 1.TotalTime	.05767	.00796	.01003	.16959	3586
ID and boarding pass check.Queue.WaitingTi	.02770	.00766	.00000	.10440	3595
Scanner3.Queue.WaitingTime	.00729	.00144	.00000	.07574	811
Scanner2.Queue.WaitingTime	.00393	7.5648E-04	.00000	.04281	1682
Scanner1.Queue.WaitingTime	.00473	.00127	.00000	.04372	1097

DISCRETE-CHANGE VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Final Value
Entity 1.WIP	17.246	2.6418	.00000	45.000	9.0000
Resource 1.NumberBusy	3.7274	.11416	.00000	4.0000	3.0000
Resource 1.NumberScheduled	4.0000	(Insuf)	4.0000	4.0000	4.0000
Resource 1.Utilization	.93187	.02854	.00000	1.0000	.75000
Scanner 1.NumberBusy	1.1385	.08185	.00000	2.0000	1.0000
Scanner 1.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
Scanner 1.Utilization	.56927	.04093	.00000	1.0000	.50000
Scanner 3.NumberBusy	.83816	.02999	.00000	1.0000	1.0000
Scanner 3.NumberScheduled	1.0000	(Insuf)	1.0000	1.0000	1.0000
Scanner 3.Utilization	.83816	.02999	.00000	1.0000	1.0000
Scanner 2.NumberBusy	1.7661	.02344	.00000	2.0000	2.0000
Scanner 2.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
Scanner 2.Utilization	.88305	.01172	.00000	1.0000	1.0000
ID and boarding pass check.Queue.NumberInQ	8.2996	2.4434	.00000	37.000	.00000
Scanner3.Queue.NumberInQueue	.49282	.08143	.00000	6.0000	1.0000
Scanner2.Queue.NumberInQueue	.55143	.08937	.00000	7.0000	1.0000
Scanner1.Queue.NumberInQueue	.43204	.11615	.00000	7.0000	.00000

OUTPUTS

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Identifier	Value
Entity 1.NumberIn	3595.0
Entity 1.NumberOut	3586.0
Resource 1.NumberSeized	3595.0
Resource 1.ScheduledUtilization	.93187
Scanner 1.NumberSeized	1097.0
Scanner 1.ScheduledUtilization	.56927
Scanner 3.NumberSeized	811.00
Scanner 3.ScheduledUtilization	.83816
Scanner 2.NumberSeized	1682.0
Scanner 2.ScheduledUtilization	.88305
System.NumberOut	3586.0

Beginning replication 2 of 10

ARENA Simulation Results
Authorized User

Summary for Replication 2 of 10

Project: Unnamed Project	Run execution date : 3/11/2020
Analyst: Authorized User	Model revision date: 3/11/2020
Replication ended at time : 12.0 Hours	
Base Time Units: Hours	

TALLY VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Observations
Entity 1.VATime	.02478	3.4652E-04	.00845	.11882	3531
Entity 1.NVATime	.00000	.00000	.00000	.00000	3531
Entity 1.WaitTime	.02835	.00888	.00000	.11998	3531
Entity 1.TranTime	.00000	.00000	.00000	.00000	3531
Entity 1.OtherTime	.00000	.00000	.00000	.00000	3531
Entity 1.TotalTime	.05313	.00910	.00872	.17159	3531
ID and boarding pass check.Queue.WaitingTi	.02414	.00870	.00000	.10624	3541
Scanner3.Queue.WaitingTime	.00641	4.4958E-04	.00000	.03409	802
Scanner2.Queue.WaitingTime	.00345	2.6615E-04	.00000	.01965	1686
Scanner1.Queue.WaitingTime	.00416	7.1344E-04	.00000	.02539	1048

DISCRETE-CHANGE VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Final Value
Entity 1.WIP	15.749	3.0845	.00000	41.000	24.000
Resource 1.NumberBusy	3.6148	.14263	.00000	4.0000	4.0000

