SCHOOL OF COMPUTER ENGINEERING

KIIT DEEMED TO BE UNIVERSITY

Web Technology Lab Manual

IT-2094

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Web Technology
Lab Syllabus

Lecture :	*-0*	*Internal Assessment Marks:*	*60*
Tutorial :	*-0*	*End Term Marks*	*40*
Practical:	*- 3 Hrs/Week*	*Credits*	*4*

Objectives:

□ *To design a front end application using various html tags, frames, style sheets, tables and forms.*

□ *Understand the fundamentals of java programming including defining classes invoking methods, using class libraries etc.*

□ *Able to write a computer program in java, compile debug and run it to solve specific problem.*

□ *To introduce the concept of inheritance, interface, package, String, Exception and event handling and collection framework.*

□ *To design an interactive application in GUI using java applet and event handling.*

Course Outcomes:

1. *Able to understand the concept of HTML & create a web page using html and style sheet etc.*
2. *Able to understand and implements the object oriented programming concept using java.*
3. *Able to created classes, package and interface using java.*
4. *Able to implements inheritance, string, exception and event handling in java.*
5. *Able to use predefined data structure using collection classes, develop and deploy applet in java.*

Program Outcomes

(a) Ability to apply knowledge of mathematics, science, engineering, computing to solve complex problems.

(b) Ability to identify, analyze and solve complex software and hardware engineering problems.

(c) Ability to design, implement and evaluate various computer based systems to meet the needs of the society by considering public health, safety, cultural, societal and environmental issues.

(d) Ability to design & conduct experiments and interpret data.

(e) Ability to use techniques, skills and modern engineering and IT tools to various relevant engineering practices.

(f) Ability to examine and understand the impact of societal, health, safety, legal and cultural concerns at local, national and international levels relevant to engineering practices.

(g) Ability to recognize the sustainability and environmental impact of the computer-based engineering solutions.

(h) Ability to follow prescribed norms, responsibilities and ethics in engineering practices.

(i) Ability to work effectively as an individual and in a team.

(j) Ability to communicate effectively through oral, written and pictorial means with engineering community and the society at large.

(k) Ability to recognize the need for and to engage in life-long learning.

(l) Ability to understand and apply engineering & management principles in executing projects.

Mapping of CO to PO

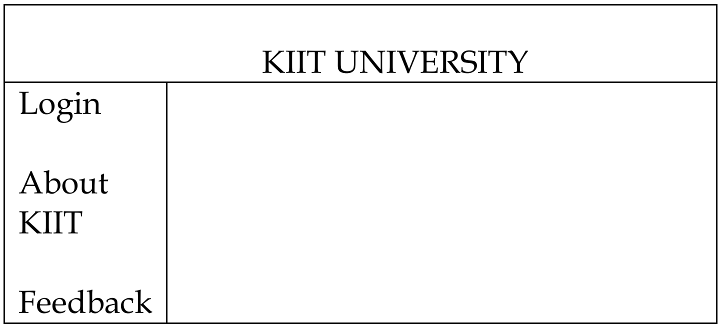
COs POs	a	b	c	d	e	f	g	h	i	j	k	l
Able to understand the concept of HTML & create a web page using html and style sheet etc.	M	M	H	H					M	H		
Able to understand and implements the object oriented programming concept using java.	H	H	H	M	M					M		
Able to created classes, package and interface using java.	M	M	H	H	M					M		
Able to implements inheritance, string, exception and event handling and collection classes in java.	M	H	M	H	H							
Able to use collection classes, develop and deploy applet in java.	M	M	M	M	H				H		M	

List of Assignments

Lab1- Topic - Use of basic text formatting tags in HTML
Example –Design a user registration form using basic text formatting tags.

Lab 2 – Topic -Creation of List & Frames in HTML
-Use of style sheet in HTML

Example – 1 Create a web page as follows: having 3 frames. KIIT University will move in marquee in the top frame. In the left frame 3 hyperlinks named Login, About KIIT and Feedback will be there and clicking on that the desired result will be displayed in the main frame. **Output:-**



