# Machine Failure with Jobs

## Main Component

### Entities/Attributes/Methods

#### Job



* Each Job is assigned one amount of “work” to be performed. This is decremented by the creditWork() method, which decrements remainingTime by the elapsed time for that Job.
* In the Event Graph, remainingTime is abbreviated “RPT”

#### Machine



* Each Machine has an initial time to failure, but after each repair it is assigned a new time to failure
* The decrementTimeToFailure method decrements timeToFailure by the Machine’s elapsedTime
* In the Event Graph, timeToFailure is abbreviated TTF

|  |  |
| --- | --- |
| Parameters allM = array of machine entities, representing each machine in the shop  r = # repair people  = times to Failure  = times to Repair | State Variables q = queue of waiting jobs, (empty)  am = queue of available machines (initially containing each of the machine entities in the allM array)  fmq = queue of failed machines (empty)  W = time in system for jobs (NaN)  R = # available repair people (r) |

## Notes

* The remaining processing time attribute (“RPT”) of each job is set in the JobCreator component
* In the Event Graph, expressions such as “s.TTF = tF” are shorthand for “s.setTTF(tF)”; similarly, “j.RPT -= j.elapsedTime” is shorthand for calling the getter for elapsedTime, getElapsedTime().
* The EndProcessing event updates the machine’s time to failure (TTF) by the elapsed time, which is counted from the timestamp at the StartProcessing event.
* Similarly, at a Failure event, the job’s remaining processing time is updated by the elapsed time since the timestamp at StartProcessing

### Event Graph



## Job Arrival Process

### Parameters

{tA} – interarrival times

{tS} = processing time for jobs.

### Event Graph (Job Arrival Process)



## Listeners

