Name of the Subject | Advance Programming In Java | Subject Code | CA40511(CA)
--- | --- | --- | ---
Semester | Vth | Board of Studies |
Maximum Marks | 100 | Minimum Marks | 40 |
Lecture Periods/Week | Tutorial Periods/Week | Practical Periods/Week | Credits |
04 | 01 | | 05 |

### Unit 1: Overview of Java:
Features of Java, Byte-code & JVM, data-types, Variables & Arrays, Control-statements, Introduction to Java class & object, main () function, garbage collection & finalize () method, this, Inheritance, method overriding, Dynamic method dispatching, super, final, package, Interface, Abstract class, Class path, String Class.

### Unit 2: Exception and Multithreads:
Exception-type, Uncaught Exception, Using trycatch, throw, throws, finally, Throwable class and object, Exception classes, Create own exception subclass. Creating multiple threads, isAlive(), join(), Thread priorities, synchronization, - Deadlock, wait(), notify(), notify All() methods, Inter-Thread Communication, suspend, resume & stop the threads.

### Unit 3: Stream and Socket:
I/O classes & Interfaces, File, The Stream Classes, The Byte stream (InputStream, OutputStream, FileInputStream, File Output Stream), Serialization, Network basics, Networking classes and Interfaces, InetAddress, TCP/IP Client/Server socket, URL, URL Connection, Datagram, RMI.

### Unit 4: Event handling & working with windows:
Delegation event model, event classes, Event listener interface, AWT Classes, Window fundamental, AWT Controls, Layout managers, Menus, Swings: benefits of swing over AWT, Frames panels and borders, labels and buttons, tabbed panes, scrolling panes, split panes, combo boxes, list boxes, text component, menu, toolbar and actions, progress bars, sliders and scrollbars, dialogs.

### Unit 5: Web development:

### Text Books

### Reference Books
1. Michael Morgan, “Java 2 for Professionals Developers”, Ed. 01, SAMS, Techmedia, New Delhi, India 2000.
UNIT – 1:
**Introduction:** Motivation, objectives, characterization & classification of distributed systems. Distributed system architecture. Hardware & software issues. Communication: Layered protocols, Client server protocols, RPC, group communication. Coordination, synchronization & consistency: Logical clocks, Physical clocks, mutual exclusion, election algorithms, atomic broadcast, sequential consistency transaction distributed consensus, Threads: Thread synchronization, implementation issues, and threads vs. RPC

UNIT – 2:
**Models of distributed computing:** Client server and RPC, RPC architecture, exceptions, underlying protocols, IDL, marshalling etc. Group models and peer to peer: Groups for service replication/reliability, groups for parallelism/performance, client/server vs. peer-to-peer, multicast, atomic broadcast. Interprocess Communication: API for Internet protocols. External data representation and Marshalling. Client-Server communication and Group communication.

**Distributed Objects and Remote Invocation** - Communication between distributed objects, Remote procedure call, Events and notifications.

UNIT – 3:
**Distributed file system** - Security, Naming/location transparency, R/W semantics, cache coherence, replication. Distributed shared memory: DSM architecture, consistency models and relation to caching, release consistency, comparison with message passing and RPC. Advanced Distributed Computing Paradigms: Message Queuing, Mobile agents, Network services, Object spaces

UNIT – 4:
**Fault tolerant distributed systems** - Introduction, dependability, faults vs. errors vs. failure, space time and value redundancy, fault tolerant architecture, failure detection algorithms, partitioning, FT consensus. Distributed multimedia system: Introduction, characteristics, and resource management stream adaptation

UNIT – 5:
**Security** - Introduction, security techniques, cryptographic algorithms, authentication and access control.

**Case study:** CORBA, RMI, MACH

**Text Books:**
2. A. Taunenbaum, Distributed Systems: Principles and Paradigms

**References:**
1) Distributed systems, concepts and design, 3rd Edition, Addison Wesley by George Colouris, Jean Dollimore and Tim Kindberg.
Name of the Subject: Mobile Computing  
Subject Code: CA40513(CA)  
Semester: Vth  
Board of Studies  
Maximum Marks: 100  
Minimum Marks: 40  
Credits: 05  
Lecture Periods/Week: 04  
Tutorial Periods/Week: 01  
Practical Periods/Week: 05

Unit 1: Introduction to telecommunication systems

Unit 2: Wireless Standards

Unit 3: Mobile Network Layer

Unit 4: Mobile Transport Layer & Wireless Application Protocol

Unit 5: Application Issues

Text Books

Reference Books
UNIT – 1:
Overview of modern processor architectures. Memory Hierarchy. Introduction to Parallel Processing: Flynn’s classification, SIMD and MIMD operations, Shared Memory vs. message passing multiprocessors, Distributed shared memory, Hybrid multiprocessors, Overview of modern processor architectures. Memory Hierarchy, Cache and Cache Coherence.

