

Figure 1. ARENA model for problem 3-6

Create

Name: Entity Type:

Time Between Arrivals

Type: Value: Units:

Entities per Arrival: Max Arrivals: First Creation:

Figure 2. Creates parts with an exponential distribution and a parameter of 5 minutes

Process

Name: Type:

Logic

Action: Priority:

Resources:

Delay Type: Units: Allocation:

Minimum: Value (Most Likely): Maximum:

☒ Report Statistics

Figure 3. Drilling Center with a triangular distribution

Process ? X

Name: Washing Center Type: Standard

Logic

Action: Seize Delay Release Priority: Medium(2)

Resources:

- Resource, Washer, 1
- <End of list>

Add... Edit... Delete

Delay Type: Triangular Units: Minutes Allocation: Value Added

Minimum: 1 Value:(Most Likely): 3 Maximum: 6

☒ Report Statistics

OK Cancel Help

Figure 4. Washing Center with same parameters as Drilling Center

Process ? X

Name: Inspection Type: Standard

Logic

Action: Seize Delay Release Priority: Medium(2)

Resources:

- Resource, Inspector, 1
- <End of list>

Add... Edit... Delete

Delay Type: Constant Units: Minutes Allocation: Value Added

Value: 4.5

☒ Report Statistics

OK Cancel Help

Figure 5. Inspection with a constant service time

Decide

Name: Type:

Percent True (0-100): %

OK Cancel Help

Figure 6. Determines whether the inspection passes or fails

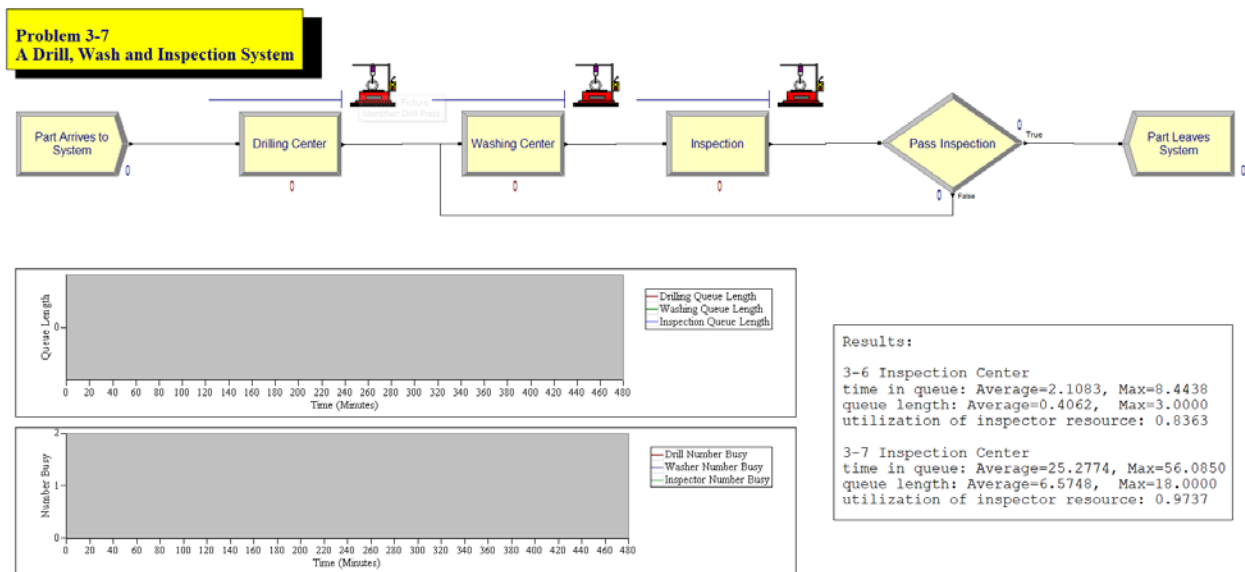


Figure 7. ARENA model for problem 3-7

The only difference from problem 3-6 is that the parts that fail the inspection go back to the Washing Center instead of being disposed.

