Sandip University

Neelam Vidya Vihar, Vill.: Sijoul. P.O. : Mailam, Dist.:Madhubani, Bihar -847235
Website : http://www.sandipuniversity.edu.in
Toll-Free No.- 1800-313-2714 Ph: 7549991044.

School: Engineering &Technology	Programme: B.Tech (Computer Science & Engg.)
Year: Second Year	Semester –III
Course: Engineering Mathematics-III	Course Code:CS301T
Theory: 3 Hours/Week	Max. University Theory Examination: 60 Marks
Tutorial: 1 Hour/Week	Continuous Internal Assessment: 40 Marks
Max. Time for Theory Exam.: 2.5 Hrs	Credit: 4

Objectives :	
1	To become familiar with linear differential equations of higher order applicable to Control systems.
2	To study Complex functions, conformal mappings, contour integration applicable to Electrostatics, Digital filters, Signal and Image processing.
3	To study differentiation and integration vectors.
4	To familiarize with Z-transform.
5	To be through with applications to control systems and signal processing.

Unit Number	Details	Hours
1	Linear Differential Equations and applications: Solution of linear differential equations of first order, solution of nth order linear differential equations with constant coefficients, method of variation of parameters, applications in simple electrical circuit.	8
2	Laplace Transform: Laplace transforms, Inverse Laplace transform, properties and Theorems on them, Laplace transform of standard functions, Laplace transform of some special functions like -periodic, unit step, unit impulse; applications of Laplace transform for solving differential equations.	8
3	Z -Transform: Introduction and definition of Z -Transform, standard properties Z -Transform, Z -Transform of standard sequences and their region of convergence, Inverse Z-transform, solution of difference equations by using Z-Transform.	8
4	Vector Differentiation and Integration: Basics of vector differentiation, vector differential operator, gradient, divergence and curl, directional	8

	derivative, solenoidal, irrotational fields, scalar potential, standard vector identities, line integral, Green's Lemma and its applications.	
5	Complex Variables: Functions of complex variables, analytic functions, Cauchy-Riemann equations, Cauchy's integral Theorem, Cauchy's integral formula, residue Theorem, bilinear transformation.	8
	Total (Hrs)	40

Course Outcome	
Student Should able to :	
CO1	Student will be able to solve linear differential equations and apply them on simple electric circuit.
CO2	Student will gain the basic knowledge of Laplace transform and their applicability in solving initial value problems.
CO3	Student understands the new notion of Z-transform and their usability in solving difference equations.
CO4	Student will be able to solve the problems on vector derivatives and integrations.
CO5	Student will be able to gain the knowledge of complex analysis and its application electrical engineering problem.

Resources	
Recommended Books	1. Erwin Kreyszig, "Advanced Engineering Mathematics", 9e, (Wiley India). 2.A. B. Mathur and V.P. Jaggi: A text book of Engg. Maths and Advanced Engg Mathematics. 3.B.S. Grewal: Elementary Engg. Maths and Higher Engg. Maths.
Reference Books	1.M. D. Greenberg, "Advanced Engineering Mathematics", 2e, Pearson Education. 2.Higher Engineering Mathematics By. Dr. B. S. Grewal 3.Higher Engineering Mathematics By. B.V. Ramana. 4.Advanced Engineering Mathematics By- H. K. Das.
E-Resources	http://nptel.ac.in/

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School: Engineering &Technology	Programme: B.Tech (Computer Science & Engg.)
Year: Second Year	Semester –III
Course: Digital Electronic Circuit	Course Code: CS302T
Theory : 3 Hrs/Week	Max. University Theory Examination: 60 Marks
	Continuous Internal Assessment: 40 Marks
Max. Time for Theory Exam.: 2.5 Hrs	Credit: 3

Objectives :	
1	Recall and Recognize construction and characteristics of JFETs and MOSFETs and differentiate with BJT
2	Evolve and Analyze Operational Amplifier circuits and their applications
3	Describe, Illustrate and Analyze Combinational Logic circuits, Simplification of Algebraic Equations using Karnaugh Maps and Quine McClusky Techniques.
4	Describe and Design Decoders, Encoders, Digital multiplexers, Adders and Subtractors, Binary comparators, Latches and Master-Slave Flip-Flops.
5	Describe, Design and Analyze Synchronous and Asynchronous Sequential