UNIT – 2:

UNIT – 3:

UNIT – 4:

UNIT – 5:
Parallel Algorithms: [a] Design Methodology and Analysis Techniques: Foster’s Design Methodology, Time Complexity (computation and communication complexities), Speedup, Efficiency, Cost Optimality, Amdahl’s Law, Brent’s Scheduling Principle. [b] Simple PRAM Algorithms: Boolean Operations, Max Finding in O (1) time, Reduction, Prefix-Sum, etc. [c] Basic Algorithms and Techniques: (i) Prime Numbers using Sieve Method; Monte Carlo Methods (e.g., Calculating Pi), (ii) Matrix Multiplication (Row and Column-based on a Ring Topology, and Block-based on a Mesh Topology - Cannon’s algorithm), (iii) Sorting (Odd-Even transposition, Merge sort, Bitonic Merging and Sorting, Hyper Quicksort, Parallel Sorting with Random Sampling, etc.)

Text Books:

References:
DEPARTMENT OF COMPUTER APPLICATIONS (MCA)
SYLLABUS

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**UNIT 1: INTRODUCTION & FUNDAMENTALS:** Origin of DIP, examples of fields that use DIP, fundamentals of DIP, components of an DIP system, Image formation model, Spatial & Gray level resolution, Image enhancement in special domain: Piecewise transformation functions, Histogram equalization, Histogram specification, image averaging, spatial filters- smoothing and sharpening, Laplacian filter, Canny edge detector., image sampling and quantization, some basic relationships between pixels.

**UNIT 2: IMAGE ENHANCEMENT AND SEGMENTATION:** Image Enhancement in Spatial Domain: Background, some basic gray level transformations, Histogram processing, enhancement using arithmetic and logic operations, basic of spatial filtering, smoothing spatial filters, sharpening spatial filters.

**Image Enhancement in the Frequency Domain:** Background, Introduction to FT and frequency domain, smoothing frequency domain filters, sharpening frequency domain filters, additional properties of the 2-D FT, convolution, line detection, Edge Detection, Edge Linking and boundary detection, Global Thresholding, Ostu’s method, multiple threshold, variable threshold, multivariant threshold, Region based Segmentation., Corner Detection, segmentation using Morphological watersheds.

**UNIT 3: IMAGE COMPRESSION:** Fundamentals, image compression models, elements of information theory, error free Compression, run length coding, Huffman coding, LZW coding, Arithmetic coding, LZW coding, symbol based coding, bit plane coding, predictive coding, wavelet coding, loss less predictive coding, lossy predictive coding, image compression standards, DCT, JPEG, MPEG  video compression standards, watermarking.

**UNIT 4: MORPHOLOGICAL IMAGE PROCESSING:** Erosion, dilation, opening, closing, Basic Morphological Algorithms: hole filling, connected components, thinning, skeletons, some basic morphological algorithms, Gray scale Morphology.

**UNIT 5: IMAGE REPRESENTATION, DESCRIPTION & RECOGNITION:** Representation, Boundary descriptors, Regional descriptors, Principal component analysis, Recognition based on decision theoretic & structural methods. Optimum statistical classifiers, neural network, string matching, matching shape numbers. Small project work for DIP.

**Text Books:**
6. Chanda & Majumdar, Digital image processing and analysis, PHI, 2003
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS

Name of the Subject | Java Programming Lab | Subject Code | CA40521(CA)
-------------------|---------------------|--------------|-------------
Semester           | Vth                 | Board of Studies |             
Maximum Marks      | 75                  | Minimum Marks |             
Lecture Periods/Week| Tutorial Periods/Week| Practical Periods/Week | Credits 
                   | 04                  | 02             |             

List of Experiments:

(i) Write a program to create a class called `PassObjectDemo` with two variables `a` and `b` of type integer and method with following prototype:

```java
Pass Object Demo get Parameter To Sum (Pass Object Demo p, Pass Object Demo q) Which will accept two parameter of object of same class two add the individual member variable `a` and `b` of both the objects and returns the same class object in the called area. Store this retired object in the called area and display the value of variables of this object by using `void getDisplay()` method.
```

