END3032 – SYSTEMS SIMULATION

THE SHIPPING BOXES UNLIMITED PROBLEM

Laboratory Practice #8

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Problem Definition

Computer monitors arrives at the Shipping Boxes Unlimited on average every **15 minutes** according to the **exponential distribution**. Then they are sent to the packing table. Similarly, empty boxes arrive at the factory at the rate of one every **15 minutes, exponentially** and they are sent to the packing table. At this station, monitors are packed into boxes. Then packed boxes are sent for inspection. The inspector checks the contents of the box and tallies with the packing slip. Inspector loads packed boxes on an empty pallet. The loaded pallet is sent to the shipping dock and waits in the shipping queue. At the shipping dock, the packed boxes are unloaded from the pallet and they are prepared for the shipment. The empty pallet is returned, via pallet queue, to the inspector. There is only **one pallet** used in the system and this way it is recirculated.

Processing times are given in Table 1.

Table 1. Processing Times

Process	Time (min)
Packing	**Normal (5, 1)**
Inspection	**Normal (4, 2)**
Loading on the pallet	**Uniform (3, 1)**
Unloading from the pallet	**Uniform (3, 1)**
Preparing for the shipment	**Uniform (5, 1)**

Make a simulation model and estimate the number of monitors shipped and the amount of the work-in-process (WIP) of the monitors. Run the simulation model for 100 hours.