

Simulation and Modelling Practical

1. WAP to generate 50 random numbers using Mixed Congruential Method where $X_0=11$, $m=100$, $a = 5$ and $c = 13$.
2. WAP to generate 50 random numbers using Multiplicative Congruential Method where $X_0=13$, $m =1000$, $a = 15$ and $c = 7$.
3. WAP to implement (i) Kolmogorov – Smirnov test and (ii) Chi-Square Test
4. WAP to implement (i) Autocorrelation Test, (ii) Poker Test
5. Write a program to determine point estimation and its bias for a sample of data with given population mean.
6. Write a program to determine interval/ confidence interval estimation for a sample of data with given population mean.
7. Write a program to implement markov chain to predict weather condition.
8. Write a program to estimate the value of PI using Monte Carlo Simulation.
9. Write a program to estimate the area under the curve using the Monte Carlo Sin
10. Write a program to calculate measures of a M/M/1 Queue for a given value of Arrival Rate and Service Rate.
11. Consider a machine tool in a manufacturing shop is turning out parts at the rate of one every 10 minutes. As they are finished, the parts go to an inspector, who takes 7 ± 3 minutes to examine each one and rejects about 10% of the parts. Develop a block diagram and write the code for simulating the above problem using GPSS, and also explain the function of each block used in the block diagram in detail. (Model 1 to 5 from Gordon Book)
12. Write a GPSS model to simulate a barber shop where each costumer enters the Shop every 10 ± 2 minutes and a barber takes 13 ± 2 for a haircut. Run the simulation for 1 hour and prepare the report.