

**Uka Tarsadia University**



**BCA**

**Advanced Java (030010503)**

**5<sup>th</sup>Semester**

**EFFECTIVE FROM JUNE-2013**

UKA TARSADIA UNIVERSITY			
BCA (5th Semester) Syllabus, 2014-2015			
Course Code: 0300100503		Course Title: Advanced Java	
Course Credits: 04		Total Hours: 48	[Lectures: 04, Tutorial: 00, Practical: 03]
Prerequisites:	030010301-Java Programming, 030010404-Fundamentals of Computer Networks, 030010304-Fundamentals of Operating Systems		
Prerequisites By Topics:		030010301:- Data types, Concept of object oriented programming, Exception handling, File handling. 030010404:- OSI layer model 030010304:- Process and process management	
Objectives:	To understand the Collection and Thread class, usage of Network and AWT package and Swing framework to develop multithreaded, network-based and GUI-based applications using Java language		
1	Strings and Collections		[08 Hours]
	1.1.	String class, Constructors, Length and Special String Operations	
	1.2.	StringBuffer class	
	1.3.	java.util package	
	1.4.	Collection Framework: Set, List and Map	
	1.5.	StringTokenizer class	
2	Multithreaded Programming		[08 Hours]
	2.1.	The Java Thread Model	
	2.2.	The Main Thread	
	2.3.	Creating a thread: implementing Runnable and Extending Thread	
	2.4.	Creating Multiple Threads	
	2.5.	Thread Priorities	
	2.6.	Synchronization: Using Synchronized Method and Synchronized Statement	
	2.7.	Deadlock	
3	Event Handling and AWT		[08 Hours]
	3.1.	Delegation Event Model	
	3.2.	Event Classes	
	3.3.	Sources of event	
	3.4.	Event Listener Interfaces	
	3.5.	Adapter Classes	
	3.6.	AWT : Window Fundamental	
	3.7.	Working with Frame Windows	
	3.8.	Handling events in Frame Windows	
	3.9.	Working with Graphics, Colors and Fonts	
	3.10.	Centering Text, Multiline Text alignment	
4	Controls, Layouts, Managers and Menus		[07 Hours]
	4.1.	Control Fundamentals	
	4.2.	Labels, Buttons, Checkbox, Checkbox group, Choice and List controls	
	4.3.	Scrollbars, TextFields and TextArea	
	4.4.	Layout Manager	
	4.5.	Menu bar and Menus	
	4.6.	Dialog Boxes and File Dialog	
5	Swing		[10 Hours]
	5.1.	Swing Features	
	5.2.	MVC Connection	
	5.3.	Components and Containers	
	5.4.	Event Handling	
	5.5.	JButton, JCheckbox, JComboBox, JLabel, JList, JRadioButton, JScrollPanel	
	5.6.	JTabbedPane, JTable, JTextfield, JToggleButton.	
6	Network Programming		[07 Hours]

6.1.	Networking: Introduction	
6.2.	The Networking classes and interfaces	
6.3.	InetAddress: Inet4Address and Inet6Address	
6.4.	TCP/IP Client-Server Socket	
6.5.	URL,URLConnection and HttpURLConnection	
6.6.	Datagrams	

### Special Purpose Instructions:

Usage of Frame shall be done when teaching unit 3 and 4. Applets are not allowed.

For practical session, more focus shall be given on Swing than on AWT.

Student shall not use any IDE to develop their programs/applications.

**Course Outcomes:** Upon completion of the course, students shall able to

C01:	Understand and use generic Collections and String objects.
C02:	Develop multithreaded applications.
C03:	Use AWT objects and controls for developing GUI based applications.
C04:	Understand delegation event model and use event listeners and classes for event handling.
C05:	Develop applications using Swing controls.
C06:	Develop basic connection-less and connection-oriented client-server applications.

