Uka TarsadiaUniversity

M.Sc. (C.A.)

Application Development in Java (040020108)

3rdSemester

EFFECTIVE FROM JUNE-2014

Course Code: 040020108   Course Title: Application Development in Java
Course Credits: 4   Total Hours: 48   [Lectures: 04, Tutorial: 00, Practical: 04]
Prerequisites: Object Oriented Programming Concepts
Prerequisites By Topics: Encapsulation, Inheritance, Classes and Packages.

Objectives: To understand the Thread class, usage of Network, AWT package, Java Beans & Swing framework and JDBC Connectivity to develop multithreaded, network-based and GUI-based programs to access data from various databases using Java language.

1   Multithreaded Programming   [08 Hours]
1.1.   Thread Model
1.2.   Main Thread
1.3.   Creating Threads
1.4.   Creating Multiple Thread
1.5.   Thread Priorities
1.6.   Synchronization
1.7.   Deadlock

2   Network Programming   [06 Hours]
2.1.   Basics of Networking
2.2.   Networking Classes and Interfaces
2.3.   InetAddress
2.4.   TCP/IP client sockets
2.5.   URL, URLConnection, HttpURLConnection
2.6.   TCP/IP Server sockets
2.7.   Datagrams

3   Event Handling and AWT   [10 Hours]
3.1.   Delegation Event Model
3.2.   Event classes
3.3.   Sources of Events
3.4.   Event Listener Interface
3.5.   Adapter classes
3.6.   AWT: Window Fundamental
3.7.   Working with Frames
3.8.   Handling Events in Frame
3.9.   Working with Graphics, Color and Fonts
3.10.   Centering Text, Multiline Text Alignment

4   Controls, Layout Managers and Menus   [00 Hours]
4.1.   Control Fundamental
4.2.   Labels, Buttons, CheckBox, CheckBoxGroup, Choice Control, Lists, Scrollbars, TextField and TextArea
4.3.   Layout Manager
4.4.   Menu Bar and Menu
4.5.   Dialog Boxes, FileDialog

5   Java Bean and Swing   [00 Hours]
5.1.   Java Bean and its Advantages
5.2.   Introspection, Bound and Constrained properties, Persistence
5.3.   Java Beans API Overview
5.4.   Swing Features
5.5.   MVC Connection
5.6.   Components and Containers
5.7.   Event Handling
5.8.   JButton, JCheckBox,JComboBox, JLabel, JList, JRadioButton, JScrollPane, JTabbedPane, JTable, JTextField, JToggleButton, JTree

6   JDBC   [00 Hours]
6.1.   JDBC Drivers
6.2.   Configuration for JDBC Connection
6.3.   JDBC Update and Query Operations

6.4. Prepared Statement
6.5. Stored Procedure
6.6. JDBC Transaction Support

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

CO1: Develop multithreaded applications.
CO2: Develop basic connection-less and connection-oriented client-server applications.
CO3: Use AWT objects and controls for developing GUI based applications.
CO4: Understand delegation event model and use event listeners and classes for event handling.
CO5: Understand usage of Java Beans and develop applications using Swing controls.
CO6: Understand JDBC connectivity to access data from various databases.

Course Objectives and Course Outcomes Mapping:

To understand the Thread class, usage of Network, AWT package, Java Beans & Swing framework and JDBC Connectivity to develop multithreaded, network-based and GUI-based programs to access data from various databases using Java language.
Understand the Thread class: CO1
Usage of Network, AWT package: CO2, CO3, CO4
Usage of Java Beans & Swing framework and JDBC Connectivity: CO5, CO6

Course Units and Course Outcomes Mapping:

Unit No.	Unit	Course Outcome					
		CO1	CO2	CO3	CO4	CO5	CO6
1	Multithreaded Programming	✓					
2	Network Programming		✓				
3	Event Handling and AWT			✓	✓	✓	
4	Controls, Layout Managers and Menus			✓	✓	✓	
5	Java Bean and Swing			✓	✓	✓	
6	JDBC						✓

Laboratory: <<applicable only for practical courses>>

❖ The practical list shall not be repeated for next two consecutive years.
❖ Laboratory supervisor or course teacher shall sign in the journal only if he/ she feel satisfied by the work of student.
❖ Journal shall be verified twice during the 5th and 10thweek of semester by course teacher.
❖ Journal must not be certified if required number of problems are not included and not written clearly or copied.
❖ After the approval of the Course Coordinator, the List of problem definition 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 signed in the journal by laboratory supervisor and/or subject teacher.
❖ Journal shall not be certified if not written clearly or copied.
❖ Problem list shall contain practical problems from 6 units are as follow:

Unit No.	Minimum No. of problem	Required No. of problem to get journal certified	Remarks
1	At least 4	4	Covering topics: 1.1, 1.3, 1.5, 1.6
2	At least 4	4	Covering topics: 2.3 to 2.6
3	At least 3	3	Covering topics: 3.4, 3.5, 3.8, 3.9
4	At least 4	4	Covering topics 4.2 to 4.6
5	At least 1	1	Covering all sub-topics from unit 5.
6	At least 3	3	Covering topics: 6.3, 6.4, 6.5

Computing Environment:

A student must have the following computing environment in laboratory and or on his/her laptop and.