Unit Number	Details	Hours
1	Junction Field Effect Transistors, MOSFETs, Differences between JFETs and MOSFETs, Biasing MOSFETs, FET Applications, CMOS Devices. Wave-Shaping Circuits: Integrated Circuit(IC) Multivibrators. **Introduction to Operational Amplifier**: Ideal v/s practical Opamp, Performance Parameters, **Operational Amplifier Application Circuits**:Peak Detector Circuit, Comparator, Active Filters, Non-Linear Amplifier, Relaxation Oscillator, Current-To-Voltage Converter, Voltage-To-Current Converter.	8
2	**The Basic Gates**: Review of Basic Logic gates, Positive and Negative Logic, Introduction to HDL. **Combinational Logic Circuits:** Sum-of-Products Method, Truth Table to Karnaugh Map, Pairs Quads, and Octets, Karnaugh Simplifications, Don't-care Conditions, Product-of-sums Method, Product-of-sums simplifications, Simplification by Quine-McClusky Method, Hazards and Hazard covers, HDL Implementation Models.	8
	Data-Processing Circuits: Multiplexers, Demultiplexers, 1-of-16 Decoder,	

3	BCD to Decimal Decoders, Seven Segment Decoders, Encoders, Exclusive-OR Gates, Parity Generators and Checkers, Magnitude Comparator, Programmable Array Logic, Programmable Logic Arrays, HDL Implementation of Data Processing Circuits. Arithmetic Building Blocks, Arithmetic Logic Unit **Flip- Flops:** RS Flip-Flops, Gated Flip-Flops, Edge-triggered RS FLIP-FLOP, Edge-triggered D FLIP-FLOPs, Edge-triggered JK FLIP-FLOPs.	8
4	**Flip- Flops:** FLIP-FLOP Timing, JK Master-slave FLIP-FLOP, Switch Contact Bounce Circuits, Various Representation of FLIP-FLOPs, HDL Implementation of FLIP-FLOP. **Registers:** Types of Registers, Serial In - Serial Out, Serial In - Parallel out, Parallel In - Serial Out, Parallel In – Parallel Out, Universal Shift Register, Applications of Shift Registers, Register implementation in HDL. **Counters:** Asynchronous Counters, Decoding Gates, Synchronous Counters, Changing the Counter Modulus.	8
5	Decade Counters, Presettable Counters, Counter Design as a Synthesis problem, A Digital Clock, Counter Design using HDL. **D/A Conversion and A/D Conversion:** Variable, Resistor Networks, Binary Ladders, D/A Converters, D/A Accuracy and Resolution, A/D Converter- Simultaneous Conversion, A/D Converter-Counter Method, Continuous A/D Conversion, A/D Techniques, Dual-slope A/D Conversion, A/D Accuracy and Resolution.	8
	Total (Hrs)	40

Course Outcome	
Student Should able to :	
CO1	Explain the operation of JFETs and MOSFETs , Operational Amplifier circuits and their application
CO2	Explain Combinational Logic, Simplification Techniques using Karnaugh Maps, Quine McClusky technique.
CO3	Demonstrate Operation of Decoders, Encoders, Multiplexers, Adders and Subtractors, working of Latches, Flip-Flops, Designing Registers, Counters, A/D and D/A Converters
CO4	Design of Counters, Registers and A/D & D/A converters

Resources	
Recommended Books	1. Anil K Maini, Varsha Agarwal: Electronic Devices and Circuits, Wiley, 2012. 2. Donald P Leach, Albert Paul Malvino & Goutam Saha: Digital Principles and Applications, 8th Edition, Tata McGraw Hill, 2015. 3.Robert L. Boylestad, Louis Nashelsky, “Electronic devices and circuit Theory”, PHI 4.Ramakant A. Gaikwad, “Op-amp and linear Integrated circuits”, PHI
	1.R.K. Rajput, “Basic Electrical and Electronics Engineering”, Laxmi

Reference Books	Publications, First Edition, 2007. 2.Anil K. Maini, “Digital Electronics Principles and Integrated Circuits”, Wiley India 3.Donald p Leach, Albert Paul Malvino, “Digital principles and Applications”, Tata McGraw Hill. 4.Thomas L. Floyd, “Electronic Devices”, Pearson Education, 9th Edition, 2011.
E-Resources	http://nptel.ac.in/

Tutorials:
Tutorial assessment shall be conducted for the Project, Tutorials, Industrial Visit report and Seminar. Tutorial is continuous assessment based on work done, submission of work in the form of report/journal, timely completion, attendance, and understanding. It should be assessed by subject teacher of the school. At the end of the semester, the final grade for a Tutorial shall be assigned based on the performance of the student and is to be submitted to the University.

