

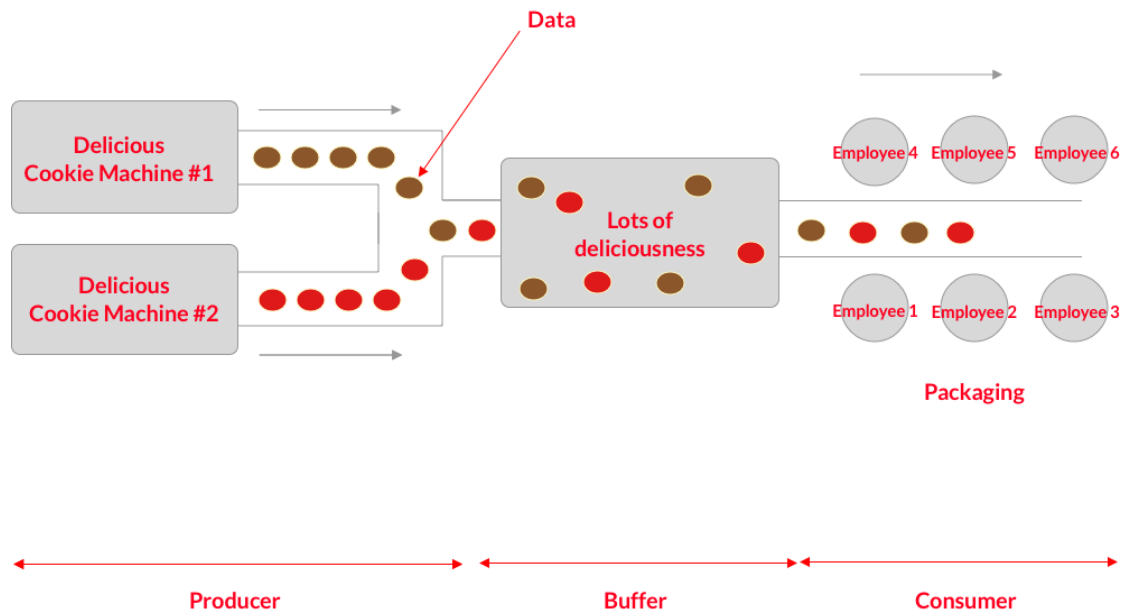
CSC369 Week 3 Notes

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1 Synchronization

- Producer and Consumer Problem
 - Is also known as **bound-and-buffer** problem
 - Achieves synchronization
 - Has two types of processes
 1. **Producer**
 - * Produces data
 - * Puts data into buffer
 2. **Consumer**
 - * Consumes data
 - * Removes data from buffer, one piece at a time
 - It's like kimchi factory, or delicious cookie factory :)



- Semaphore
 - Developed by Dijkstra in 1962.
 - Provides synchronization
 - Works like a signal
 - * Uses a non-negative integer variable that is shared between threads [*Note: Need to come back later*]
 - * Has two “**atomic**” operations
 1. **Wait** (Also called P, or decrement)
 2. **Signal** (Also called V, or increment)
- Types of Semaphores
 1. Counting Semaphore
 - $count = N \Rightarrow$ Max number of resources
 - $count \uparrow$ when resource added
 - $count \downarrow$ when resource used
 - $count = 0 \Rightarrow$ No resources available \Rightarrow **Wait** until $count > 0$
 2. Mutex Semaphore