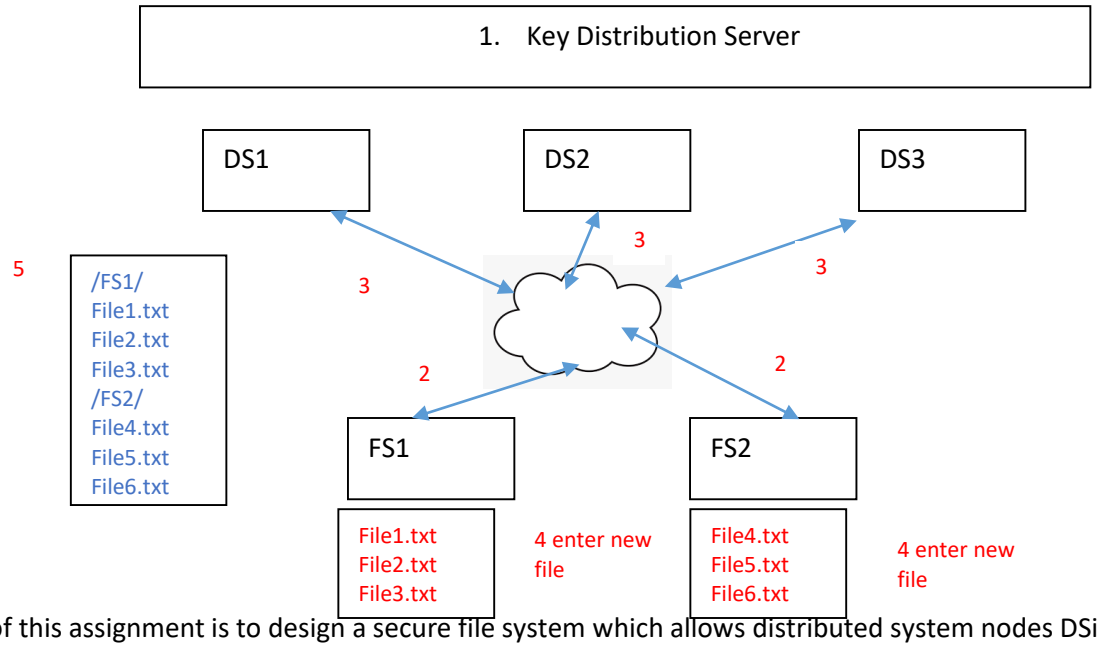
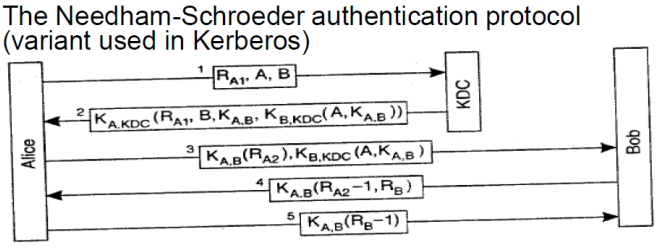
Secure RPC File System



Purpose of this assignment is to design a secure file system which allows distributed system nodes DSi to access the remote files stored on the remote file servers FSi in a secure manner using RPCs.

1. Let all the file server and the distributed nodes be assigned unique ids and share symmetric keys with a Key Distribution Server (KDC)
2. Let the File servers register with the KDC for the files that they store.
3. When the Distributed nodes register with the KDC to get their session keys, they must authenticate with the servers to generate session key using the symmetric key authentication protocol. DSis start with mounting the files in the known FSis as shown in the figure.



4. To enter a new file to the distributed file system FSi must register the file. The file creation must be communicated over RPC to all other DSis as a folder entry seen on the shell.
5. The DSis provide users a shell prompt to be able to type the file commands. using the program must get a terminal window on their screens. Using which they should be able to use the different file commands:
   - i) Pwd – list the present working directory
   - ii) ls – list the contents of the file
   - iii) cp - copy one file to another in the same folder
   - iv) mv – move file from one folder to another
   - v) rm – remove file

vi) cat – display contents of the file

6. Once file is removed or copied it must be reflected in the file server also
7. All above commands must work using RPC, and provide results to the distributed node using RPC only
8. Each time the user on the Distributed node terminal types a command, it must encrypt it using the session key $K_{A,B}$ and then send the RPC information.

Marks Distribution

1. Design document and review Sep 30, 2020 -10
2. File server registration and setup – 10
3. Distributed node registration and authentication with servers to mount files on a shell – 10
4. Each of the commands listed above using RPC– 5 marks each (50)
   i. Pwd – list the present working directory
   ii. ls – list the contents of the file
   iii. cp - copy one file to another in the same folder
   iv. mv – move file from one folder to another
   v. rm – remove file

   Communication for registration and authentication over TCP/IP (10)
5. Demo (20)