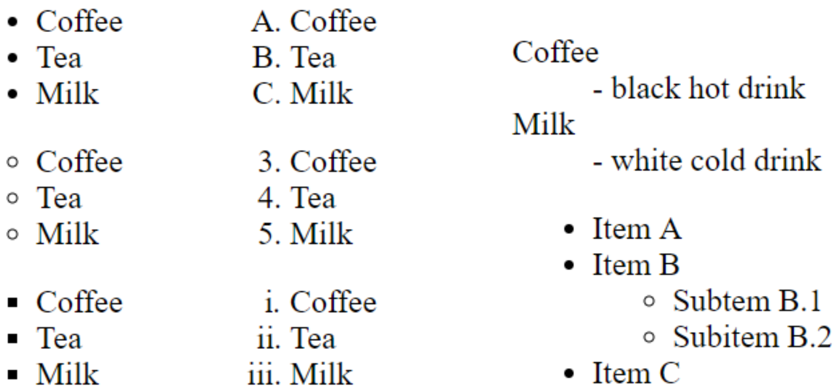
KIIT UNIVERSITY

Login

About KIIT

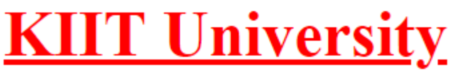
Feedback

Example – 2 Create a web page using Ordered, Unordered, Directory and Nested List which will display the output as follows:



```
•  Coffee        A. Coffee
•  Tea           B. Tea          Coffee
•  Milk          C. Milk                - black hot drink
                                 Milk
○  Coffee        3. Coffee              - white cold drink
○  Tea           4. Tea
○  Milk          5. Milk              • Item A
                                      • Item B
▪  Coffee         i. Coffee                 ○ Subtem B.1
▪  Tea           ii. Tea                    ○ Subitem B.2
▪  Milk         iii. Milk             • Item C
```

Example – 3 Design a web page using inline style applied on <h> tag using style attribute which will display the following output:



KIIT University

Example – 4 Design the same web page as shown in Example – 3 using internal style sheet.

Example – 5 Design the same web page as shown in Example – 3 using external style sheet.

Lab3 –Topic - Creation of tables in HTML
-Creation of form in HTML

Example – 1 Create a webpage to display the following student table.

Student Table

Roll No	Name	Subjects Wise Marks		Average	SGPA	Grade
17069	Arun Sahu	Sub - 1	40	60	6	B
		Sub - 2	70			
		Sub - 3	80			
		Sub - 4	50			

Example – 2 Design the following table using colspan and rowspan

<table>
<tr><td colspan="3">A</td></tr>
<tr><td rowspan="2">B</td><td colspan="2">C</td></tr>
<tr><td>D</td><td>E</td></tr>
</table>

Example – 3 Design a user registration form in HTML.

Lab4 – Topic – Writing, compiling and executing a simple Java program

- Giving input to the program in Java
- Use of control statements in Java
- Use of iteration statement in Java

Examples -

1. Program to print your name, roll no, section and branch in separate lines.
2. Program to print the corresponding grade for the given mark using if..else statement in Java
3. Program to print the corresponding week day for the given day no. of the current month using switch..case statement in Java
4. Program to check a user entered number is palindrome or not.
5. Write a program in Java to take first name and last name from user and print both in one line as last name followed by first name.

Lab 5 – Topic – Array in Java

- Command line arguments in Java
- static and final modifier in Java

Examples -

1. Find the largest among 3 user entered nos. at the command prompt using Java
2. Accept 10 numbers from command line and check how many of them are even and how many odd.
3. Program to sort the user entered list of numbers of any size
4. Program to find no. of objects created out of a class using 'static' modifier.
5. Find the no. of occurrence of each element in an user entered list of nos.
6. Find sum of each diagonal (left & right) elements separately of a user entered 3 X 3 matrixes in Java.

Lab 6 – **Topic** – class and objects in Java
-method overloading in Java
-constructor overloading in Java

Examples -

1. Write a class file – box with three data members(length, width, height) and a method volume() . Also implement the application class Demo where an object of the box class is created with user entered dimensions and volume is printed.
2. Write a program to overload subtract method with various parameters in a class in Java
3. Write a program which will overload the area () method and display the area of a circle, triangle and square as per user choice and user entered dimensions.
4. Write a program in Java to define a class Rectangle having data member: length and breadth; to calculate the area and perimeter of the rectangle. Use member functions to read, calculate and display.
5. Write a program in java to input and display the details of n number of students having roll, name and cgpa as data members. Also display the name of the student having lowest cgpa.
6. Write a program to calculate area according to user input, whether it is circle, square or triangle (Menu Driven).
7. Write a program in Java to define a class Number with appropriate data members and member functions to input n number of integers and swap the biggest and smallest elements. Use member functions read(), swap() and display().

Lab 7 – **Topic** – Single level inheritance in Java

- Multi-level inheritance in Java
- Method Overriding
- Dynamic Method Dispatch

Examples -

1. A plastic manufacturer sells plastic in different shapes like 2D sheet and 3D box. The cost of sheet is Rs 40/ per square ft. and the cost of box is Rs 60/ per

cubic ft. Implement it in Java to calculate the cost of plastic as per the dimensions given by the user where 3D inherits from 2D.

