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Emerging Network Technologies

Tutorial

Faculty of Architecture, Computing and Engineering (FACE)

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1.0 INTRODUCTION AND OBJECTIVES OF THE EXERCISES

This tutorial main objective is to allow you to gather information and gain more knowledge and understanding of simulation systems; how they operate, their purposes and in what situation they are appropriate to use.

Use textbooks and the Internet to research and explain the following as they relate to simulations:

1. Discrete system
2. Continuous system
3. Deterministic models
4. Probabilistic models
5. Linear and Nonlinear models
6. Statistical models
7. Queueing models
8. Stochastic models
9. State
10. Dynamic

From the information gather, which of the following relates to the kind of simulations carried out in Computer networks and Communications. Justify your answer.

11. Explain the difference between these two techniques:

- a. Continuous-event simulation
- b. Discrete-event simulation.

Can both techniques used in carrying out computer networks and communications simulations tasks? Justify your answer

12. From your you have learnt about simulations and the kind of simulations system used in computer networks and communications which simulation model or models would you categorise the following simulation software/tools and state why:

- a. Matlab/Simulink
- b. NetSim and Riverbed Modeler (former OPNET)

13. Explain the following distributions and state when it is appropriate to use them:

- a. Statistical distribution
- b. Discrete distribution
- c. Continuous distribution

14. What type of distribution are the following? Place a **tick** at the correct distribution

Types	Statistical	Discrete	Continuous
Uniform			
Gaussian			
Raleigh			
Exponential			
Pareto			
Poisson			
Geometric			
Binomial			
Bernoulli			
Correlation and Covariance			
Joint and Marginal			
Cumulative Density Functions			
Probability Density Functions			
Discrete versus Continuous			

From the above distributions which types are appropriate to use for your model/design in; list them and state why:

Simulink	NetSim and Riverbed Modeler