❖   Installed JRE 6.0 , JDK 6.0 and any text editor.

Modes of Transaction (Delivery):

❖   **Lecturemethod** is generally used but along with it, as and when required, discussion method would be fruitful. It shall be supplemented with variousappropriateaudio-visual aids.
❖   **Practical exercises** would be solved by the students.
❖   **Self Study** of following part of the syllabus shall be done by the students.
    2.3 InetAddress: Inet4Address and Inet6Address

Activities/Practicum:

The following activities shall be carried out by the students.
❖   Understand and use inner/anonymous class.
❖   Understand and use JTree.
❖   Differentiate between usage of Inet4Address and Inet6Address class methods.

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 JDBC connectivity with MS Access.

Text Book:

1.   Schildt, H., The Complete Reference : Java ,Tata McGraw Hill
2.   Buyya, R., et. al. Object-oriented Programming with Java: Essentials and Applications, McGraw Hill

Reference Books:

1.   Xavier, C. Java Programming: A Practical Approach, McGraw Hill.
2.   Malhotra, S. and Choudhary, S. Programming in Java, Oxford Higher Education.
3.   Dietel, Java – How to Program?, PHI/Pearson Education Asia.
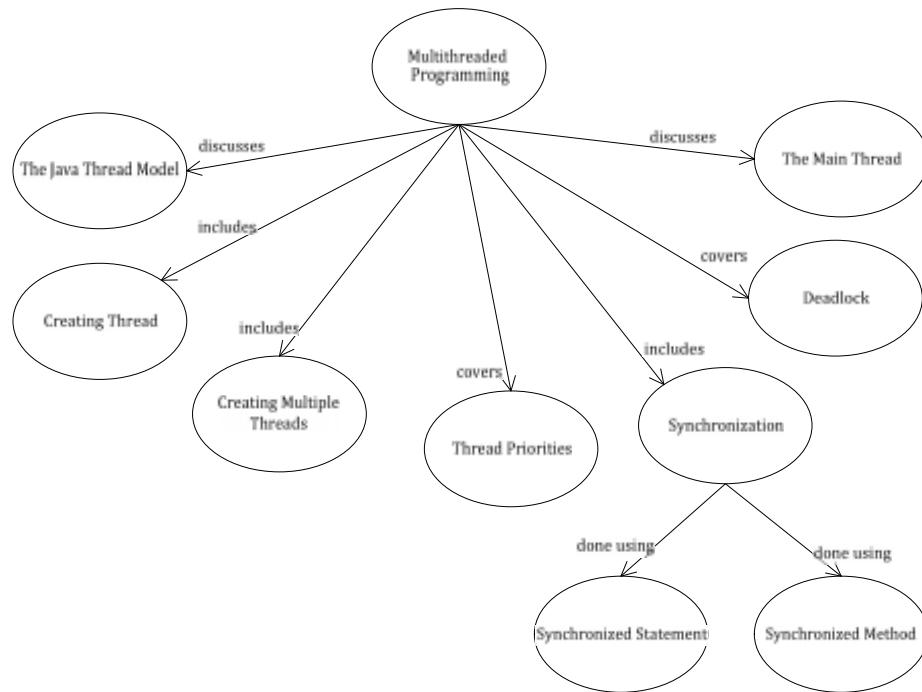4.   Horstmann, C. and Cornel, G. Core Java Advanced Features. Sun Microsystems

Concept Map:

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.
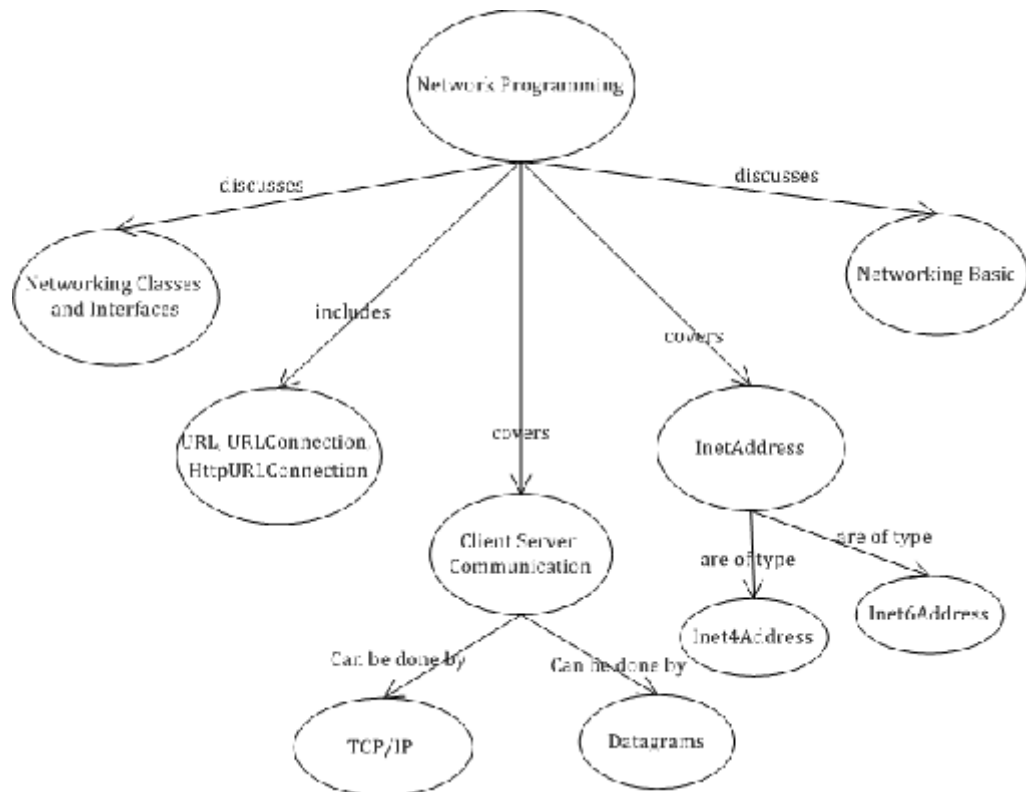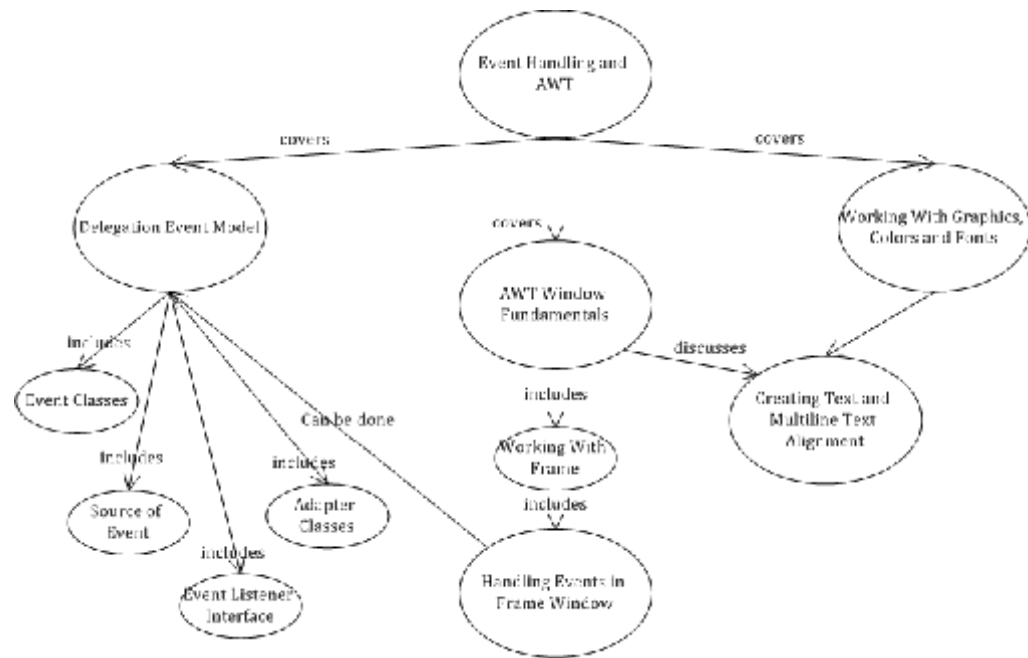