2. Illustrate the execution of constructors in multi-level inheritance with three Java classes – plate(length, width), box(length, width, height), wood box (length, width, height, thick)
3. Program on Dynamic Method Dispatch.
4. Write a program in java to define a class Shape which has data member 'area' and a member function showArea(). Derive two classes Circle and Rectangle from Shape class. Add appropriate data members and member functions to calculate and display the area of Circle and Rectangle.
5. Write a program to create an Account class containing acc_no, balance as data members and disp() to display the details. Inherit it in Person class with all mentioned data members and functions. Person class also has name and aadhar_no as extra data members of its own. Override disp() function. Create 5 persons' details.
6. Write a program in java using inheritance to show how to call the base class parameterized constructors from the derived class using super.

Lab 8 – Topic – Abstract classes in Java

- Interface in Java

Examples -

1. Illustrate the usage of abstract class with following Java classes –
   i>An abstract class 'student' with data member roll no, reg no and a abstract method course()
   ii>A subclass 'kiitian' with course() method implementation
2. Define an interface Motor with a data member –capacity and two methods such as run() and consume(). Define a Java class 'Washing machine' which implements this interface and write the code to check the value of the interface data member thru an object of the class.
3. Define an interface with three methods – earnings(), deductions() and bonus() and define a Java class 'Manager' which uses this interface without implementing bonus() method. Also define another Java class 'Substaff' which extends from 'Manager' class and implements bonus() method. Write the complete program to find out earnings, deduction and bonus of a sbstaff with basic salary amount entered by the user as per the following guidelines –

earnings →	basic + DA (80% of basic) + HRA (15% of basic)
deduction PF →	12% of basic
bonus →	50% of basic

Lab 9 – Topic – Package in Java

- String handling in Java

Example -

1. Define two packages as – General and Marketing. In General package define a class 'employee' with data members as empid(protected), ename(private) and a public method as earnings() which calculate total earnings as

   earnings → basic + DA (80% of basic) + HRA (15% of basic)

   In Marketing package define a class 'sales' which is extending from 'employee' class and has a method tallowance() which calculates Travelling Allowance as 5% of total earning. Write the programs to find out total earning of a sales person for the given basic salary amount and print along with the emp id.
2. Write a program to perform following operations on user entered strings –
   i) Change the case of the string
   ii) Reverse the string
   iii) Compare two strings
   iv) Insert one string into another string

Lab 10 – Topic – Exception handling in Java

- ArithmaticException, ArrayIndexOutofBoundsException, NullPointerException
- User defined exception in Java

Examples-

1. Write a Java program to generate an ArrayIndexOutofBoundsException and handle it using catch statement.
2. A subclass exception must appear before super-class exception. Justify this with suitable Java programs.
3. Write a Java program to illustrate try..catch..finally block.
4. Write a Java class which has a method called ProcessInput(). This method checks the number entered by the user. If the entered number is negative then throw an user defined exception called NegativeNumberException, otherwise it displays the double value of the entered number.
5. Q1. Write a program to create user defined exceptions called HrsException, MinException and SecException. Create a class Time which contains data members hours, minutes, seconds and throw the user defined exceptions if hours (>24 & <0),minutes(>60 & <0),seconds(>60 & <0).
6. Q2. Create an user defined exception named Check Argument to check the number of arguments passed through command line. If the number of arguments is less than four, throw the Check Argument exception, else print the addition of squares of all the four elements.
7. Q3. Write a java program to create Account with 500 rupee minimum balance, deposit amount, withdraw amount and also throws LessBalanceException which returns the statement that says withdraw amount is not valid.
8. Q4. Write a java program to implement a stack class having methods push () and pop(). These methods must be designed to throw user defined exception when the stack is empty or full.

9. Q5. Write a java program to justify “A subclass exception must appear before super-class exception”.

Lab 11 –Topic – Applet in Java

- File handling in Java

Examples-

1. Design an applet to display the user information such as Roll No., Name, Branch and Section in separate lines.
2. Design an applet to display a colored smiley.
3. Design an applet with following components on it – Label, Textbox, Text area, Checkbox, Radio button and Button.
4. Write a program in Java to copy the content of a given file to another user entered file using character stream.
5. Design an applet with one label, one text field and one button so that on clicking the button it will check and display in the applet whether the value entered in the text field is even or odd or blank.
6. Write an applet that places a rectangle, a rounded rectangle, a 3D rectangle and fill rectangle of random sizes and colors inside the applet’s visible area.
7. Write a program in Java to design an applet with three text boxes - input1, input2 , result and two buttons - Add, Sub. On clicking of any of these buttons, the corresponding operation should be performed with input1 and input2 and the result should be displayed in the result box.
8. Write a program in Java to copy the content of a given file to another user entered file using character stream.
9. Implement an applet which consists of two buttons named as RED and BLUE. When the user clicks RED button, a message “you have passed RED” will be displayed in the applet window. Similarly when the user clicks BLUE button, a message “you have pressed BLUE” will be displayed in the applet window.
10. Write a java program to compare two binary files, printing the first byte position where they differ.
11. Write a java program to capitalize first letter of every word in a file.