105	Resource 1.NumberScheduled	4.0000	(Insuf)	4.0000	4.0000	4.0000
106	Resource 1.Utilization	.90371	.03566	.00000	1.0000	1.0000
107	Scanner 1.NumberBusy	1.0924	.07467	.00000	2.0000	2.0000
108	Scanner 1.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
109	Scanner 1.Utilization	.54623	.03733	.00000	1.0000	1.0000
110	Scanner 3.NumberBusy	.82896	.02482	.00000	1.0000	1.0000
111	Scanner 3.NumberScheduled	1.0000	(Insuf)	1.0000	1.0000	1.0000
112	Scanner 3.Utilization	.82896	.02482	.00000	1.0000	1.0000
113	Scanner 2.NumberBusy	1.7658	.02514	.00000	2.0000	2.0000
114	Scanner 2.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
115	Scanner 2.Utilization	.88292	.01257	.00000	1.0000	1.0000
116	ID and boarding pass check.Queue.NumberInQ	7.1699	2.8660	.00000	32.000	14.000
117	Scanner3.Queue.NumberInQueue	.42820	.02900	.00000	3.0000	.00000
118	Scanner2.Queue.NumberInQueue	.48525	.03523	.00000	3.0000	.00000
119	Scanner1.Queue.NumberInQueue	.36357	.06667	.00000	4.0000	1.0000

OUTPUTS

Identifier

Value

Entity 1.NumberIn	3555.0
Entity 1.NumberOut	3531.0
Resource 1.NumberSeized	3541.0
Resource 1.ScheduledUtilization	.90371
Scanner 1.NumberSeized	1048.0
Scanner 1.ScheduledUtilization	.54623
Scanner 3.NumberSeized	802.00
Scanner 3.ScheduledUtilization	.82896
Scanner 2.NumberSeized	1686.0
Scanner 2.ScheduledUtilization	.88292
System.NumberOut	3531.0

Beginning replication 3 of 10

ARENA Simulation Results Authorized User

Summary for Replication 3 of 10

Project: Unnamed Project
Analyst: Authorized User

Run execution date : 3/11/2020
Model revision date: 3/11/2020

Replication ended at time : 12.0 Hours
Base Time Units: Hours

TALLY VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Observations
Entity 1.VATime	.02455	4.0175E-04	.00853	.18314	3550

157	Entity 1.NVATime	.00000	.00000	.00000	.00000	3550
158	Entity 1.WaitTime	.02501	(Corr)	.00000	.12523	3550
159	Entity 1.TranTime	.00000	.00000	.00000	.00000	3550
160	Entity 1.OtherTime	.00000	.00000	.00000	.00000	3550
161	Entity 1.TotalTime	.04956	(Corr)	.00900	.19478	3550
162	ID and boarding pass check.Queue.WaitingTi	.02040	(Corr)	.00000	.11243	3565
163	Scanner3.Queue.WaitingTime	.00678	4.8889E-04	.00000	.04610	795
164	Scanner2.Queue.WaitingTime	.00361	3.2796E-04	.00000	.03089	1676
165	Scanner1.Queue.WaitingTime	.00455	4.9152E-04	.00000	.02939	1084

DISCRETE-CHANGE VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Final Value
Entity 1.WIP	14.710	2.5677	.00000	48.000	17.000
Resource 1.NumberBusy	3.5870	.13034	.00000	4.0000	4.0000
Resource 1.NumberScheduled	4.0000	(Insuf)	4.0000	4.0000	4.0000
Resource 1.Utilization	.89676	.03259	.00000	1.0000	1.0000
Scanner 1.NumberBusy	1.1247	.06737	.00000	2.0000	2.0000
Scanner 1.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
Scanner 1.Utilization	.56235	.03369	.00000	1.0000	1.0000
Scanner 3.NumberBusy	.81649	.02568	.00000	1.0000	1.0000
Scanner 3.NumberScheduled	1.0000	(Insuf)	1.0000	1.0000	1.0000
Scanner 3.Utilization	.81649	.02568	.00000	1.0000	1.0000
Scanner 2.NumberBusy	1.7515	.03202	.00000	2.0000	2.0000
Scanner 2.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
Scanner 2.Utilization	.87575	.01601	.00000	1.0000	1.0000
ID and boarding pass check.Queue.NumberInQ	6.0629	2.3547	.00000	40.000	2.0000
Scanner3.Queue.NumberInQueue	.45031	.04647	.00000	4.0000	1.0000
Scanner2.Queue.NumberInQueue	.50511	.06043	.00000	5.0000	2.0000
Scanner1.Queue.NumberInQueue	.41265	.08263	.00000	5.0000	3.0000