### Course Objectives and Course Outcomes Mapping:

❖	Understand the Collection and Thread class: C01, C02
❖	Usage of Network and AWT package: C03, C06
❖	Usage of Swing framework: C03, C04, C05

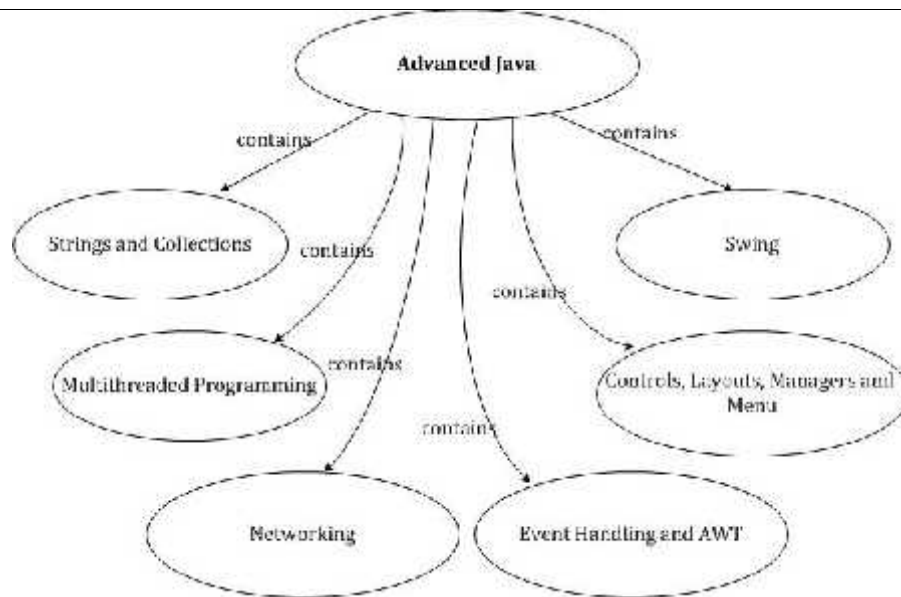
### Course Units and Course Outcomes Mapping:

Unit No.	Unit	Course Outcome					
		C01	C02	C03	C04	C05	C06
1	Strings and Collections	✓					
2	Multithreaded Programming		✓				
3	Event Handling and AWT			✓	✓	✓	
4	Controls, Layouts, Managers and Menus			✓	✓	✓	
5	Swing			✓	✓	✓	
6	Network Programming						✓

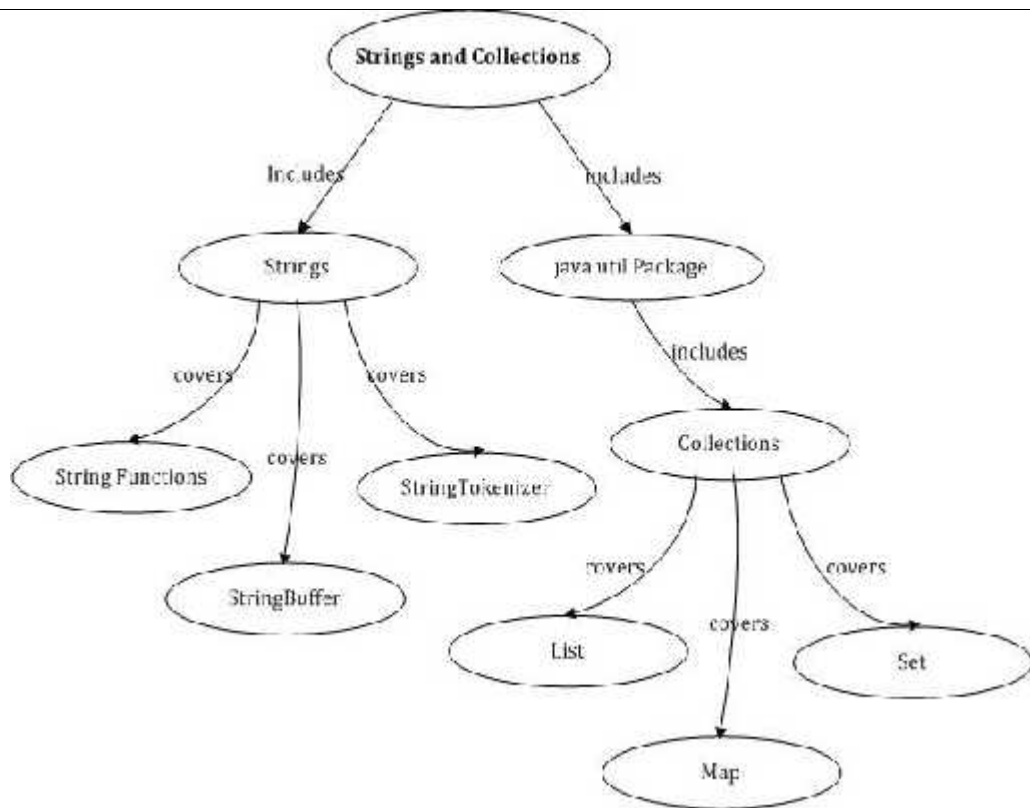
### Laboratory:

	❖	There shall be at least 22 lists of problems and other extra practice questions in practical list.			
	❖	The practical list contain the problem as follows:			
		<b>Unit No.</b>	<b>Minimum no. of problems</b>	<b>Required no. of problems to get the journal certified</b>	<b>Remarks</b>
		1	6	6	Covering all sub- topics from unit 1.
		2	4	4	Covering topics: 2.1, 2.3, 2.5, 2.6
		3	3	3	Covering topics: 3.4,3.5, 3.8, 3.9
		4	4	4	Covering topics: 4.2 to 4.6
		5	1	1	Covering all sub- topics from unit 5.
		6	4	4	Covering topics: 6.3 to 6.6
		Total	22	22	
	❖	The practical list shall not be repeated for next two consecutive years.			
	❖	After approved by course co-ordinator, the list of problem definitions shall be kept by concern teacher on web site before the commencement of the semester.			
	❖	Viva shall be conducted when the practical problem solution are checked in the journal by laboratory supervisor and/or subject teacher.			
	❖	Laboratory supervisor and/or course teacher shall sign in the index/journal only after he/she feels satisfied by student work.			

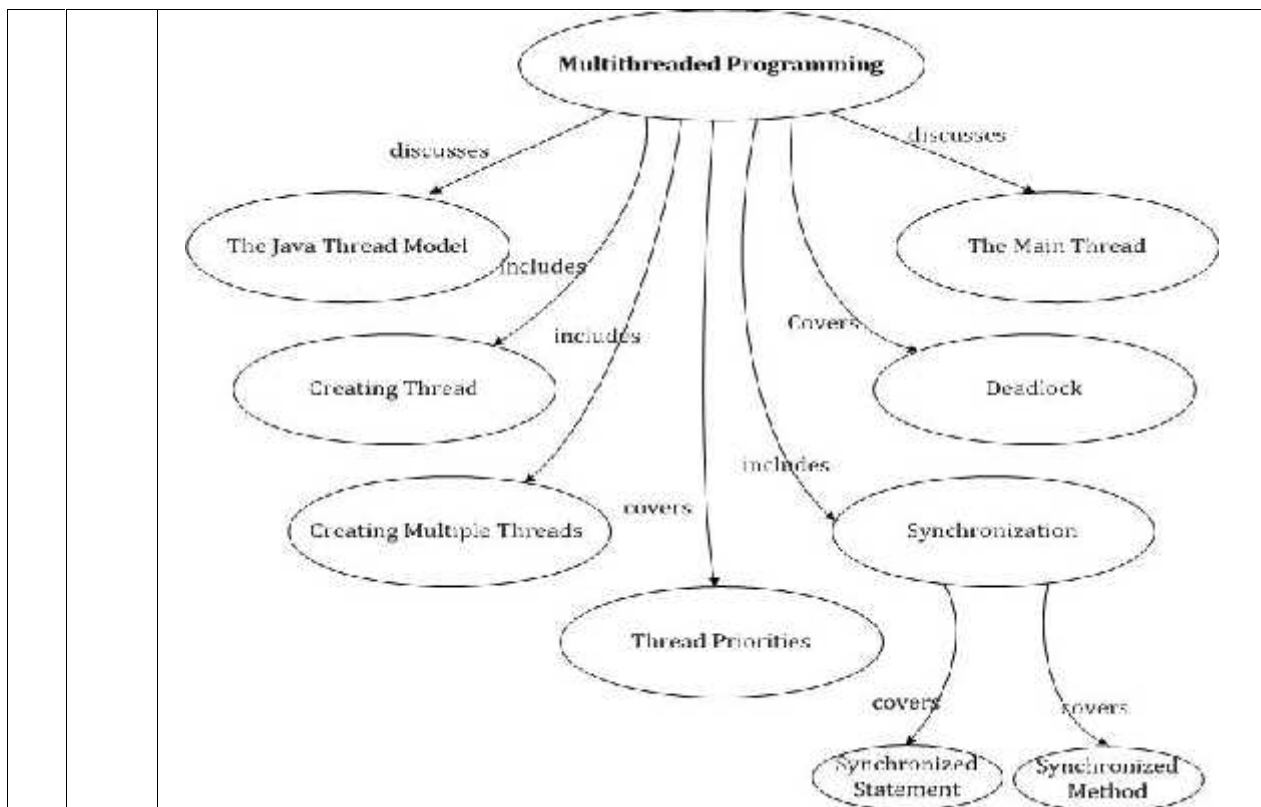
	❖	The journal shall be verified at the end of 4 <sup>th</sup> unit by subject teacher.
	❖	Journal shall not be certified if required number of problems are not included and not written clearly or copied.
<b>Resource Material</b>		
	➤	<a href="http://docs.oracle.com/javase/tutorial/">http://docs.oracle.com/javase/tutorial/</a>
	➤	<a href="http://www.javabeginner.com/java-swing/java-swing-tutorial">http://www.javabeginner.com/java-swing/java-swing-tutorial</a>
	➤	<a href="http://www.tutorialspoint.com/java/">http://www.tutorialspoint.com/java/</a>
<b>Computing Environment:</b>		
	A student shall have the following computing environment in laboratory as well as on their person laptop:	
	❖	Installed JRE 6.0, JDK 6.0 and any text editor.
