



Answer the following questions

1. Let the following table contains all the future arrivals A_i , Landings L_i and departures D_i events in a single runway aircraft (single-server queue)

Fight	A_i	L_i	D_i
F1	1	4	8
F2	3	7	11

- i. Develop a conceptual model for the above problem
 - ii. Develop a specification for your conceptual model
2. Find the pseudo random numbers generated by the Von Neumann's Midsquare method starting with the seed 61.
3. Let X be exponential random variable $exp(\lambda)$ and $Y = \sqrt{X}$, $X > 0$
Find $F_Y(Y)$
4. Suppose X_i for $i=1,2,3,4$ are independent random variables, with mean μ and standard deviation σ . Let $V = X_1 - X_2 + X_3$ and $W = X_1 - X_2 + X_3$. Find
- a. The covariance $Cov(V, W)$
 - b. The Correlation $\rho_{V,W}$
 - c. How do you interpret the value of the correlation

Best Wishes,
Areeg Abdalla