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School: Engineering &Technology	Programme: B.Tech (Computer Science & Engg.)
Year: Second Year	Semester –III
Course: Data Structure	Course Code: CS303T
Theory : 3 Hrs/Week	Max. University Theory Examination: 60 Marks
Tutorial: 1 Hr/Week	Continuous Internal Assessment: 40 Marks
Max. Time for Theory Exam.: 2.5 Hrs	Credit: 4

Objectives :	
1	To impart the basic concepts of data structures and algorithms.
2	To understand the basic concepts of searching and hashing
3	To understand the basic concepts of operations in data structures
4	Demonstrate sorting and searching algorithms.
5	To understand the time and space required for a given algorithm,

Unit Number	Details	Hours
1	**Introduction:** Basic Terminology: Data, Data Item, Data type, Data Structure Data Structures: Classification, Operations Linear Arrays: Traversing, Insertion and Deletion Pointers and Structures. Static and Dynamic Memory Management	8
2	**Stacks and Queues** Introduction to Stacks and Queue Stacks: Representation of Stack using Array Applications of stack in Arithmetic expressions, recursion and Tower of Hanoi Queue: Representation of Queue using Array Circular Queue and its implementation	8
3	**Linked Lists:** Concept of linked organization Representation of Linked List in Memory	8

	Singly, doubly and circular Linked List Operations on singly and Doubly Linked List such as creation, traversing, searching, insertion, deletion. Representation of Stack and Queue using Linked List	
4	**Trees**: Basic terminology of Trees Binary trees and its representation in memory Binary Search Trees: Searching, Inserting, Deletion and Traversals using Stacks. Balanced Binary Trees: AVL Search Trees and Rotations Heap and Heap sort	8
5	**Algorithms and Searching**: Complexity of Algorithms: Asymptotic Notations Linear Search Algorithm with time complexity Binary Search Algorithm with time complexity Hashing: Hash table, hashing functions, Collision Resolution Techniques	8
	Total (Hrs)	40

Course Outcome	
Student Should able to :	
CO1	Apply suitable data structure for a given problem.
CO2	To design and implement basic data structures and to determine time and space complexity.
CO3	Apply suitable searching algorithm for a given problem.
CO4	Perform operations like insert, delete, traverse, search etc. in a given data structure.

Resources	
Recommended Books	1. Fundamentals of Data Structures in C - Ellis Horowitz and Sartaj Sahni, 2nd edition, Universities Press,2014 2. Data Structures - Seymour Lipschutz, Schaum's Outlines, Revised 1st edition, McGraw Hill, 2014
Reference Books	1. Data Structures: A Pseudo-code approach with C –Gilberg & Forouzan, 2nd edition, Cengage Learning,2014 2. Data Structures using C, , Reema Thareja, 3rd edition Oxford press, 2012 3. An Introduction to Data Structures with Applications- Jean-Paul Tremblay & Paul G. Sorenson, 2nd Edition, McGraw Hill, 2013 4. Data Structures using C - A M Tenenbaum, PHI, 1989 5. Data Structures and Program Design in C - Robert Kruse, 2nd edition, PHI, 1996
E-Resources	http://nptel.ac.in/

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School: Engineering &Technology	Programme: B.Tech (Computer Science & Engg.)
Year: Second Year	Semester –III
Course: Discrete Mathematical Structure	Course Code: CS304T
Theory : 3 Hrs/Week	Max. University Theory Examination: 60 Marks
Tutorial: 1 Hr/Week	Continuous Internal Assessment: 40 Marks
Max. Time for Theory Exam.: 2.5 Hrs	Credit: 4

Objectives :	
1	Provide theoretical foundations of computer science to perceive other courses in the programme.
2	Illustrate applications of discrete structures: logic, relations, functions, set theory and counting.
3	Describe different mathematical proof techniques.
4	Illustrate the use of graph theory in computer science.
5	Provide theoretical foundations of computer science to perceive other courses in the programme.