<b>Modes of Transaction (Delivery):</b> Appropriate methods of teaching shall be decided depending on the objectives of the content taught.		
	❖	<b>Lecture method</b> is generally used but along with it, as and when required, discussion method would be fruitful. It shall be supplemented with various appropriate audio-visual aids.
	❖	<b>Practical exercises</b> would be solved by the students.
	❖	<b>Hands-on</b> shall be used to understand and implement the practical based on unit-6. For this student would perform the practical on their own laptop (having required computing environment) as end when instructed by course teacher in the class room.
<b>Activities/Practicum:</b>		
	The following activities shall be carried out by the students.	
	❖	Understand and use inner/anonymous class.
	❖	Understand and use JTree.
	❖	Self Study of following part of the syllabus shall be done by the students: 6.3 InetAddress: Inet4Address and Inet6Address
	The following activities shall be carried out by the teacher.	
	❖	Hands-on training to develop an application, where a client sends a query to the server and server replies back to the client.
	❖	Demonstrate the usage of creation and usage of generic data type.
<b>Text Book:</b>		
	1.	Schildt, H. - The Complete Reference : Java - Tata McGraw Hill
<b>Reference Books:</b>		
	1.	Buyya, R., et. al. - Object-oriented Programming with Java: Essentials and Applications - McGraw Hill
	2.	Xavier, C - Java Programming: A Practical Approach - McGraw Hill.
	3.	Malhotra, S. and Choudhary, S. - Programming in Java - Oxford Higher Education.
	4.	Dietel - Java – How to Program? - PHI/Pearson Education Asia.
	5.	Horstmann, C. and Cornel, G. - Core Java Advanced Features - Sun Microsystems
<b>Concept Map:</b>		
	It is a hierarchical / tree based representation of all topics covered under the course. This gives direct / indirect relationship /association among topics as well as subtopics.	
	<b>Advanced Java</b>	



