CS 115 Computer Simulation, Assignment #2 – Train Unloading Dock (again)
Due at the start of the 12th lecture of the quarter.

In this assignment, you will write a simulation of a train unloading dock. The system being modeled is *exactly* the same as that described in assignment 1, except this time you will write your simulation using the *process interaction* model, in any special-purpose simulation language or library that supports it. (Previously we used the **CSIM** language, but you can use any special-purpose system so long as it uses the process interaction model and we can run/test it on openlab**; SimPy** is likely easiest.) As with Assig. #1, it will be tested for output correctness on the ICS openlab Linux computers.

The input and output specifications remain the same; we would like to be able to run your code with various parameters and see the output. Output the same list of statistics at the end of your simulation as specified in Assignment #1. Contrary to A1, you should use **separate random number streams for each** of the random processes (train arrivals, train unloading times, remaining crew time, replacement crew travel time).

The grading gu but thoughtful write-up describing why tests) also remain the same. The late the Unix "submit" command as before

In addition, you imulation(s):

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b) Compu confidence. How many r our simulation, each time w a width which is less than 1%

These statistics times; or, if you are clever, it can all be intervals are supported by your s ions **reset, permanent_table,** M User Manual discussing confider own). Note also that if you do it this way imulations and combine them by h ty queue at the beginning of each b

In addition, use

1) At what average inter-arrival time does the system become overloaded? That is, leaving all distributions the same except the train arrival rate, how small can the average inter-arrival time be before the system becomes overloaded? How did you determine whether the system was overloaded or not?
2) Does your system overload at the same rate of train arrivals as your first assignment? If it does not, explain why not (which means that at least one of your simulations has a bug).
3) **(Bonus 10%):** Provide an analytical estimate for the maximum train arrival rate (or equivalently, the minimum average inter-arrival time), if all other values and distributions remain as they are. How close does your analytical formula agree with the simulated one(s) above? If they disagree, why? Which is more accurate?