OUTPUTS

Identifier	Value
Entity 1.NumberIn	3567.0
Entity 1.NumberOut	3550.0
Resource 1.NumberSeized	3565.0
Resource 1.ScheduledUtilization	.89676
Scanner 1.NumberSeized	1084.0
Scanner 1.ScheduledUtilization	.56235
Scanner 3.NumberSeized	795.00
Scanner 3.ScheduledUtilization	.81649
Scanner 2.NumberSeized	1676.0
Scanner 2.ScheduledUtilization	.87575
System.NumberOut	3550.0

Beginning replication 4 of 10

ARENA Simulation Results
Authorized User

Summary for Replication 4 of 10

Project: Unnamed Project
Analyst: Authorized User

Run execution date : 3/11/2020
Model revision date: 3/11/2020

Replication ended at time : 12.0 Hours
Base Time Units: Hours

TALLY VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Observations
Entity 1.VATime	.02493	4.6155E-04	.00854	.11738	3559
Entity 1.NVATime	.00000	.00000	.00000	.00000	3559
Entity 1.WaitTime	.03152	(Corr)	.00000	.11184	3559
Entity 1.TranTime	.00000	.00000	.00000	.00000	3559
Entity 1.OtherTime	.00000	.00000	.00000	.00000	3559
Entity 1.TotalTime	.05645	(Corr)	.00881	.18776	3559
ID and boarding pass check.Queue.WaitingTi	.02675	(Corr)	.00000	.10107	3564
Scanner3.Queue.WaitingTime	.00675	6.7140E-04	.00000	.04211	789
Scanner2.Queue.WaitingTime	.00367	3.9158E-04	.00000	.02503	1702
Scanner1.Queue.WaitingTime	.00492	7.5545E-04	.00000	.02997	1069

DISCRETE-CHANGE VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Final Value
Entity 1.WIP	16.746	2.8195	.00000	41.000	5.0000
Resource 1.NumberBusy	3.6891	.11524	.00000	4.0000	4.0000
Resource 1.NumberScheduled	4.0000	(Insuf)	4.0000	4.0000	4.0000
Resource 1.Utilization	.92228	.02881	.00000	1.0000	1.0000
Scanner 1.NumberBusy	1.1201	.08743	.00000	2.0000	.00000
Scanner 1.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
Scanner 1.Utilization	.56006	.04371	.00000	1.0000	.00000
Scanner 3.NumberBusy	.81967	.03288	.00000	1.0000	.00000
Scanner 3.NumberScheduled	1.0000	(Insuf)	1.0000	1.0000	1.0000
Scanner 3.Utilization	.81967	.03288	.00000	1.0000	.00000
Scanner 2.NumberBusy	1.7694	.02381	.00000	2.0000	1.0000
Scanner 2.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
Scanner 2.Utilization	.88472	.01191	.00000	1.0000	.50000
ID and boarding pass check.Queue.NumberInQ	7.9452	2.5923	.00000	33.000	.00000
Scanner3.Queue.NumberInQueue	.44402	.04662	.00000	3.0000	.00000
Scanner2.Queue.NumberInQueue	.52053	.05552	.00000	3.0000	.00000
Scanner1.Queue.NumberInQueue	.43838	.10132	.00000	4.0000	.00000

OUTPUTS

261	Identifier	Value
262		
263		
264	Entity 1.NumberIn	3564.0
265	Entity 1.NumberOut	3559.0
266	Resource 1.NumberSeized	3564.0
267	Resource 1.ScheduledUtilization	.92228
268	Scanner 1.NumberSeized	1069.0
269	Scanner 1.ScheduledUtilization	.56006
270	Scanner 3.NumberSeized	789.00
271	Scanner 3.ScheduledUtilization	.81967
272	Scanner 2.NumberSeized	1702.0
273	Scanner 2.ScheduledUtilization	.88472
274	System.NumberOut	3559.0