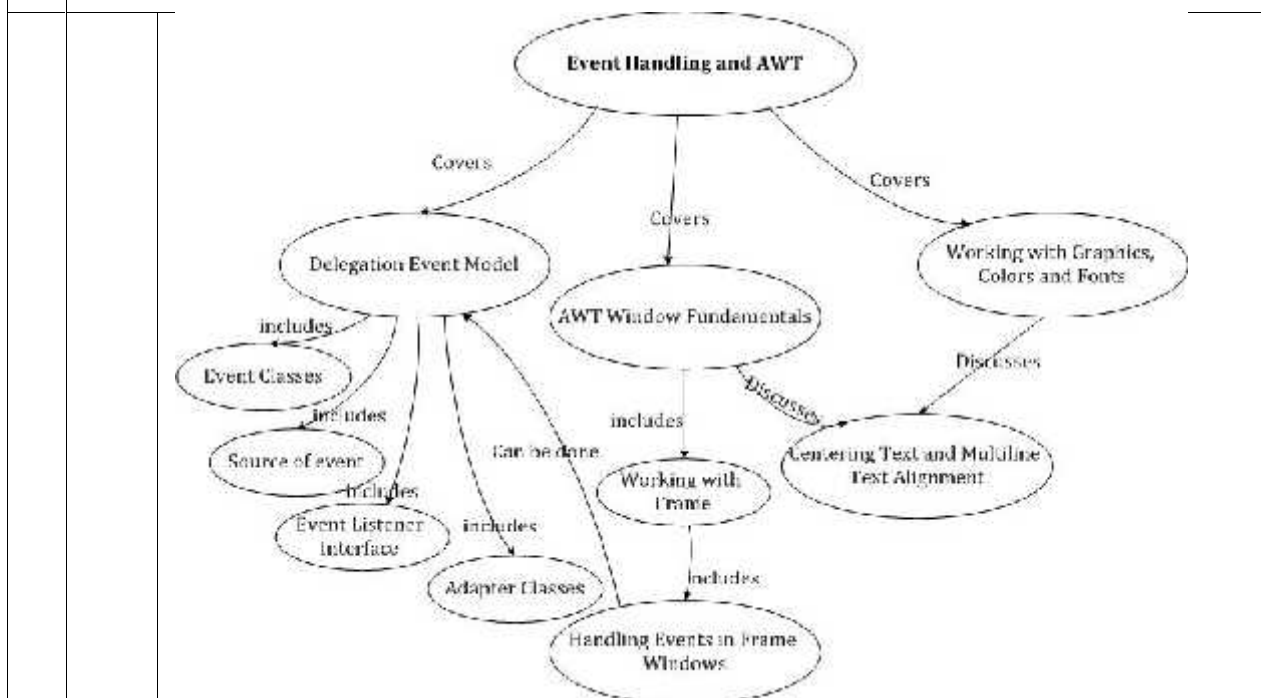
### Unit-1: Strings and Collections



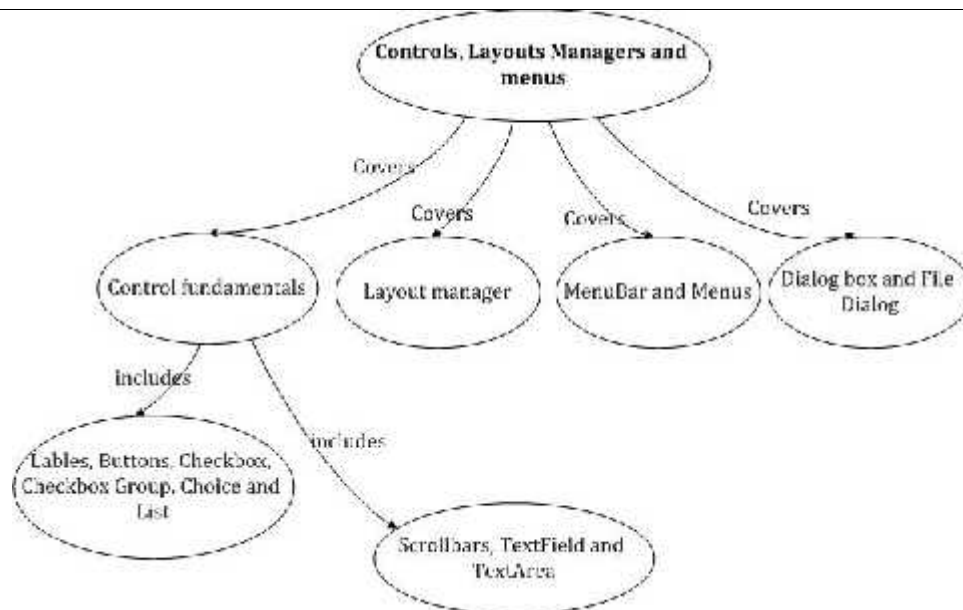
### Unit-2: Multithreaded Programming