Unit Number	Details	Hours
1	Fundamentals of Logic: Basic Connectives and Truth Tables, Logic Equivalence – The Laws of Logic, Logical Implication – Rules of Inference. Fundamentals of Logic contd.: The Use of Quantifiers, Quantifiers, Definitions and the Proofs of Theorems.	8
2	Properties of the Integers: Mathematical Induction, The Well Ordering Principle – Mathematical Induction, Recursive Definitions. Principles of Counting. Fundamental Principles of Counting: The Rules of Sum and Product, Permutations, Combinations – The Binomial Theorem, Combinations with Repetition.	8
	Relations and Functions: Cartesian Products and Relations, Functions – Plain and One-to-One, Onto Functions. The Pigeon-hole Principle, Function Composition and Inverse Functions. Properties of Relations, Computer	

3	Recognition – Zero-One Matrices and Directed Graphs, Partial Orders – Hasse Diagrams, Equivalence Relations and Partitions.	8
4	The Principle of Inclusion and Exclusion: The Principle of Inclusion and Exclusion, Generalizations of the Principle, Derangements – Nothing is in its Right Place, Rook Polynomials. Recurrence Relations: First Order Linear Recurrence Relation, The Second Order Linear Homogeneous Recurrence Relation with Constant Coefficients.	8
5	Introduction to Graph Theory: Definitions and Examples, Sub graphs, Complements, and Graph Isomorphism, Vertex Degree, Euler Trails and Circuits , Trees: Definitions, Properties, and Examples, Routed Trees, Trees and Sorting, Weighted Trees and Prefix Codes	8
	Total (Hrs)	40

Course Outcome	
Student Should able to :	
CO1	Use propositional and predicate logic in knowledge representation and truth verification.
CO2	Demonstrate the application of discrete structures in different fields of computer science.
CO3	Solve problems using recurrence relations and generating functions.
CO4	Application of different mathematical proofs techniques in proving theorems in the courses.
CO5	Compare graphs, trees and their applications.

Resources	
Recommended Books	1. Ralph P. Grimaldi: Discrete and Combinatorial Mathematics, , 5th Edition, Pearson Education. 2004
Reference Books	1. Basavaraj S Anami and Venakanna S Madalli: Discrete Mathematics – A Concept based approach, Universities Press, 2016 2. Kenneth H. Rosen: Discrete Mathematics and its Applications, 6th Edition, McGraw Hill, 2007. 3. Jayant Ganguly: A Treatise on Discrete Mathematical Structures, Sanguine-Pearson, 2010. 4. D.S. Malik and M.K. Sen: Discrete Mathematical Structures: Theory and Applications, Thomson, 2004. 5. Thomas Koshy: Discrete Mathematics with Applications, Elsevier, 2005, Reprint 2008.
E-Resources	http://nptel.ac.in/

Tutorials:
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assessed by subject teacher of the school. At the end of the semester, the final grade for a Tutorial shall be assigned based on the performance of the student and is to be submitted to the University.

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School: Engineering &Technology	Programme: B.Tech (Computer Science & Engg.)
Year: Second Year	Semester –III
Course: Object Oriented Programming	Course Code: CS305T
Theory : 3 Hrs/Week	Max. University Theory Examination: 60 Marks
	Continuous Internal Assessment: 40 Marks
Max. Time for Theory Exam.: 2.5 Hrs	Credit: 3

Objectives :	
1	Explain about the concepts of object.
2	Describe the feature of object in the various languages.
3	Explain the logic about class, Inheritance and Exception.

Unit Number	Details	Hours
1	**Introduction to Object Oriented Concepts:** A Review of structures, Procedure–Oriented Programming system, Object Oriented Programming System, Comparison of Object Oriented Language with C, Console I/O, variables and reference variables, Function Prototyping, Function Overloading. **Class and Objects:** Introduction, member functions and data, objects and functions, objects and arrays, Namespaces, Nested classes, Constructors, Destructors.	8
2	**Introduction to Java**: Java's magic: the Byte code; Java Development Kit (JDK); the Java Buzzwords, Object-oriented programming; Simple Java programs. Data types, variables and arrays, Operators, Control Statements.	8
3	**Classes, Inheritance, Exceptions, Packages and Interfaces:** Classes: Classes fundamentals; Declaring objects; Constructors, this keyword, garbage collection. **Inheritance:** inheritance basics, using super, creating multi level hierarchy, method overriding. **Exception handling:** Exception handling in Java. Packages, Access Protection, Importing Packages, Interfaces.	8
4	**Multi Threaded Programming, Event Handling:** Multi Threaded Programming: What are threads? How to make the classes threadable ; Extend-	8

