

Batch Processing with Garbage collector

A batch processing system, requires an $Exp<0.05\text{ s}^{-1}>$ distributed time to prepare a new job for execution. Processes run on a Java Virtual Machine, and the execution of the job requires a different amount of time, depending on whether the garbage collector is running or not. In particular it takes $Exp<1\text{ s}^{-1}>$ when running at full speed, and $Exp<0.3\text{ s}^{-1}>$ during garbage collection. Garbage collection is started every $Exp<0.1\text{ s}^{-1}>$ and lasts $Exp<0.4\text{ s}^{-1}>$.

- Draw a state machine based model of the system
- Implement it in a programming language of your choice
- Compute the probability of preparing a new job, executing it at full speed, and running the task during garbage collection.
- Determine the throughput of the system (how many new jobs per second are started).