

Repair Workshop Queue System Modification Using Priority Scheme

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Abstract : In this paper, a modification on repair workshop queuing system using multi priority scheme was carried out. Chi square goodness of fit test was used to determine the random distribution of the inter arrival time and service time of crankshafts that come for maintenance in the workshop. The chi square values obtained for all the prioritized classes show that the distribution conforms to Poisson distribution. The mean waiting time in queue results of non-preemptive priority for 1st, 2nd and 3rd classes show 0.066, 0.09, and 0.224 day respectively, while preemptive priority show 0.007, 0.036 and 0.258 day. However, when non priority is used, which obviously has no class distinction it amounts to 0.17 days. From the results, one can observe that the preemptive priority system provides a very dramatic improvement over the non preemptive priority as it concerns arrivals that are of higher priority. However, the improvement has a detrimental effect on the low priority class. The trend of the results is similar to the mean waiting time in the system as a result of addition of the actual service time. Even though the mean waiting time for the queue and that of the system for no priority takes the least time when compared with the least priority, urgent and semi-urgent jobs will terribly suffer which will most likely result in renegeing or balking of many urgent jobs. Hence, the adoption of priority scheme in this type of scenario will result in huge profit to the Company and more customer satisfaction.

Keywords : queue, priority class, preemptive, non-preemptive, mean waiting time

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