1 A. File Retrieval Exercise   5 Marks

Write a Java code or any relevant programming code using Remote Method Invocation (RMI) system, which retrieves a file specified by a Client from the Server. You are expected to follow the following general steps when using the Java RMI or Python Remote Object (Pyro4).

   a) Writing the required remote interface   1 Mark
   b) Implementing the interface   1 Mark
   c) Creating stub and skeleton (Compiling remote interface and its implementation) 1 Mark
   d) Starting the registry mechanism
   e) Writing the main Client and Server programs   1 Mark
   f) Execution of the Client and Server to show the required output 1 Mark

The contents of the retrieved file may be saved in another file or may be printed on the screen.

1 B. Secure File Retrieval Exercise   15 Marks

Modify the code of the exercise 1A and include additional code wherever appropriate so that, the interaction between the Client and Server is secure.
Along with RMISecurityManager, use RSA encryption algorithm to generate the digital signature and for secure Client authentication. The following steps are expected and evaluated as shown.

   a) Creating a key store and generating a pair of public and private keys 3 Marks
   b) Exporting a digital certificate for the above key into a file 2 Marks
   c) Creating a trust store and import the certificate as a trusted certificate 3 Marks
   d) Execution of the final program and presentation   5 Marks

The contents of the retrieved file may be saved in another file or may be printed on the screen.
Upon program execution you are required to explain briefly all the key in-built classes and methods used to implement.   2 Marks

Q. What changes are required to implement the above program in a physical network rather than a single machine?