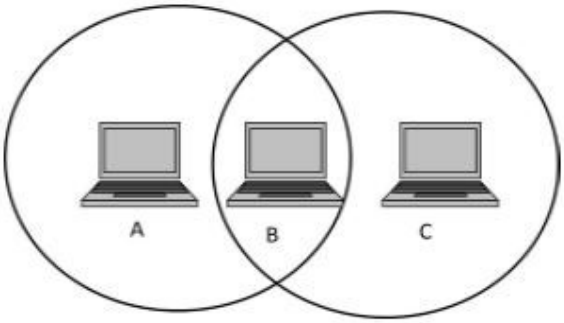
Experiment - 2

Name: **Ansari Ushair** **Roll no : 14DCO53**
Class : **BE.CO** **Batch : 03**

Aim : **Illustration of Hidden Terminal Problem (NS-2)**

#Theory

- WLAN



A significant difference between wired and wireless LANs is the fact that, in general a fully connected topology between the WLAN nodes cannot b assumed. This problem gives rise to 'hidden' and 'exposed' station problems.

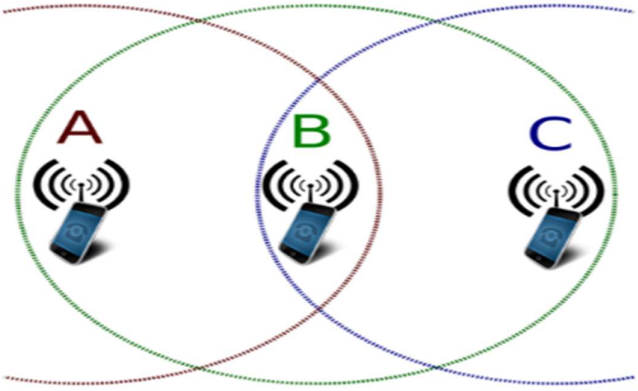
- Hidden Terminal Problem:

A wireless network with lack of centralized control entity, sharing of wireless bandwidth among network access nodes i.e. medium access control (MAC) nodes must be organized in decentralized manner.

The hidden terminal problem occurs when a terminal is visible from a wireless access point (APs), but not from other nodes communicating with AP. This situation leads the difficulties in medium access control sub-layer over wireless networking.

In a formal way hidden terminal are nodes in a wireless network that are out of range of other node or a collection of nodes.

Consider the scenario of wireless networking with three wireless devices (e.g. mobile phones) as shown below.



The transmission range of access point A reaches at B, but not at access point C, similarly transmission range of access point C reaches B, but not at A. These nodes are known as hidden terminals. The problem occurs when nodes A and C start to send data packets simultaneously to the access point B. Because the access points A and c are out of range of each other and resultant they cannot detect a collision while transmitting, Carrier sense multiple access with collision detection (CSMA/CD) does not work, and collisions occur, which then corrupt the data received by the access point B due to the hidden terminal problem.

The hidden terminal analogy is determined as follows

- Terminal C wants to send data to B, terminal C senses a "free" medium (CS fails) and starts transmitting
- Collision at B occurs, A cannot detect this collision (CD fails) and continues with its transmission at B
- Terminal A is "hidden" from C and vice versa

- Solutions

Some other technology that can be employed to solve hidden node problem are: Increase Transmitting Power from the Nodes. With the enhancement of the transmission power of access point can solve the hidden terminal problem by allowing the cell around each mode to increase in size, encompassing all of the the nodes.

Use Omni directional antennas: Since nodes using directional antennas are nearly invisible to nodes that are not positioned in the direction the antenna is aimed at, directional antennas should be used only for very small networks.

Use protocol enhancement software:: Pooling and token passing strategy should be used before start data transformation