275
276 Beginning replication 5 of 10
277

278 ARENA Simulation Results
279 Authorized User

280
281 Summary for Replication 5 of 10
282

283 Project: Unnamed Project Run execution date : 3/11/2020
284 Analyst: Authorized User Model revision date: 3/11/2020
285

286 Replication ended at time : 12.0 Hours
287 Base Time Units: Hours
288

289 TALLY VARIABLES

291	Identifier	Average	Half Width	Minimum	Maximum	Observations
292						
293						
294	Entity 1.VATime	.02482	4.7037E-04	.00835	.11985	3591
295	Entity 1.NVATime	.00000	.00000	.00000	.00000	3591
296	Entity 1.WaitTime	.03052	.00925	.00000	.14867	3591
297	Entity 1.TranTime	.00000	.00000	.00000	.00000	3591
298	Entity 1.OtherTime	.00000	.00000	.00000	.00000	3591
299	Entity 1.TotalTime	.05534	.00944	.00870	.20538	3591
300	ID and boarding pass check.Queue.WaitingTi	.02625	.00917	.00000	.14565	3598
301	Scanner3.Queue.WaitingTime	.00668	6.1055E-04	.00000	.04119	799
302	Scanner2.Queue.WaitingTime	.00349	2.6158E-04	.00000	.02559	1701
303	Scanner1.Queue.WaitingTime	.00399	6.7830E-04	.00000	.02342	1093

304
305 DISCRETE-CHANGE VARIABLES

307	Identifier	Average	Half Width	Minimum	Maximum	Final Value
308						
309						
310	Entity 1.WIP	16.674	(Corr)	.00000	50.000	26.000
311	Resource 1.NumberBusy	3.7041	(Corr)	.00000	4.0000	4.0000
312	Resource 1.NumberScheduled	4.0000	(Insuf)	4.0000	4.0000	4.0000

365	Entity 1.WaitTime	.05782	(Corr)	.00000	.21619	3696
366	Entity 1.TranTime	.00000	.00000	.00000	.00000	3696
367	Entity 1.OtherTime	.00000	.00000	.00000	.00000	3696
368	Entity 1.TotalTime	.08282	(Corr)	.01048	.27199	3696
369	ID and boarding pass check.Queue.WaitingTi	.05265	(Corr)	.00000	.20637	3705
370	Scanner3.Queue.WaitingTime	.00712	6.0610E-04	.00000	.04837	809
371	Scanner2.Queue.WaitingTime	.00395	3.7587E-04	.00000	.02513	1710
372	Scanner1.Queue.WaitingTime	.00528	6.3933E-04	.00000	.03102	1180

DISCRETE-CHANGE VARIABLES

376	Identifier	Average	Half Width	Minimum	Maximum	Final Value
379	Entity 1.WIP	25.525	(Corr)	.00000	73.000	12.000
380	Resource 1.NumberBusy	3.8683	.09250	.00000	4.0000	4.0000
381	Resource 1.NumberScheduled	4.0000	(Insuf)	4.0000	4.0000	4.0000
382	Resource 1.Utilization	.96709	.02313	.00000	1.0000	1.0000
383	Scanner 1.NumberBusy	1.2243	.08510	.00000	2.0000	.00000
384	Scanner 1.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
385	Scanner 1.Utilization	.61216	.04255	.00000	1.0000	.00000
386	Scanner 3.NumberBusy	.83476	.03190	.00000	1.0000	1.0000
387	Scanner 3.NumberScheduled	1.0000	(Insuf)	1.0000	1.0000	1.0000
388	Scanner 3.Utilization	.83476	.03190	.00000	1.0000	1.0000
389	Scanner 2.NumberBusy	1.7811	.03174	.00000	2.0000	2.0000
390	Scanner 2.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
391	Scanner 2.Utilization	.89060	.01587	.00000	1.0000	1.0000
392	ID and boarding pass check.Queue.NumberInQ	16.255	(Corr)	.00000	63.000	3.0000
393	Scanner3.Queue.NumberInQueue	.47974	.04119	.00000	4.0000	1.0000
394	Scanner2.Queue.NumberInQueue	.56227	.05496	.00000	4.0000	1.0000
395	Scanner1.Queue.NumberInQueue	.51916	.07420	.00000	5.0000	.00000

