Introduction to Information Security

The objective of the course is to familiarize students with basics Information Security and information security awareness.

Outline of the course

S.No.	Topic	Minimum nos. of Hours
1	Introduction to information security	4.
2	Number Theory	4.
3	Cryptography	8.
4	Key Management	4.
5	Security Engineering	4.
6	Network Security	4.
7	System Security	4.
8	Security Analysis of Protocols	4.
9	Public Key Infrastructure (PKI)	4.
10	Steganography	3.
11	Information Security Audit and Assurance	2.
	Total	35

Lecture : 45 hours
Practical : 45 hours
Total : 90 hours

Detailed Syllabus

1) Introduction to information security **(4 Hr.)**

2) Number Theory **(4. Hr.)**

3) Cryptography **(8 Hrs.)**

4) Key Management **(4 Hrs.)**

5) Security Engineering **(4 Hrs.)**

6) Network Security **(4 Hrs.)**

7) System Security **(4 Hrs.)**

8) Security Analysis of Protocols **(4 Hrs.)**

9) Public Key Infrastructure (PKI) **(4 Hrs.)**

10) Steganography **(3 Hrs.)**
11) Information Security Audit and Assurance **(2 Hrs.)**

Recommended Books:

Assignments:

Assignment 1

Write a program that can create a concordance (A concordance lists every word that occurs in the document, and for each word it gives the line number of every line in thedocument where the word occurs).The document should be read from an input file, and theconcordance data should be written to an output file. The names of the input file and outputfile should be specified as command line arguments when the program is run.

Assignment 2

Assume that a bank maintains two kinds of accounts for customers, one called as savings account and the other as current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimumbalance and if the balance falls below this level, a service charge is imposed.
Create a class **account** that stores customer name, account number and type ofaccount. From this derive the classes “cur_acct” and “sav_acct” to make themmore specific to their requirements. Include necessary functions in order toachieve the following tasks:
a) Accept deposit from a customer and update the balance.
b) Display the balance.
c) Compute and deposit interest.
d) Permit withdrawal and update the balance.
e) Check for the minimum balance, impose penalty, necessary, and updatethe balance.

Assignment 3

Write a Java Program to find all the strings that match a given Regular Expression in one or more files or other sources.

Assignment 4

Write a Java Program to create three new types of exceptions. Write a class with a method that throws all three. In main( ), call the method but only use a single catch clause that will catch all three types of exceptions.

Assignment 5

Write an applet with a JTextArea where the user can enter some text. The applet should have a button. When the user clicks on the button, the applet should count the number of lines in the user's input, the number of words in the user's input, and the number of characters in the user's input. This information should be displayed on three labels in the applet.

Assignment 6

Design a Calculator using Java Applet/Swing. The display should have all the digit buttons along with buttons for operations +,-,*, / and =. There is a designated panel to show the current results. If a digit button is clicked, the number is displayed on the panel. If anoperator button is clicked the operation is to be performed. The calculator can operate in two modes.

a. When, the operator buttons are pressed the intermediate results should be displayed.

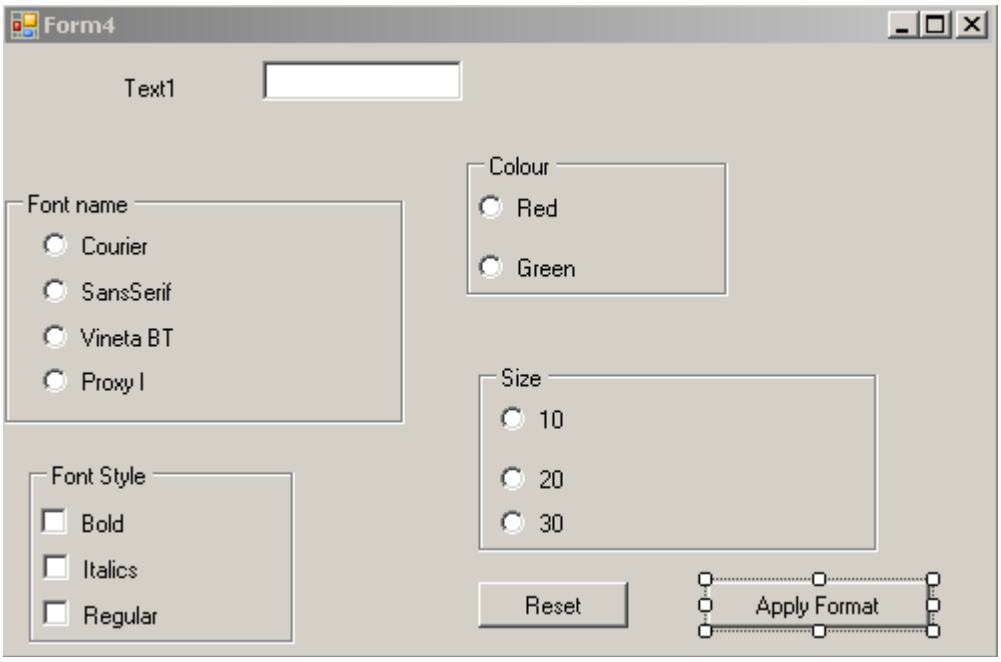
b. The operations can take in any number of arguments and the final result is displayed only when the = button is pressed.

Assignment 7

Write a little applet that lets the user draw polygons. As the user clicks a sequence ofpoints, count them and store their x- and y-coordinates in two arrays. These points will bethe vertices of the polygon. Also, draw a line between each consecutive pair of points togive the user some visual feedback. When the user clicks near the starting point, draw thecomplete polygon. Draw it with a red interior and a black border. The user should then beable to start drawing a new polygon. When the user shift-clicks on the applet, clear it.

Assignment 8

Create the following form using java applet/Swing and the text in textbox should be formatted as per the selections:



Assignment 9

Create a layout prototype of Ms-Paint in Java swing using menus and layout management. You can also add functionality to some of the menu item/toolbar items.

Assignment 10

Create an image from an Array of Color-Indexed Pixel Values in the byte buffer. A 16-color index color model is used to represent the pixel colors.