(ii) Create two classes called `A` and `B`. The class has two variables `a`, `b` and two function `void getData()`, `void getSum()`. Similarly class `B` has two variable `c`, `d` and two method `void getData()`, `void getSum()`. Now pass reference of class `A` into `B`, and reference of class `B` into class `A` to access members.

```
[Note: Program for two way communication within the classes]
```

(iii) Write a program to create two classes called `A` and `B`. Class `A` has two variable ‘a’ and ‘b’ with two methods `void getData()` used to get values of ‘a’ and ‘b’ and `void getDisplay()` used to display the sum of relevant variables. Similarly class `B` has two variables ‘c’ and ‘d’ of type integer with two function `void getData()` used to get values of ‘c’ and ‘d’ and `void getDiv()` used to divide corresponding variables. Extend `A` by `B` and call methods of `B` in the class `A` by dynamically. Use `super()` to call constructor of `B` if require.

```
[Use of super]
```

(iv) Write a program to generate own exception class called `MyException` used to generate exception during execution. Create `ExceptionDemo` class; inside this define one method named `void getAge (int a)` which will throws `MyException` if negative age is entered. Create another class `UsingMyException` used to call this method with an integer parameter for age.

```
[v] Write a program to define a method called `void call ()` in class `CallMe`. Create another class `Caller` which implements `Runnable` interface, to create multiple threads. These threads will call `void call ()` method of `CallMe` class synchronously by using `synchronized block or synchronized statement`. Create another class `Synch` in which main () method will start execution of these threads as chilled threads.
```

(vi) Write a program to demonstrate `Inter-thread communication` for two threads consider thread 1 generating one integer number & thread 2 accepting it via two method `wait ()` and
notify ()

(vii) Write a program to create I / O stream to read and write content of disc file.
(viii) Write a program to create Client/Server socket to establish communication in bi-directional.
(ix) Write a program to create URL connection to current find out status of a web site.
(x) Write a program to show all the AWT Components of the Java.
(xi) Write a program to show all the Swing Components of the Java.
(xii) Write a program to demonstrate Swing/AWT components with is corresponding event and listener interfaces, event registration, and called relevant event methods.
(xiii) Create an Applet for accepting parameters through `getParameter()` method of Applet class which is coming from `param` tag of relevant `HTML` file and display the gathered parameter through `public void paint(Graphics g)` method in the Applet. Also find out the location of applet & path by using `getDocumentBase()`, `getCodeBase()` methods of `Applet` class. And also use Applet Context interface and `showDocument()` method to context another applet.
(xiv) Write a program to create simple servlet and deploy by using tomcat server.
(xv) Write a program to implement session tracking and cookies in the server.

**List of Equipments/Machine required:**
(i) Software: The Java Development Kit version 1.3 (JDK 1.3 or more) and Java Servlets Development Kit.
(ii) Operating System: Win32 Release for Windows 98 and Windows NT on Intel hardware. For Windows NT, only version 4.0 is supported.
(iii) RAM / Processor: A 486/DX or faster processor and at least 64 megabytes of RAM are recommended.

**Recommended Books:**
(i) “Head First Java” by Kathy Sierra & Bert Bates O’Reilly Publication.
(ii) “Head First Servlets and JSP “ Bryan Basham, Kathy Sierra & Bert Bates.
### DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
### SYLLABUS

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1. Out of 40 periods allocated, in 10 periods of Introduction to ASP / JSP, connectivity to database must be taught.

2. Students are supposed to make a web based project.
## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
### SYLLABUS

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**Instructions:**

1. Project should be made using front-end tools with database.
2. Database should be normalized up to 3 NF.
3. The concept of System Analysis and design should be implemented.
4. Project report should be submitted.
# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
## SYLLABUS

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### Unit I - Introduction to Technical Writing

### Unit II - Correspondence
Memos, Letters, E-mails, Its differentiation, types of letters, Document Design, its importance, Electronic Communication: Internet, Intranet, extranet, Writing effective e-mail.

### Unit III - Summary
Report Strategies, Effective style of technical report writing: Structures: content, introduction, conclusions, references, etc., Presentation, Writing first draft, revising first draft, diagrams, graphs, tables etc. report layout.

### Unit IV - Report Writing

### Unit V - Proposals & Presentation
Title page, Cover letter, Table of Content, list of illustrations, summary, discussion, conclusion, references, glossary, appendix, Case Studies. Oral Presentation/ Seminar:

### Text Books:

### Reference Books:
1. Sunita Mishra, "Communication Skills for Engineers" Pearson Education
2. Davies J.W. "Communication for engineering students", Longman