CAOS ASSIGNMENT 4 (SCHEDULING ALGORITHMS)

<u>DEADLINE - 29/10/2017(23:59:59 IST)</u>

Simulate the following CPU scheduling algorithms using C/JAVA and **print the average waiting time and turnaround time for each process**. Assume that the processes arrive based on poisson distribution and their CPU burst times are exponentially distributed.

(1) FIFO
(2) SJF
(3) Round robin
(4) Priority based Scheduling
(5) Multilevel Queues
(6) Multilevel Feedback Queues

NOTE :
(1) Your program will be running for a fixed interval of time. During which processes will be generated. Your code should be able to handle all the processes according to their arrival time and burst time provided.
(2) Arrival time for the process will be generated on the basis of **poisson distribution**.
(3) Burst time for the process will be generated on the basis of **exponential distribution.**
(4) Generate priority of the processes randomly on the scale of 1-10 wherever required for the scheduling algorithm (1 is highest priority while 10 being the lowest).
(5) The only input is initial running time for the program (i.e., 1 min 3 min, 5 min or 10 min etc)
(6) Time Quantum for round robin should be "2 units".

<u>REFERENCES</u>

<u>POISSON DISTRIBUTION</u>
The formula for the Poisson probability mass function is

$$p(x; \lambda) = \frac{e^{-\lambda}\lambda^x}{x!} \text{ for } x = 0, 1, 2, \cdots$$

λ the average number of events in the given time interval.

X takes values 0,1,2,....no of times event can occur(process to be executed by CPU)

<u>EXPONENTIAL DISTRIBUTION</u>
The probability density function (pdf) of an exponential distribution is

$$f(x; \lambda) = \begin{cases} \lambda e^{-\lambda x} & x \geq 0, \\ 0 & x < 0. \end{cases}$$