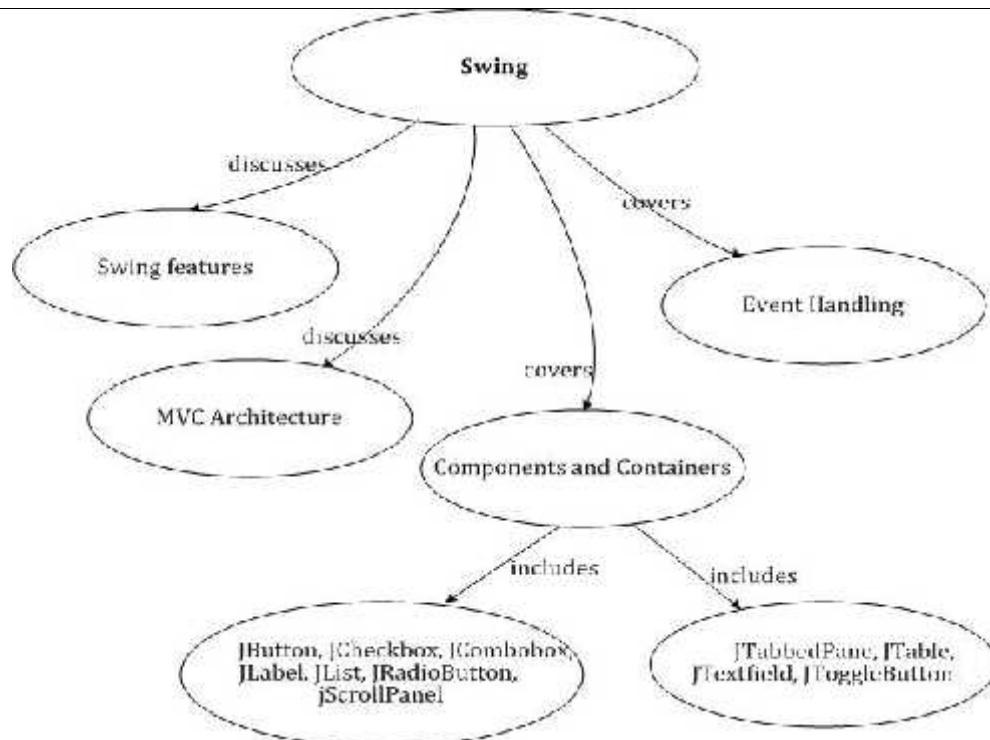
### Unit-3: Event Handling and AWT



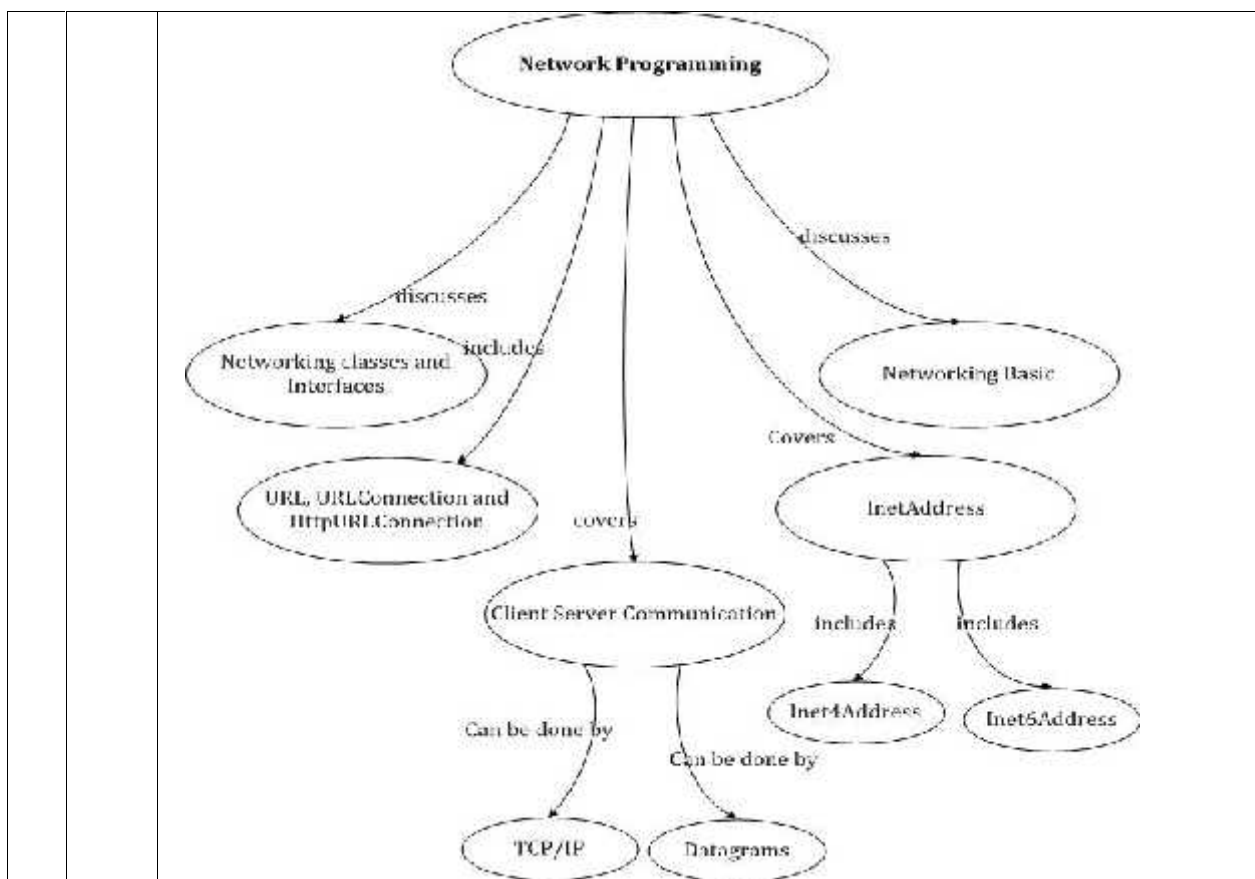
### Unit-4: Controls, Layout Managers and Menus