OUTPUTS

399	Identifier	Value
402	Entity 1.NumberIn	3708.0
403	Entity 1.NumberOut	3696.0
404	Resource 1.NumberSeized	3705.0
405	Resource 1.ScheduledUtilization	.96709
406	Scanner 1.NumberSeized	1180.0
407	Scanner 1.ScheduledUtilization	.61216
408	Scanner 3.NumberSeized	809.00
409	Scanner 3.ScheduledUtilization	.83476
410	Scanner 2.NumberSeized	1710.0
411	Scanner 2.ScheduledUtilization	.89060
412	System.NumberOut	3696.0

Beginning replication 7 of 10

Authorized User

Summary for Replication 7 of 10

Project: Unnamed Project
Analyst: Authorized User

Run execution date : 3/11/2020
Model revision date: 3/11/2020

Replication ended at time : 12.0 Hours
Base Time Units: Hours

TALLY VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Observations
Entity 1.VATime	.02497	4.3396E-04	.00855	.12363	3599
Entity 1.NVATime	.00000	.00000	.00000	.00000	3599
Entity 1.WaitTime	.03348	(Corr)	.00000	.12093	3599
Entity 1.TranTime	.00000	.00000	.00000	.00000	3599
Entity 1.OtherTime	.00000	.00000	.00000	.00000	3599
Entity 1.TotalTime	.05846	(Corr)	.00925	.16374	3599
ID and boarding pass check.Queue.WaitingTi	.02874	(Corr)	.00000	.11312	3607
Scanner3.Queue.WaitingTime	.00673	7.2029E-04	.00000	.03517	810
Scanner2.Queue.WaitingTime	.00367	4.2496E-04	.00000	.02162	1688
Scanner1.Queue.WaitingTime	.00474	6.7660E-04	.00000	.02729	1104

DISCRETE-CHANGE VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Final Value
Entity 1.WIP	17.549	(Corr)	.00000	50.000	8.0000
Resource 1.NumberBusy	3.7433	(Corr)	.00000	4.0000	3.0000
Resource 1.NumberScheduled	4.0000	(Insuf)	4.0000	4.0000	4.0000
Resource 1.Utilization	.93583	(Corr)	.00000	1.0000	.75000
Scanner 1.NumberBusy	1.1465	.08953	.00000	2.0000	.00000
Scanner 1.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
Scanner 1.Utilization	.57328	.04476	.00000	1.0000	.00000
Scanner 3.NumberBusy	.83743	.03054	.00000	1.0000	1.0000
Scanner 3.NumberScheduled	1.0000	(Insuf)	1.0000	1.0000	1.0000
Scanner 3.Utilization	.83743	.03054	.00000	1.0000	1.0000
Scanner 2.NumberBusy	1.7750	.02158	.00000	2.0000	2.0000
Scanner 2.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
Scanner 2.Utilization	.88752	.01079	.00000	1.0000	1.0000
ID and boarding pass check.Queue.NumberInQ	8.6396	(Corr)	.00000	39.000	.00000
Scanner3.Queue.NumberInQueue	.45419	.05103	.00000	3.0000	1.0000
Scanner2.Queue.NumberInQueue	.51728	.05073	.00000	3.0000	1.0000
Scanner1.Queue.NumberInQueue	.43614	.08716	.00000	4.0000	.00000