Application Development in Java
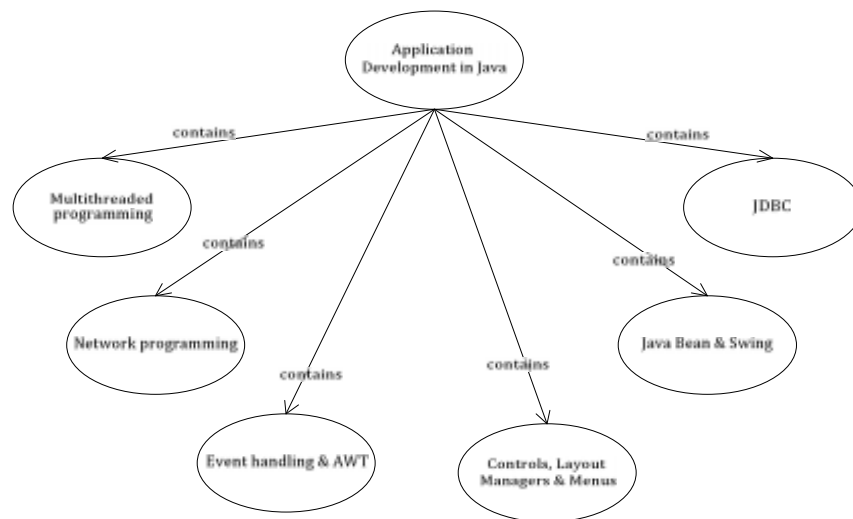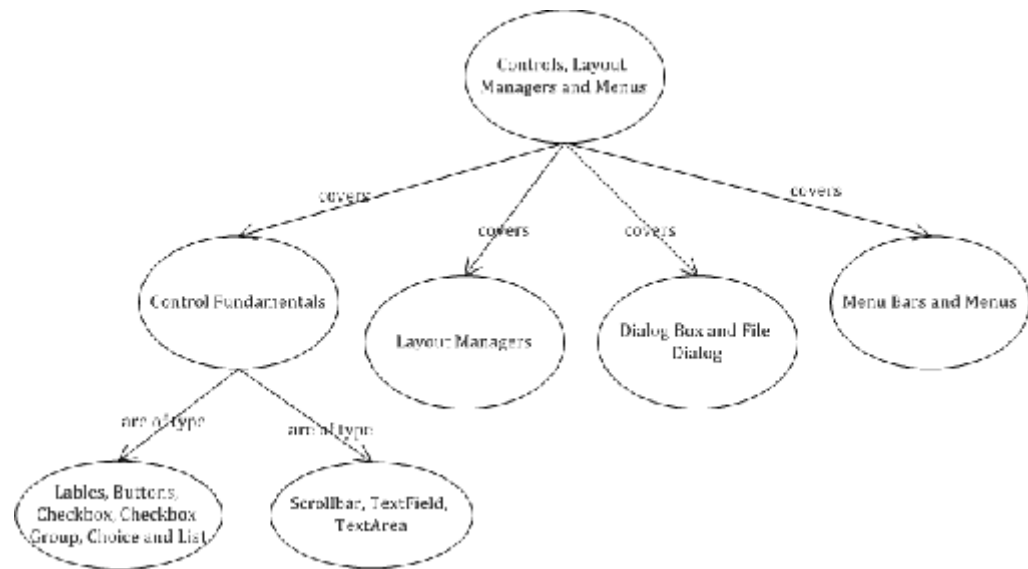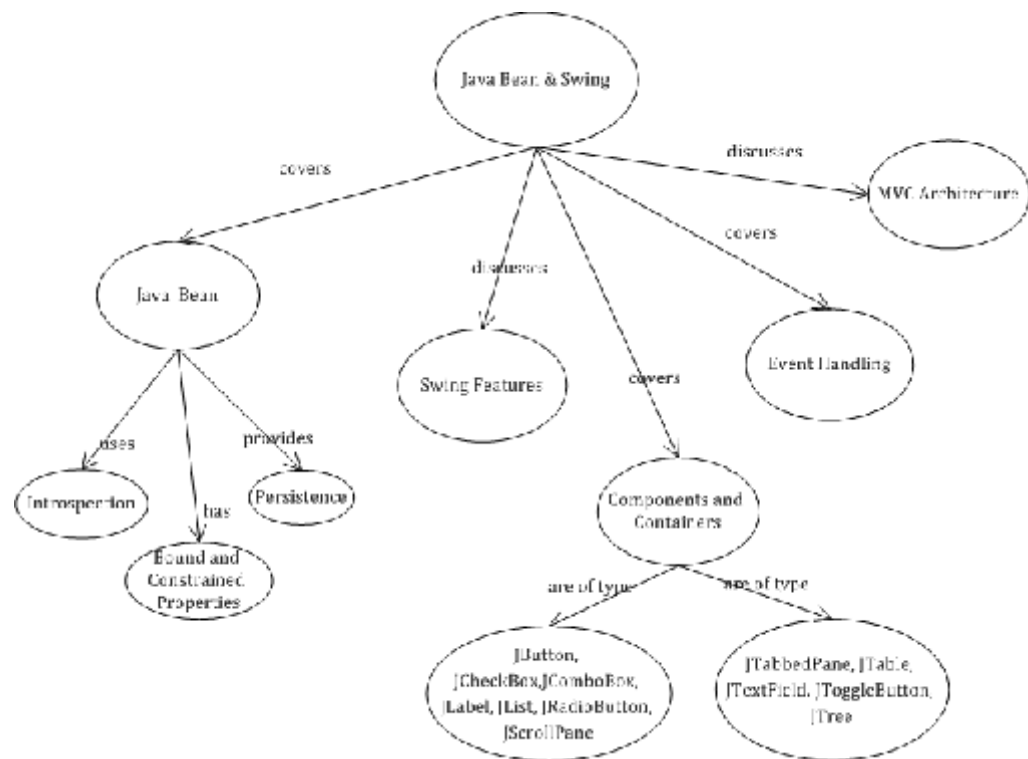

