# Written Assignment 5

1. Jobs arrive to a facility with *m* machines for processing, waiting in a queue if no machine is available upon arrival. Each machine experiences failures after a certain amount of *processing* time (*not* “calendar time”). That is, each machine has a certain number of hours it can spend processing jobs before it fails; the time a machine is idle does not “count” towards when it eventually fails. The means that a machine failure will only occur when it is processing a job. Upon a machine failure, the job being processed gets “credited” with the amount of work that has been performed and is returned to the front of the queue (assume that this takes a negligible amount of time). In that case, if another machine is available for processing, then it may start immediately. Failed machines wait for availability of one of *r* repair people. Job processing times, machine times to failure, and repair times are all given by (different) random sequences.

To be clear, in this situation machines only fail when processing parts; the times when they are idle do not “count” towards failure. That is, if *tF* is the time to failure for a machine, then it will fail after *tF* units of time spent processing jobs, *not* simply after *tF* unitsofsimulatedtime.

Formulate an Event Graph model for this situation.[[1]](#footnote-1)

Your model must include component for the part arrivals and a separate one for the facility. Be sure to include the listener (or adapter, if appropriate) diagram.

1. Hint: use Entities to represent the jobs and define additional attribute(s) on the job Entity type. [↑](#footnote-ref-1)