Lab 12 – **Topic -**AWT & event handling in Java & Collection Framework – Util Package

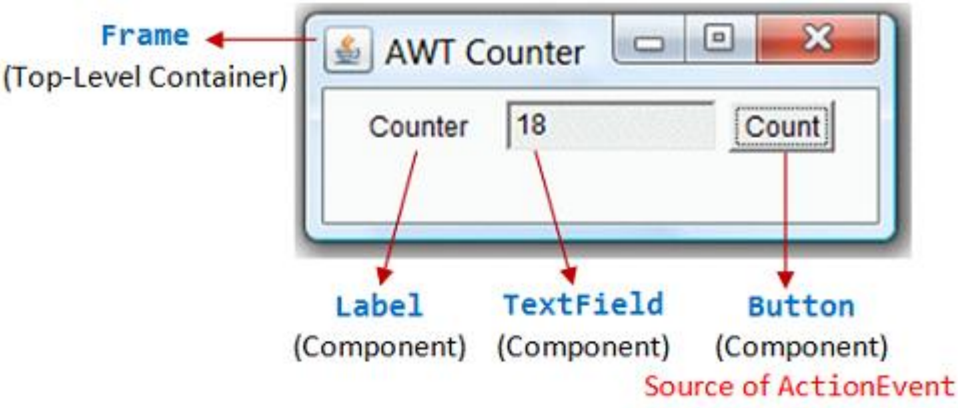
Example -

1. Write a program in Java to design an applet with three text boxes - input1, input2 , result and two buttons - Add, Sub. On clicking of any of these buttons, the corresponding operation should be performed with input1 and input2 and the result should be displayed in the result box.

2.Create a simple GUI by adding components to an applet.

3. Create an applet that counts and displays the number of times a button has been pressed.

4.



Write an AWT GUI application (called AWTCounter) as shown in the Figure. Each time the "Count" button is clicked, the counter value shall increase by 1. The program has three components:

a java.awt.Label "Counter";
a non-editable java.awt.TextField to display the counter value; and
a java.awt.Button "Count".

The components are placed inside the top-level AWT container java.awt.Frame, arranged in FlowLayout.

5. Write an AWT GUI application called AWTAccumulator, which has four components:

   a java.awt.Label "Enter an integer and press enter";
   an input java.awt.TextField;
   a java.awt.Label "The accumulated sum is", and
   a protected (read-only) java.awt.TextField for displaying the accumulated sum.

6. Write a program in java which will create an ArrayList and do some operations on it.
7. Write a program in java which will create an LinkedList and do some operations on it.

Guide lines

1. *Students should be regular and come prepared for each laboratory class.*
2. *Students should bring their lab record and practice note books to every class.*
3. *The prescribed text and reference books and class notes can be kept ready for reference if required.*
4. *Students have to complete their lab experiments in the lab and be capable to explain and show the modifications, output results as and when required by the faculty. All these are to ensure that the students' capability to understand, debug and modify of codes by their own.*
5. *In case a student misses a class, it is his/her responsibility to complete that missed experiment(s).*
6. *The code written by the student should meet the following:*
    - *Program should have proper input prompt messages and descriptive output.*
    - *Input validation should be done (data type, range error etc.) and give appropriate error messages and suggest corrective actions.*
    - *Comment lines should be used to give problem statement, describe functions and key logics.*
    - *Program should be indented properly.*
    - *Variables and functions should be meaningfully named.*
7. *All java programs should be verified by different values and lengthy inputs.*
8. *Once the experiment(s) get executed, they should show the program and results to the instructors and copy the same in their observation book and get signed which ensures him/her with day to day performance marks*
9. *Student should submit his/her record by/in the next lab session to ensure the lab record marks. Failing to do so reduces record marks.*
10. *Lab exam questions need not be necessarily be limited to the questions in the manual, but could involve some variations and/or combinations of the questions.*
11. *Students are strictly advised to take care of their personal belonging all the time. The University is not responsible and liable to any lost of personal belonging in the computer labs.*

SCHEME OF EVALUATION

Maximum Marks for Web Technology Lab is 100 which is divided into Continuous Internal Assessment and End-Semester Final Evaluations.

Internal Evaluation (Continuous Evaluation over the semester which includes
Quiz, Viva, Lab Record, Attendance) : 60 Marks
End-Term Evaluation (At the End of the Semester – Sessional Exam) : 40 Marks