Unit-1: Multithreaded Programming

Unit-2: Network Programming

Unit-3: Event Handling and AWT
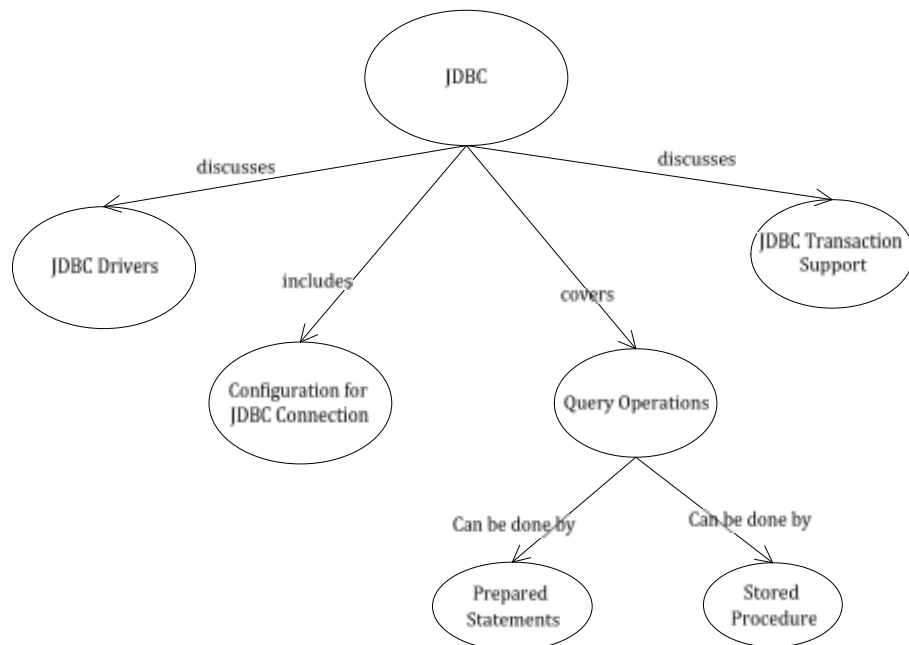
Unit-4: Controls, Layout Managers and Menus

Unit-5: Java Bean and Swing

Unit-6: JDBC

Assessment:

The weightage of CIE and University examination shall be as per the University regulations.
Composition of CIE shall be (for theory)

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	2 Hours	1	50	15X1=15	-
A4	App and its presentation	10 weeks	1	50	15X1=15	Based on unit 3,4,5 and 6
A5	Practical Quiz	45 mins	2	20	4X2=8	Based on unit 1,2 and 3,4
A6	Internal Practical	2 hours	1	40	8X1=8	-
A7	Viva		2	10	2X2=4	1occurrence of viva shall be conducted during internal practical exam

- ❖ 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.
- ❖ Syllabus for each CIE parameter shall be covered by the date of the corresponding test.

Course Assessment with Course Outcomes Mapping

Assessment	Course Outcomes					
	CO1	CO2	CO3	CO4	CO5	CO6
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.

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.

UFM:

- ❖ 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.
- ❖ 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 Program coordinator; (iii) report to the Director.

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 course teacher to maintain Discussion Board

Attendance:

- ❖ 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.

❖ Concern teacher must clearly state his/her attendance policies at the first class meeting.