

Norwegian University of Science and Technology

TPK4186

Advanced Tools for Performance Engineering

Assignment 3- A production facility

SUBMITTED BY: - KRISHNAN GOPAKUMAR NAIR

August 07, 2020



Norwegian University of
Science and Technology

Introduction

The elements in the facility is coded as three entities, units, chains and facility, where units consists of items like (HPS-A, DEH-A etc.), the chains include the elements like separators, compressor and dehydrator units and the facility encompasses all the entities. These are coded in the core module as different classes. After that, the working is coded as a Markov chain and is simulated using the simulator module. The required statistics are evaluated, and the output is saved as an html file.

Modules Implemented

The different modules implemented in the program are: -

Core

The function of this module is to create the elements of the production facility. This module consists of the classes required to create different elements like units, the sub-systems and facility. Functions are also implemented to return the attributes of the different elements.

Simulator

This module performs the calculation that are needed to simulate the Markov chain, carry out Monte-Carlo Simulation and assess the required statistics.

HTMLInterface

This module helps to present the results in an html file.

Main

This is used to execute the program in the sequence needed.

Points to be noted

- When the facility capacity becomes 0, it is considered that there is no point in running the other components that are not failed and hence when assessing production loss by each unit, when the capacity is zero it is assumed that none of the components are producing and hence all has production loss in this state.
- To address for the condition of only one repair crew, the code needs to be commented in and the older one should be commented out in the simulator module. It is also commented in the code.
- The problem was first carried out as explained in the class, however it proved some difficulty and hence it was changed.

Conclusion

All the functionalities that were asked is believed to be implemented in the script.