Production System Design Activity
Team 203 - SMILE
14 January 2022

Purpose

To gain experience collecting data and evaluating the performance of a queuing system in a manual production system through hands-on activities.

Problem Statement

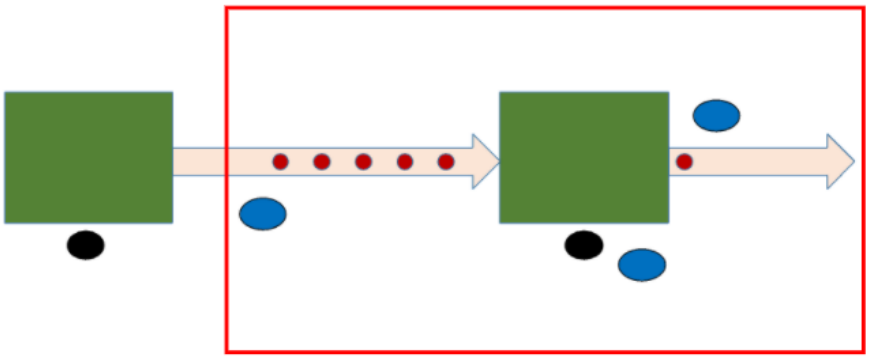
A production manager would like to evaluate the performance of a system and improve it. The goal is to make it so that there will be less than 5 work pieces in queue.

Lab Instruction

- Everyone will work in teams of four or five.
- One person from each team will be selected to serve in one of the roles required during each simulation run.

Iteration 1

Production System (System 1)



WS 1

- Kit Assembly
  - Pick one bag and open it
  - One by one, pick 5 orange beads and place them in the bag
  - One by one, pick 5 black beads and place them in the bag
  - Cut 12 inches of elastic string and place the piece in the bag
  - Close the bag and place it at the end of the queue before WS 2

Observer 1 records the time when the bag arrives to queue at WS 2

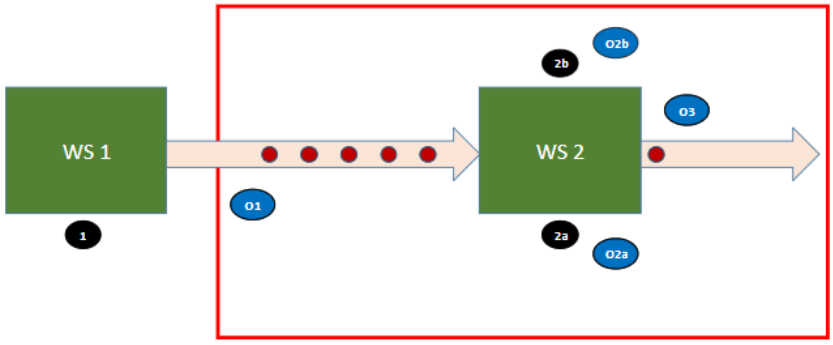
WS 2

- Part Assembly
  - Take a bag from the queue, open it, and place the contents in the bin
  - Alternating colors, insert beads in elastic string
  - Tie three knots
  - Place completed part in bag, close it, and place it in the output bin

Observer 2 records when the bag is taken from queue 2
Observer 3 records the status of workstation 2

Iteration 2 - Add Operator to WS 2

Production System (System 2)



WS 1

- Kit Assembly
  - Pick one bag and open it
  - One by one, pick 5 orange beads and place them in the bag
  - One by one, pick 5 black beads and place them in the bag
  - Cut 12 inches of elastic string and place the piece in the bag
  - Close the bag and place it at the end of the queue before WS 2

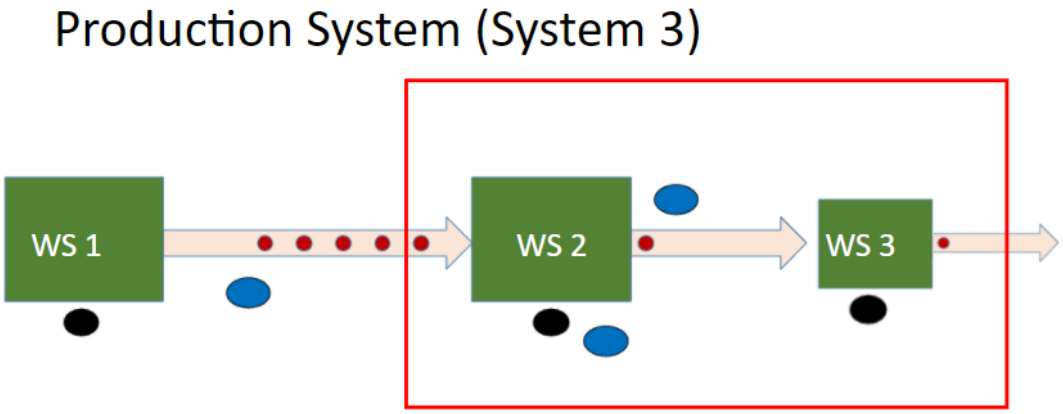
Observer 1 records the time when the bag arrives to queue at WS 2

WS 2

- Part Assembly for each Operator
  - Take a bag from the queue, open it, and place the contents in the bin
  - Alternating colors, insert beads in elastic string
  - Tie three knots
  - Place completed part in bag, close it, and place it in the output bin

Observer 2 records when the bag is taken from queue 2
Observer 3 records the status of workstation 2

Iteration 3 - Additional Process Step



WS 1

- Kit Assembly
  - Pick one bag and open it
  - One by one, pick 5 orange beads and place them in the bag
  - One by one, pick 5 black beads and place them in the bag
  - Cut 12 inches of elastic string and place the piece in the bag
  - Close the bag and place it at the end of the queue before WS 2

WS 2

- Part Assembly for each Operator
  - Take a bag from the queue, open it, and place the contents in the bin
  - Alternating colors, insert beads in elastic string
  - Place on binder clip
  - Put WP in bag and place it at the end of queue before WS 3

Observer 1 records the status of workstation 2
Observer 2 records the status of workstation 3

WS 3

- Part Assembly for each Operator
  - Take the bag from queue and place it in front of you
  - Remove binder clip and return to station 2
  - Tie three knots
  - Place completed part in bag, close it, and place it in the output bin