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// Network Security - Assignment # 2
// by- Harsh & Nishtha
// RSA Encryption


import java.io.*;
import java.security.*;
import javax.crypto.*;
import java.security.spec.*;
import javax.crypto.spec.*;

class RSA {
      public PrivateKey priv;
      public PublicKey pub;

      public void setKeys(String filename) throws
FileNotFoundException, IOException, ClassNotFoundException
      {
             keygen k = new keygen();
             k.setKeyName(filename);
             k.KeyRead();
             priv = k.getprivatekey();
             pub = k.getpublickey();
      }

      public byte[] encryptUsingPub(byte[] plaintext) throws
NoSuchAlgorithmException, InvalidKeyException,
IllegalBlockSizeException, NoSuchProviderException,
BadPaddingException, NoSuchPaddingException
      {
            /* Create the cipher */
            Cipher rsaCipher = Cipher.getInstance("RSA");
            rsaCipher.init(Cipher.ENCRYPT_MODE, pub);
            byte[] ciphertext = null;
            ciphertext = rsaCipher.doFinal(plaintext);
            return ciphertext;
      }

      public byte[] encryptUsingPriv(byte[] plaintext) throws
NoSuchAlgorithmException, InvalidKeyException,
IllegalBlockSizeException, NoSuchProviderException,
BadPaddingException, NoSuchPaddingException
      {
            /* Create the cipher */
            Cipher rsaCipher = Cipher.getInstance("RSA");
            rsaCipher.init(Cipher.ENCRYPT_MODE, priv);
            byte[] ciphertext = null;
            ciphertext = rsaCipher.doFinal(plaintext);
            return ciphertext;
      }

      public byte[] decryptUsingPriv(byte[] ciphertext) throws
NoSuchAlgorithmException, InvalidKeyException,
IllegalBlockSizeException, NoSuchProviderException,
BadPaddingException, NoSuchPaddingException
      {
            Cipher rsaCipher = Cipher.getInstance("RSA");
            rsaCipher.init(Cipher.DECRYPT_MODE, priv);
            byte[] cleartext1 = rsaCipher.doFinal(ciphertext);
            return cleartext1;
```

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	}

	public byte[] decryptUsingPub(byte[] ciphertext) throws
NoSuchAlgorithmException, InvalidKeyException,
IllegalBlockSizeException, NoSuchProviderException,
BadPaddingException, NoSuchPaddingException
	{
		Cipher rsaCipher = Cipher.getInstance("RSA");
		rsaCipher.init(Cipher.DECRYPT_MODE, pub);
		byte[] cleartext1 = rsaCipher.doFinal(ciphertext);
		return cleartext1;
	}

	public static void main (String[] args) throws
NoSuchAlgorithmException, InvalidKeyException,
IllegalBlockSizeException, NoSuchProviderException,
BadPaddingException, NoSuchPaddingException,FileNotFoundException,
IOException, ClassNotFoundException
	{
		RSA app = new RSA();
		app.setKeys("CustomerKey");
		// Cleartext
		byte[] cleartext = null;
		cleartext = "This is harsh".getBytes();
		String text = new String(cleartext);
		System.out.println("the original cleartext is: " + text);
		System.out.println("the encrypted text is: " +
app.encryptUsingPriv(cleartext));
		String text2 = new String(app.decryptUsingPub
(app.encryptUsingPriv(cleartext)));
		System.out.println("the final cleartext is: " + text2);
	}
}
```