	ing threads; Implementing runnable; Synchronization; Changing state of the thread; Bounded buffer problems, read-write problem, producer consumer problems. **Event Handling:** Two event handling mechanisms; The delegation event model; Event classes; Sources of events; Event listener interfaces; Using the delegation event model; Adapter classes; Inner classes.	
5	**The Applet Class:** Introduction, Two types of Applets; Applet basics; Applet Architecture; An Applet skeleton; Simple Applet display methods; Requesting repainting; Using the Status Window; The HTML APPLET tag; Passing parameters to Applets; getDocumentbase() and getCodebase(); AppletContext and showDocument(); The AudioClip Interface; The AppletStub Interface;Output to the Console. **Swings:** Swings: The origins of Swing; Two key Swing features; Components and Containers; The Swing Packages; A simple Swing Application; Create a Swing Applet; Jlabel and ImageIcon; JTextField;The Swing Buttons; JTabbedpane; JScrollPane; JList; JComboBox; JTable.	8
	Total (Hrs)	46

Course Outcome	
Student Should able to :	
CO1	Explain the object-oriented concepts and JAVA.
CO2	Develop computer programs to solve real world problems in Java.
CO3	Develop simple GUI int erfaces for a computer program to interact with users, and to Comprehend the event-based GUI handling principles using Applets and swings.

Resources	
Recommended Books	1. Sourav Sahay, Object Oriented Programming with C++ , 2nd Ed, Oxford University Press,2006 2. Herbert Schildt, Java The Complete Reference, 7th Edition, Tata McGraw Hill, 2007.
Reference Books	1. Mahesh Bhave and Sunil Patekar, "Programming with Java", First Edition, Pearson Education,2008, ISBN:9788131720806 2. Herbert Schildt, The Complete Reference C++, 4th Edition, Tata McGraw Hill,2003. 5. Richard A Johnson, Introduction to Java Programming and OOAD, CENGAGE Learning.
E-Resources	http://nptel.ac.in/

Tutorials:
Tutorial assessment shall be conducted for the Project, Tutorials, Industrial Visit report and Seminar. Tutorial is continuous assessment based on work done, submission of work in the form of report/journal, timely completion, attendance, and understanding. It should be assessed by subject teacher of the school. At the end of the semester, the final grade for a Tutorial shall be assigned based on the performance of the student and is to be submitted to the University.

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School: Engineering &Technology	Programme: B.Tech (Computer Science & Engg.)
Year: Second Year	Semester –III
Course: Digital Electronic Lab	Course Code: CS308P
Practical : 3 Hrs/Week	Max. University Practical Examination: 25 Marks
	Term Work: 25 Marks
Max. Time for Exam.: 3 Hrs	Credit: 1

Practical Objectives :	
1	Design and implement the flip-flop using various gates.
2	Design the counter using various synchronous and asynchronous.
3	Design and verify the operation of a magnitude comparator.

Sr. No.	Practical Description
1	Introduction to Digital Electronics lab- nomenclature of digital ICS, specifications, study of the data sheet, concept of vcc and ground, verification of the truth tables of logic gates using TTL ICS.
2	Implementation of the given Boolean function using logic gates in both sop and pos forms.
3	Verification of state tables of RS, JK, T and D flip-flops using NAND & nor gates.
4	Implementation and verification of decoder/de-multiplexer and encoder using logic gates.
5	Implementation of 4x1 multiplexer using logic gates.
6	Implementation of 4-bit parallel adder using 7483 IC.
7	Design and verify the 4-bit synchronous counter.
8	Design and verify the 4-bit asynchronous counter.
9	To design and verify operation of half adder and full adder.
10	To design and verify operation of half subtractor.
11	To design & verify the operation of magnitude comparator.
12	To study and verify NAND as a universal gate.

Notes	
1	Each student should perform at least 8 experiments from the list of experiments.
2	The experiments from the regular practical syllabus will be performed
3	The regular attendance of students during the syllabus practical course will be monitored and marks will be given accordingly.
4	Good Laboratory Practices
5	Minimum one visit should be arranged to electrical instruments manufacturing company.

Course Outcome	
1	Design and demonstrate various combinational logic circuits.
2	Design and demonstrate various types of counters and Registers using Flip-flops.
3	Make use of simulation package to design circuits.
4	Infer the working and implementation of ALU.

Practical/Oral/Presentation:
Practical/Oral/Presentation shall be conducted and assessed jointly by internal and external examiners. The performance in the Practical/Oral/Presentation examination shall be assessed by at least a pair of examiners appointed as examiners by the University. The examiners will prepare the mark/grade sheet in the format as specified by the University.

