 **B. P. PODDAR INSTITUTE OF MANAGEMENT & TECHNOLOGY**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**Computer Networks lab-CS692(AY-2017-18)**

**MICRO PROJECT**

1. **Each group is assigned a project topic**
2. **The details of each topic is given in this document. Each group should make any further assumptions if necessary & expand/add any features/functions if they wish to do so.**
3. **Each group should submit the program along with a project document (one per group).**
4. **Online test using file.**

Student should implement the following features)

1. Log in
2. Question answer pair stored in file
3. Question will be displayed to user with answer options.
4. Marks or Grade will be displayed.
5. **Implement BGP routing protocol**

(Student should implement the following features)

1. Enter No of Stations.
2. Enter connectivity details.
3. Print routing tables.
4. **Implement OSPF routing protocol**

(Student should implement the following features)

1.Enter No of Stations.

2.Enter connectivity details.

3.Print routing tables.

1. **Implement RIP routing protocol**

(Student should implement the following features)

1.Enter No of Stations.

2.Enter connectivity details.

3.Print routing tables.

1. **Implement Sliding Window protocol - Selective repeat**

(Student should implement the following features)

1. Server and Client sending data using Sliding window(Selective repeat) of user given window size.
2. Implementation of the case of Lost or Delayed data
3. Implementation of the case of Lost or Delayed Acknowledged
4. **Implement Sliding Window protocol - Go-Back-N**

Student should implement the following features)

1. Server and Client sending data using Sliding window(Go back N) of user given window size.
2. Implementation of the case of Lost or Delayed data
3. Implementation of the case of Lost or Delayed Acknowledged
4. **Implement RSA algorithm for encryption and decryption.**

(Student should implement the following features)

1. RSA (Rivest–Shamir–Adleman) is one of the first [public-key cryptosystems](/home/bppimt/Documents\\x/https://en.wikipedia.org/wiki/Public-key_cryptography" \o "Public-key cryptography) and is widely used for secure data transmission. In such a [cryptosystem](/home/bppimt/Documents\\x/https://en.wikipedia.org/wiki/Cryptosystem" \o "Cryptosystem), the [encryption key](/home/bppimt/Documents\\x/https://en.wikipedia.org/wiki/Encryption_key" \o "Encryption key) is public and it is different from the [decryption key](/home/bppimt/Documents\\x/https://en.wikipedia.org/wiki/Decryption_key" \o "Decryption key) which is kept secret (private). In RSA, this asymmetry is based on the practical difficulty of the [factorization](/home/bppimt/Documents\\x/https://en.wikipedia.org/wiki/Factorization" \o "Factorization) of the product of two large [prime numbers](/home/bppimt/Documents\\x/https://en.wikipedia.org/wiki/Prime_number" \o "Prime number), the "[factoring problem](/home/bppimt/Documents\\x/https://en.wikipedia.org/wiki/Factoring_problem" \o "Factoring problem)".

2. client will send a message in encrypted version.

3. Server will show The original message.

1. **Implement Substitution cipher for encryption and decryption.**

(Student should implement the following features)

1. Substitution cipher, [data encryption](/home/bppimt/Documents\\x/https://www.britannica.com/technology/data-encryption) scheme in which units of the plain text are replaced with other symbols or groups of symbols.

2. client will send a message in encrypted version.

3. Server will show The original message.

**9. Implement a chat forum where more than one clients can chat with each other.**

(Student should implement the following features)

One to one Chatting

Group Chatting

**10.Implement leaky bucket algorithm.**

(Student should implement the following features)

Traffic Shaping : This is a mechanism to control the amount and the rate of the traffic sent to the network.   
Two techniques can shape traffic:

Leaky Bucket :

1.Main working steps

2.When the host has to send a packet , packet is thrown in bucket.

3.Bucket leaks at constant rate.

4.Bursty traffic is converted into uniform traffic by leaky bucket.

In practice bucket is a finite queue outputs at finite rate.

**11. Implement Token bucket algorithm.**

(Student should implement the following features)

**Traffic Shaping :** This is a mechanism to control the amount and the rate of the traffic sent to the network.   
Two techniques can shape traffic:

**Token Bucket :**

Main working steps

In this leaky bucket holds tokens generated at regular intervals of time.

Bucket has maximum capacity.

If there is a ready packet , a token is removed from Bucket and packet is send.

If there is no token in the bucket, packet can not be send.