OUTPUTS

Identifier	Value
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469

470

471 Entity 1.NumberIn 3607.0

472 Entity 1.NumberOut 3599.0

473 Resource 1.NumberSeized 3607.0

474 Resource 1.ScheduledUtilization .93583

475 Scanner 1.NumberSeized 1104.0

476 Scanner 1.ScheduledUtilization .57328

477 Scanner 3.NumberSeized 810.00

478 Scanner 3.ScheduledUtilization .83743

479 Scanner 2.NumberSeized 1688.0

480 Scanner 2.ScheduledUtilization .88752

481 System.NumberOut 3599.0

482

483 Beginning replication 8 of 10

484

485 ARENA Simulation Results

486 Authorized User

487

488 Summary for Replication 8 of 10

489

490 Project: Unnamed Project

Run execution date : 3/11/2020

491 Analyst: Authorized User

Model revision date: 3/11/2020

492

493 Replication ended at time : 12.0 Hours

494 Base Time Units: Hours

495

496 TALLY VARIABLES

497

498 Identifier Average Half Width Minimum Maximum Observations

499

500

501 Entity 1.VATime .02521 3.7616E-04 .00851 .12506 3596

502 Entity 1.NVATime .00000 .00000 .00000 .00000 3596

503 Entity 1.WaitTime .07792 (Corr) .00000 .24121 3596

504 Entity 1.TranTime .00000 .00000 .00000 .00000 3596

505 Entity 1.OtherTime .00000 .00000 .00000 .00000 3596

506 Entity 1.TotalTime .10313 (Corr) .00851 .31036 3596

507 ID and boarding pass check.Queue.WaitingTi .07315 (Corr) .00000 .23422 3607

508 Scanner3.Queue.WaitingTime .00733 5.6373E-04 .00000 .04269 788

509 Scanner2.Queue.WaitingTime .00397 3.2607E-04 .00000 .02570 1692

510 Scanner1.Queue.WaitingTime .00517 7.8783E-04 .00000 .02540 1121

511

512 DISCRETE-CHANGE VARIABLES

513

514 Identifier Average Half Width Minimum Maximum Final Value

515

516

517 Entity 1.WIP 31.384 (Corr) .00000 86.000 52.000

518 Resource 1.NumberBusy 3.7904 (Corr) .00000 4.0000 4.0000

519 Resource 1.NumberScheduled 4.0000 (Insuf) 4.0000 4.0000 4.0000

520 Resource 1.Utilization .94762 (Corr) .00000 1.0000 1.0000

521	Scanner 1.NumberBusy	1.1686	.09734	.00000	2.0000	2.0000
522	Scanner 1.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
523	Scanner 1.Utilization	.58431	.04867	.00000	1.0000	1.0000
524	Scanner 3.NumberBusy	.82862	.02986	.00000	1.0000	1.0000
525	Scanner 3.NumberScheduled	1.0000	(Insuf)	1.0000	1.0000	1.0000
526	Scanner 3.Utilization	.82862	.02986	.00000	1.0000	1.0000
527	Scanner 2.NumberBusy	1.7820	.02731	.00000	2.0000	2.0000
528	Scanner 2.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
529	Scanner 2.Utilization	.89102	.01366	.00000	1.0000	1.0000
530	ID and boarding pass check.Queue.NumberInQ	22.290	(Corr)	.00000	76.000	41.000
531	Scanner3.Queue.NumberInQueue	.48154	.04728	.00000	3.0000	1.0000
532	Scanner2.Queue.NumberInQueue	.56013	(Corr)	.00000	4.0000	1.0000
533	Scanner1.Queue.NumberInQueue	.48308	.11114	.00000	4.0000	.00000

534

535 OUTPUTS

536

537	Identifier	Value
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538

539

540	Entity 1.NumberIn	3648.0
541	Entity 1.NumberOut	3596.0
542	Resource 1.NumberSeized	3607.0
543	Resource 1.ScheduledUtilization	.94762
544	Scanner 1.NumberSeized	1121.0
545	Scanner 1.ScheduledUtilization	.58431
546	Scanner 3.NumberSeized	788.00
547	Scanner 3.ScheduledUtilization	.82862
548	Scanner 2.NumberSeized	1692.0
549	Scanner 2.ScheduledUtilization	.89102
550	System.NumberOut	3596.0