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School: Engineering &Technology	Programme: B.Tech (Computer Science & Engg.)
Year: Second Year	Semester –III
Course: Data Structure Lab	Course Code: CS306P
Practical : 3 Hrs/Week	Max. University Practical Examination: 25 Marks
	Term Work: 25 Marks
Max. Time for Exam.: 3 Hrs	Credit: 1

Practical Objectives :	
1	Asymptotic performance of algorithms.
2	Linear data structures and their applications such as stacks, queues and lists
3	Non-Linear data structures and their applications such as trees and graphs
4	Sorting and searching algorithms

Descriptions (if any)
Implement all the experiments in C Language under Linux / Windows environment

Practical Description

Laboratory Experiments:

Concern faculty member should suitably frame at least FOUR laboratory assignments from the Group A and FOUR experiments from the Group B using C/C++/JAVA from the following list.

(Group A)

1. Implementation of stack using array or linked list.
Performing simple operations like push, pop and display with respect to stack.

2. Implementation of multi-stack / multi-queue in one array.
Performing simple operations like push, pop and display with respect to multi-stack.

3. Implementation of queue using array or linked list.
Performing simple operations like insertion and deletion of an element into the queue.

4. Implementation of circular queue using array or linked list.
Performing simple operations like insertion and deletion of an element into the circular queue.

5. Conversion of infix expression to postfix expression.

Performing simple conversions of given infix expression into postfix expression.

6. Conversion of postfix expression to infix expression.
Performing simple conversions of given postfix expression into infix expression.

(Group B)

1.Implementation of double linked list & perform insertion, deletion and searching. Performing the operations on double linked list like insertion, deletion and searching.

2.Creation of binary tree & perform all non-recursive traversals.
Create the binary tree and perform the In-order, Preorder and Post-order traversal.

3. Creation of binary search tree & perform insertion, deletion and printing in tree shape.
Create the Binary Search tree performing the operations on BST like insertion, deletion and printing in tree shape.

4.Create a hash table and handle the collision using linear probing with or without replacement Creation of hash Table and handle the collision using linear probing with or without replacement.

5.Write a program to construct an AVL tree for the given set of keys. Also write function for deleting a key from the given AVL tree.

6.Implementation of Heap sort algorithm Sort the input data using Max-heap/Min-heap algorithm

Course outcomes:
On the completion of this laboratory course, the students will be able to:
· Analyze and Compare various linear and non-linear data structures
· Code, debug and demonstrate the working nature of different types of data structures and their applications
· Implement, analyze and evaluate the searching and sorting algorithms
· Choose the appropriate data structure for solving real world problems

Practical/Oral/Presentation:
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School: Engineering &Technology	Programme: B.Tech (Computer Science & Engg.)
Year: Second Year	Semester –III
Course: Object Oriented Programming Lab	Course Code: CS307P
Practical : 3 Hrs/Week	Max. University Practical Examination: 25 Marks
	Term Work: 25 Marks
Max. Time for Exam.: 3 Hrs	Credit: 1

Practical Objectives :	
1	To provide knowledge about Objects and Classes.
2	To provide the basics and core of Package and Inheritance.

Practical Description

Concern faculty member should suitably frame at least FOUR laboratory assignments from the Group A and FOUR experiments from the Group B using JAVA from the following list.

Group-A

1. Write a program that demonstrates string operations.

2. Write a program that demonstrate package creation and use in program.

3. Write a program to demonstrate the abstract class and abstract method.

4.Write a Java program that illustrates the concepts of Java class that includes
(a)constructor with and without parameters.
(b)Overloading methods.
(c)Overriding methods

4. Write a Java program to demonstrate inheritance by creating suitable classes.

5. Create a Java package, interface and implement in Java program.

7.Write a program to demonstrate
(a)Use of implementing interfaces.

(b)Use of extending interfaces.

Group- B

1. Write a program to implement the concept of threading.

2. Write a program to demonstrate the predefined and User defined exception handling.

3.Write a program using Applet
(a)to display a message in the Applet.
(b)for configuring Applets by passing parameters.

4.Write programs for using Graphics class
(a)to display basic shapes and fill them.
(b)draw different items using basic shapes
(c)set background and foreground colors.

5.Write a program in Java that demonstrates JDBC

6.Write a program that demonstrates JDBC on applet/application

Practical/Oral/Presentation:
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