Simulating a mobile network
Lab 03

In this mini project, you are required to simulate a mobile network in a selected area of 10kmx10km. You are required to deploy three base stations in the given area such a way that it minimizes the interference to each other.

Consider the minimum received signal strength for mobile users are -110dBm. You may accordingly adjust the transmit signal strength of the Base station.

Deploy 100 mobile users and provide them a predefined mobility pattern. Use the path – loss model for calculating the power.

Attachment to a Base station:

Mobile users will attached with the Base station based on the SINR.

SINR

The SINR is the useful signal in a transmission divided by the interference plus noise, see equation 5.3. The SINR is presented in dB.

$$SINR = \frac{Useful\ signal\ power}{Interference} \tag{5.3}$$

Resource allocation:

Consider only 20 users shall connect to a base station at any given time. Create a random process to generate calls and terminate calls assuming only 25% of users are active at any given time.

Tasks:

I. Investigate the impact of signal strength by incrementally increasing the signal power at the base station.
II. What is the optimal signal strength the base station may operate at?