551

552 Beginning replication 9 of 10

553

554 ARENA Simulation Results
555 Authorized User

556

557 Summary for Replication 9 of 10

558

559	Project: Unnamed Project	Run execution date : 3/11/2020
560	Analyst: Authorized User	Model revision date: 3/11/2020

561

562 Replication ended at time : 12.0 Hours
563 Base Time Units: Hours

564

565 TALLY VARIABLES

566

567	Identifier	Average	Half Width	Minimum	Maximum	Observations
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570	Entity 1.VATime	.02454	4.1193E-04	.00861	.11406	3534
571	Entity 1.NVATime	.00000	.00000	.00000	.00000	3534
572	Entity 1.WaitTime	.02374	.00573	.00000	.15163	3534

573	Entity 1.TranTime	.00000	.00000	.00000	.00000	3534
574	Entity 1.OtherTime	.00000	.00000	.00000	.00000	3534
575	Entity 1.TotalTime	.04827	.00599	.00887	.21027	3534
576	ID and boarding pass check.Queue.WaitingTi	.01919	.00546	.00000	.13800	3544
577	Scanner3.Queue.WaitingTime	.00672	5.7811E-04	.00000	.03633	791
578	Scanner2.Queue.WaitingTime	.00361	3.3463E-04	.00000	.02580	1691
579	Scanner1.Queue.WaitingTime	.00454	6.8399E-04	.00000	.03202	1057

580

581 DISCRETE-CHANGE VARIABLES

582

583	Identifier	Average	Half Width	Minimum	Maximum	Final Value
584						
585						
586	Entity 1.WIP	14.268	2.4606	.00000	40.000	19.000
587	Resource 1.NumberBusy	3.5573	.14125	.00000	4.0000	4.0000
588	Resource 1.NumberScheduled	4.0000	(Insuf)	4.0000	4.0000	4.0000
589	Resource 1.Utilization	.88934	.03531	.00000	1.0000	1.0000
590	Scanner 1.NumberBusy	1.0988	.08960	.00000	2.0000	2.0000
591	Scanner 1.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
592	Scanner 1.Utilization	.54944	.04480	.00000	1.0000	1.0000
593	Scanner 3.NumberBusy	.82954	.02773	.00000	1.0000	1.0000
594	Scanner 3.NumberScheduled	1.0000	(Insuf)	1.0000	1.0000	1.0000
595	Scanner 3.Utilization	.82954	.02773	.00000	1.0000	1.0000
596	Scanner 2.NumberBusy	1.7536	.02672	.00000	2.0000	2.0000
597	Scanner 2.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
598	Scanner 2.Utilization	.87682	.01336	.00000	1.0000	1.0000
599	ID and boarding pass check.Queue.NumberInQ	5.6777	2.1520	.00000	33.000	9.0000
600	Scanner3.Queue.NumberInQueue	.44338	.04970	.00000	4.0000	1.0000
601	Scanner2.Queue.NumberInQueue	.50839	.05213	.00000	4.0000	.00000
602	Scanner1.Queue.NumberInQueue	.39987	.09360	.00000	5.0000	.00000

603

604 OUTPUTS

605

606	Identifier	Value
607		
608		
609	Entity 1.NumberIn	3553.0
610	Entity 1.NumberOut	3534.0
611	Resource 1.NumberSeized	3544.0
612	Resource 1.ScheduledUtilization	.88934
613	Scanner 1.NumberSeized	1057.0
614	Scanner 1.ScheduledUtilization	.54944
615	Scanner 3.NumberSeized	791.00
616	Scanner 3.ScheduledUtilization	.82954
617	Scanner 2.NumberSeized	1691.0
618	Scanner 2.ScheduledUtilization	.87682
619	System.NumberOut	3534.0