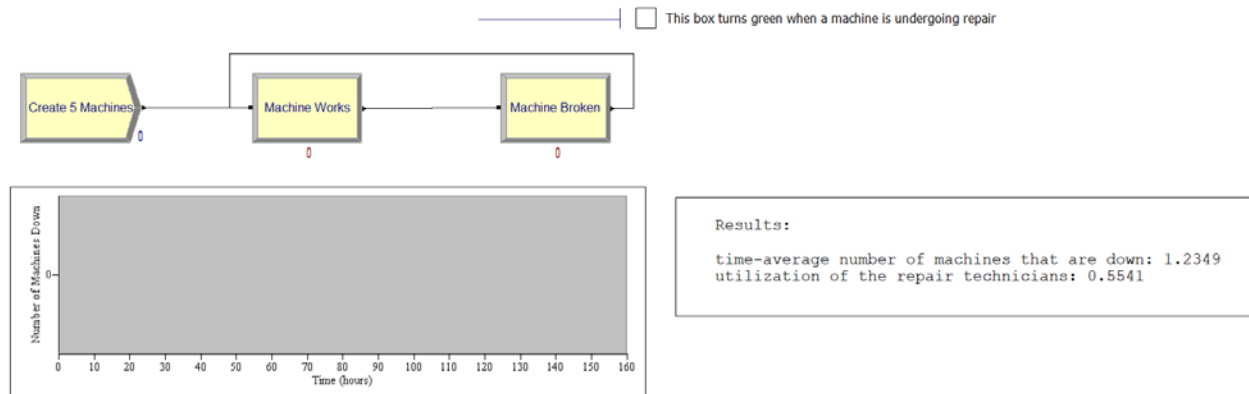


Figure 8. ARENA model for problem 3-14 a

Figure 9. Creates 5 machines then stops

Figure 10. The machine remains in working condition with a uniform distribution

Process ? X

Name: Machine Broken Type: Standard

Logic

Action: Seize Delay Release Priority: Medium(2)

Resources:

Resource, technician, 1
<End of list>

Add... Edit... Delete

Delay Type: Uniform Units: Hours Allocation: Value Added

Minimum: 1 Maximum: 4

☒ Report Statistics

OK Cancel Help

Figure 11. The machines are repaired using a uniform distribution

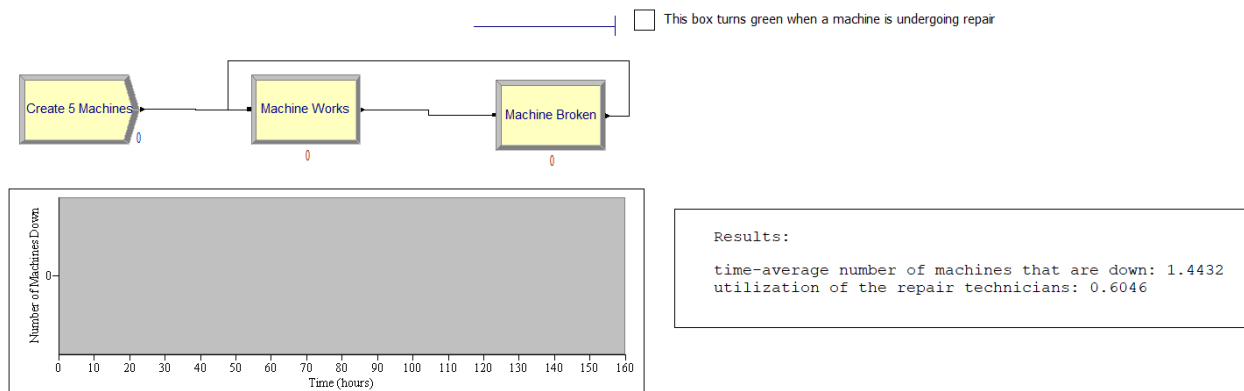


Figure 12. ARENA model for problem 3-14 b

This model is the same as part a, having exponential distributions instead of uniform distributions.

Summary: 3-6 adds on to model 3-1 by adding a Wash Center with the same parameters as the drilling center, then an inspection center that has a pass rate of 75%. 3-7 is the exact same model, but instead of disposing the parts that fail, they are sent back to the Washing Center.

3-14.a models a system with 2 technicians in charge of repairing 5 machines. The machines break and get repaired using uniform distributions and there is no queue when the machines are fixed. 3-14.b is the exact same model as 3-14.a, but the distributions are both changed to exponential distributions.