Presentation 1: (Wifi in NS3 P1)

- Overview and workflow of default wifi MAC layer in NS3
- How to do important configurations
- Usage of default helpers

Presentation 2: (Wifi in NS3 P2)

- Overview and usage of error and mobility models
- Configuration of attributes of different wifi standards

Presentation 3: (Tracing and Data Collection from Simulation Results P1)

- Walkthrough of how to obtain Network throughput from a simulation result (adopt a network/topology that suits the best for presentation purposes)
- Classes/Functions/Attributes/Tracesources that are to be used
- Logs/trace files that need to be generated
- Calculation of the metric from those logs

Presentation 4: (Tracing and Data Collection from Simulation Results P2)

- Walkthrough of how to obtain packet delivery and drop ratio from a simulation result (adopt a network/topology that suits the best for presentation purposes)
- Classes/Functions/Attributes/Tracesources that are to be used
- Logs/trace files that need to be generated
- Calculation of the metric from those logs and plot graphs

Presentation 5: (Workflow of TCP in NS3 P1)

- How a packet is sent to/received from the application layer and IP layer during sending or receiving of a packet.
- Overview of the TCP header and where to update if you want to add options (e.g. SACK).
- Overview of the major functionalities of RttEstimator Class and how RTT estimation and RTO calculation is done

Presentation 6: (Workflow of TCP in NS3 P2)

- Overview of the major functionalities of TcpSocketBase, TcpSocketState, and TcpCongestionOp and TcpRecoveryOp classes
- Workflow of Different major phases of congestion control (Slow start, congestion avoidance, fast retransmission, and fast recovery) in NS3
  Walkthrough an example congestion control protocol
  [A1 & A2: TCP Vegas, B1 & B2 6-1: TCP NewReno, B1 & B2 6-2: TCP Vegas]

Presentation 7: (Workflow of IPv4 layer and Routing in NS3 P1)

- Various models of routing protocols in NS3 (which ones are for wired, which ones are for wireless, which ones are link-state/distance-vector type routing)
- Basic structure of a routing model (packet, routing-table, routing-protocol, control packets)

Presentation 8: (Workflow of IPv4 layer and Routing in NS3 P2)

- Overview of a routing protocol (A1 & A2: AODV, B1 & B2: DSR)
  - Overview of packet header for this routing and where to update if we want to store additional information
  - Functions that handle data/control packet (Hello, Route Request etc) receive
  - Functions that decide forwarding and how they specify forwarding address
  - Functions that handle routing table update
  - Where data flows from/to TCP Layer and MAC Layer

Presentation 9: (Workflow of Traffic Control Layer in NS3 P1)

- Overview of the workflow of AQM
- High level overview of how AQM is done in NS3. You will find that all the available AQMs inherit the QueueDisc class. You have to give an abstract view of the functions of QueueDisc class.
- Major functionalities of the following classes
  - Queue Disc
  - Queue Disc Factory
  - Packet Filter
  - IPv4 Packet Filter

Presentation 10 : (Workflow of Traffic Control Layer in NS3 P2)

- How to set options in IPv4 header. If you want to store additional information of a packet you might have to use the unused bits of the IPv4 header or the optional fields.
- Walkthrough of an example AQM.
    - [A1 and A2: CodelQueueDisc, B1 and B2: RedQueueDisc]
    - For the assigned example, discuss the configurable parameters and how DoEnqueu, DoDeque, DoDispose and DoPeek functions work.

Notes on the Group Presentations:

1. The presentation will be of 6 minutes + 5 minutes for Q/A. You will be questioned based on your presentation topic. Viva will be taken on an individual basis. Therefore, each student must know the content individually.
2. Prepare your presentation to be as informative and also as understandable and useful to the audience as possible within the given presentation time. Excellent presentations would get bonus marks.
3. Don't go too deep into theory, the target of your presentation is to articulate how the protocols/various aspects are integrated in NS3.
4. It is encouraged that you discuss the topics among yourselves and gather as much information and understanding as possible.
5. Presentation Submission Deadline: **30 January at 8:00 AM.** However, you can still show an updated presentation slide during your presentation.