620

621 Beginning replication 10 of 10

622

623 ARENA Simulation Results

624 Authorized User

Summary for Replication 10 of 10

Project: Unnamed Project
Analyst: Authorized User

Run execution date : 3/11/2020
Model revision date: 3/11/2020

Replication ended at time : 12.0 Hours
Base Time Units: Hours

TALLY VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Observations
Entity 1.VATime	.02506	3.6428E-04	.00863	.15906	3626
Entity 1.NVATime	.00000	.00000	.00000	.00000	3626
Entity 1.WaitTime	.05175	(Corr)	.00000	.20437	3626
Entity 1.TranTime	.00000	.00000	.00000	.00000	3626
Entity 1.OtherTime	.00000	.00000	.00000	.00000	3626
Entity 1.TotalTime	.07681	(Corr)	.00864	.26020	3626
ID and boarding pass check.Queue.WaitingTi	.04709	(Corr)	.00000	.19794	3632
Scanner3.Queue.WaitingTime	.00663	5.4069E-04	.00000	.02910	811
Scanner2.Queue.WaitingTime	.00362	3.2193E-04	.00000	.02319	1701
Scanner1.Queue.WaitingTime	.00456	6.4223E-04	.00000	.02613	1116

DISCRETE-CHANGE VARIABLES

Identifier	Average	Half Width	Minimum	Maximum	Final Value
Entity 1.WIP	23.220	(Corr)	.00000	71.000	8.0000
Resource 1.NumberBusy	3.8048	.09934	.00000	4.0000	4.0000
Resource 1.NumberScheduled	4.0000	(Insuf)	4.0000	4.0000	4.0000
Resource 1.Utilization	.95121	.02484	.00000	1.0000	1.0000
Scanner 1.NumberBusy	1.1651	.08135	.00000	2.0000	.00000
Scanner 1.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
Scanner 1.Utilization	.58255	.04068	.00000	1.0000	.00000
Scanner 3.NumberBusy	.83959	.02595	.00000	1.0000	1.0000
Scanner 3.NumberScheduled	1.0000	(Insuf)	1.0000	1.0000	1.0000
Scanner 3.Utilization	.83959	.02595	.00000	1.0000	1.0000
Scanner 2.NumberBusy	1.7705	.02630	.00000	2.0000	1.0000
Scanner 2.NumberScheduled	2.0000	(Insuf)	2.0000	2.0000	2.0000
Scanner 2.Utilization	.88526	.01315	.00000	1.0000	.50000
ID and boarding pass check.Queue.NumberInQ	14.254	(Corr)	.00000	62.000	2.0000
Scanner3.Queue.NumberInQueue	.44819	.04144	.00000	3.0000	.00000
Scanner2.Queue.NumberInQueue	.51373	.04552	.00000	4.0000	.00000
Scanner1.Queue.NumberInQueue	.42428	.09089	.00000	5.0000	.00000

OUTPUTS

Identifier	Value
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Entity 1.NumberIn	3634.0
Entity 1.NumberOut	3626.0
Resource 1.NumberSeized	3632.0
Resource 1.ScheduledUtilization	.95121
Scanner 1.NumberSeized	1116.0
Scanner 1.ScheduledUtilization	.58255
Scanner 3.NumberSeized	811.00
Scanner 3.ScheduledUtilization	.83959
Scanner 2.NumberSeized	1701.0
Scanner 2.ScheduledUtilization	.88526
System.NumberOut	3626.0

ARENA Simulation Results
Authorized User

Output Summary for 10 Replications

Project: Unnamed Project	Run execution date : 3/11/2020
Analyst: Authorized User	Model revision date: 3/11/2020

OUTPUTS

Identifier	Average	Half-width Minimum		Maximum # Replications	
Entity 1.NumberIn	3604.8	35.265	3553.0	3708.0	10
Entity 1.NumberOut	3586.8	35.157	3531.0	3696.0	10
Resource 1.NumberSeized	3595.8	34.665	3541.0	3705.0	10
Resource 1.ScheduledUtilization	.92717	.01787	.88934	.96709	10
Scanner 1.NumberSeized	1096.9	27.023	1048.0	1180.0	10
Scanner 1.ScheduledUtilization	.57059	.01371	.54623	.61216	10
Scanner 3.NumberSeized	800.50	6.7292	788.00	811.00	10
Scanner 3.ScheduledUtilization	.83098	.00565	.81649	.83959	10
Scanner 2.NumberSeized	1692.9	7.4904	1676.0	1710.0	10
Scanner 2.ScheduledUtilization	.88404	.00362	.87575	.89102	10
System.NumberOut	3586.8	35.157	3531.0	3696.0	10

Simulation run time: 0.02 minutes.
Simulation run complete.