#### Unit-5: Swing



#### Unit-6: Network Programming



#### Assessment:

The weightage of CIE and University examination shall be as per the University regulations.

Composition of CIE shall be

Assessment Code	Assessment Type	Duration of each	Occurrence	Each of marks	Weightage in CIE of 40 marks	Remarks
A1	Quiz	45 mins	2	20	2X2=4	Taken at the end of unit 2, and 5.
A2	Unit Test	45 mins.	2	20	3X2=6	Taken at the end of unit 3, and 6.
A3	Internal Examination	3 hours	1	50	15X1=15	-
A4	App and its presentation (including Viva)	10 weeks	1	50	15X1=15	Based on unit 3, 4 and 5.



#### A4 Guideline

- A teacher shall provide titles' of app along with student team by the end of 6 weeks of semester.
- To develop the app a team shall comprise of 2-5 members. For that 4 weeks shall be given. Then a team shall give presentation of typically 10-15 minutes followed by Question - Answer session of typically 10 minutes.
- Student shall receive up to 10% bonus marks of full marks based on best presentation and relevant extra features of app.
- Student shall receive up to 10% penalty of full marks on 2 days late submission, and zero marks if no submission.



### Composition of CIE shall be (For Practical)

Assessment Code	Assessment Type	Duration of each	Occurrence	Each of marks	Weightage in CIE of 20 marks	Remarks
A5	Quiz	45 mins	2	20	2X2=4	Based on unit 2 and 6.
A6	Internal	2 hours	2	40	6X2=12	-
A7	Viva		2	10	2X2=4	1 <sup>st</sup> occurrence of viva shall be conducted during internal practical exam.

### Course Assessment with Course Outcomes Mapping

Assessment	Course Outcomes					
	C01	C02	C03	C04	C05	C06
A1	✓	✓	✓	✓		
A2	✓	✓	✓	✓		✓
A3	✓	✓	✓	✓		
A4			✓	✓	✓	
A5	✓	✓				✓
A6		✓	✓	✓	✓	
A7	✓	✓	✓	✓	✓	✓

### Question Bank:

Question Bank shall be prepared which consists of several types of questions like MCQ, Fill in the blanks, short type questions and long type questions. It shall also consist of practical list, app definition and practice questions.
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### Academic Honesty:

Coursework is assumed to be accomplished individually (otherwise stated). Any portion of submission taken directly from anywhere (like statements in assignment/report etc.) without modification must be accompanied with the properly formatted reference giving credit to the author and to the source.
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### UFM:

<ul style="list-style-type: none"> <li>❖ If two or more submitted answer papers and/or practical code are too similar for coincidence, a penalty shall be imposed that shall usually be the same for the student who did the original as for the one copying from it.</li> <li>❖ Any ascertained fact of breaking institute policy shall be associated with one or all of the following: (i) zero marks for the work; (ii) report to the Course coordinator; (iii) report to the Director.</li> </ul>
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### Discussion Group:

Students are welcome to post on the Course Discussion Board available on Department of comp View Course Webpage. It is responsibility of the concern subject teacher to maintain Discussion Board.
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### Attendance:

<ul style="list-style-type: none"> <li>❖ Attendance means being present for the entire class session. Those arriving significant late or leaving significantly early without prior permission shall be counted as ABSENT for the entire class session.</li> <li>❖ sConcern teacher shall clearly state his/her attendance policies at the first class meeting.</li> </ul>
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