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QUIZ TEST FOR SMS DATED 11 NOV, 2009

1. Cloud Computing is defined as a pool of virtualized computer resources (mainly processing facility) and its use by developing self-recovering, highly scalable programming models that allow workloads to recover from many inevitable hardware/software failures. In this situation a particular cloud computing facility comprises of the following system components (conceptual level model components):
i) Number of virtual processor is 2
ii) Any incoming task (i.e., job) goes to the processor having least queue-length and in case of a tie it goes to the first processor only.
iii) Service provided by the processors follows FIFO rule if the job requires service time, s <= 0.5 sec.s otherwise it follows round robin rule.
iv) successive Inter-arrival times of jobs are 0.34, 0.87, 0.45, 0.96, 0.16, 0.51, 0.97, 0.12, 0.41, 0.94
v) successive service times required for the successive jobs are 0.44, 0.34, 0.3, 0.35, 0.4, 0.6, 0.12, 0.04, 0.45, 0.8
Find average response-time of jobs and time average of queue-length at first and second processors. Also find principle of generation of service times and inter-arrival times of jobs (means whether it follows stochastic principle or deterministic principle following logistic feedback iterator of chaos).

2. A 2 dimensional lattice (i.e., grid), G of size 4x4 boxes are filled up and rescaled by the following chaos principle:
i) The chaos logistic iterative simulator generates successive numbers 0.35, 0.85, 0.45, 0.96, 0.16, 0.51, 0.97, 0.12, 0.41, 0.94.
ii) Initially we consider all the grid box-values as zero. Seed point (i.e., starting point within the box) is G(2,3) which takes a value 1 and the simulation starts from here only.
iii) At each iteration we fill up one box (i.e., assign box-value as zero) looking at the corresponding number (as given above) generated by chaos simulator.
iv) Box filling rule: a) Initially the seed point will be considered as current point, otherwise the latest filled up box will be considered as current point; b) for range of number-values 0 to 0.25, >0.25 to 0.5, >0.5 to 0.75 and >0.75 to 1 we fill left, upper, right and lower box adjacent to the current box respectively, c) refilling of already occupied box is allowed.
v) Find the area of the grid, G, A1 by counting number of filled up boxes only within it.
vi) Resize the Grid to another grid, H of size 2x2 by considering a scale 2 (whereas for the grid, G the scale or yard stick was 1) with a principle: if rescaled box of grid H of size 2x2 boxes of grid G is found to contain at least 1 filled up box, it will be assigned a value 1 otherwise 0.
vii) Since grid H gives rescaled description of the same objet (i.e., filled up area) of grid G, calculate its area A2 also.

Rescaling of objects within a lattice or grid following above principle is generally referred as self-organization of fractal objects. Find the fractal dimension of this object for its area.

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