

# 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: Computer Science & Application	Programme: BCA (Bachelor of Computer Application)
Year: First Year	Semester -II
Course: Advance English	Course Code: BEG201A
Theory: 3 Hours/Week	Max. University Theory Examination: 60 Marks
	Continuous Internal Assessment: 40 Marks
Max. Time for Theory Exam.: 2:30 Hrs	Credit: 4

## Objectives :

1	To use acceptable English in academic writing.
2	To use English language in a more meaningful way with an enriched word power.
3	To communicate in a professional way using various communication strategies.
4	To read and comprehend the major points discussed in various types of written texts.
5	To make notes, write precise, letter and résumé.

Unit Number	Details	Hours
1	Listening Skills(Only for Internal Assessment) i. Audios containing stories, speeches, presentations, poetry recitations, songs etc.	6
2	Vocabulary (These topics should be incorporated while teaching texts) Idioms and Phrases, using Dictionary and Thesaurus	6
3	Reading Skills (Understanding the text, skimming, scanning, speed reading, Reading charts and maps etc.) i. The Gift of Magi- O' Henry ii. My Financial Career – Stephen Leacock iii. The Convocation Speech- Chetan Bhagat/ Connect the Dots- Steve Jobs	10
4	Reading and Responding (Critical Appreciation, Paraphrasing and Analysing) The Definition of Love – Andrew Marvell Musée des Beaux Arts – W. H. Auden	8

5	Grammar (These topics should be incorporated while teaching texts) i. Modal Auxiliaries ii. Active and Passive Voice	10
6	<b>Speaking Skills:</b> (Conversational Skills) <b>Suggesting:</b> i. Permission (seeking, giving and declining permission tactfully) ii. Agreeing, disagreeing and partly agreeing iii. Complimenting iv. Apologizing v. Group Discussion vi. Interview Skills	10
7	<b>Writing Skills:</b> i. Expansion of Idea ii. Resume Writing iii. Report Writing iv. Writing for Blogs and Social Media	10
Total (Hrs)		60

### Course Outcome

Student Should able to :

CO1	Uses acceptable English in appropriate context.
CO2	Makes use of comprehensive and suitable vocabulary.
CO3	Communicates professionally by using the strategies learnt.
CO4	Applies cognizance while comprehending various types of written texts.
CO5	Writes and speaks in English, precisely with clarity and accuracy.

### Resources

Recommended Books	<ol style="list-style-type: none"> <li>1. <b>G. Radhakrishna, Pillai, K. Rajeevan.</b> Spoken English for You. CIEFL. Emerald Publication.</li> <li>2. <b>K. S. Smita, Annie Pothan.</b> English Conversational Practice. Sterling Publication Pvt. Ltd.</li> <li>3. <b>Dr. Saraswati.</b> Success with Spoken English for Undergraduate</li> <li>4. <b>O' Henry-</b> The Gift of Magi</li> <li>5. <b>Stephen Leacock-</b> My Financial Career</li> <li>6. <b>Chetan Bhagat:</b> Connect the Dots- Steve Jobs- The Convocation Speech</li> <li>7. <b>Andrew Marvell-</b> The Definition of Love</li> <li>8. <b>W. H. Auden-</b> Musée des Beaux Arts</li> </ol>
Reference Books	<ol style="list-style-type: none"> <li>1. <b>Murphy, Raymond:</b> Essential English Grammar, Cambridge University Press</li> <li>2. <b>Bygate, M.</b> Speaking. Oxford: Oxford University Press.</li> <li>3. <b>Maison, Margaret M.:</b> Examine Your English</li> <li>4. <b>Fitikides, T.J.:</b> Common Mistakes in English</li> <li>5. <b>McCarthy, Michael:</b> English Vocabulary In Use and Felicity O. Dell</li> </ol>

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School: Computer Science & Application	Programme: BCA (Bachelor of Computer Application)
Year: First Year	Semester –II
Course: Discrete Mathematics-II	Course Code:BCA201
Theory : 3 Hrs/Week	Max. University Theory Examination: 60 Marks
Tutorial : 1 Hrs/Week	Continuous Internal Assessment: 30 Marks Tutorials: 10 Marks
Max. Time for Theory Exam.: 2:30 Hrs	Credit: 4

## Objectives :

1	To learn the basic concepts of Graph Theory and Tree Structure
2	To understand propositional calculus and various laws associated with it.
3	To learn various Normal Forms
4	To learn Predicate Calculus along with its theory of inference

Unit Number	Details	Hours
1	<b>Propositional Calculus:</b> Connectives, Negation, conjunction, Disjunction, statement formulas and truth tables, conditional and Bi-conditional, well formed formulas, Tautologies, Equivalence of formulas, duality law, Tautologies implications, Functionally complete set of, other connectives.	8
2	<b>Predicate Calculus:</b> The theory of Inference for statement Calculus, validity using truth tables, Rules of inference, consistency of premises and Indirect Method of Proof .	9
3	<b>The statement function:</b> variables and quantifier, Predicate formulas, Free and Bound variables, The universe of Discourse, Theory of inference for predicate calculus.	10
4	<b>Normal Forms:</b> Disjunctive normal forms, connective normal forms, Principal disjunctive normal form, Principal conjunctive normal form.	8

5	<b>Graph Theory:</b> Basic concepts, types of graphs, Representation of graph in memory, Euler path and circuits, Hamiltonian Path and circuits. <b>Trees:</b> Basic concepts, Labeled trees, Undirected trees.	10
Total (Hrs)		45

### Course Outcome

Student Should able to :

CO1	Understand the basic concepts of graph theory and some related theoretical problems.
CO2	Examine the validity of argument by using propositional and predicate calculus.
CO3	Analyze and Solve the problems based on Conjunctive and Disjunctive Normal Form.

### Resources

Recommended Books	1. Kolman, Busby and Ross, “Discrete mathematical Structures and graph theory” 2. Alan Doerr, K. Levasseur , “Applied discrete structure for computer science”, Galgotia publications, 1988
Reference Books	1. Trembley & Manohar, “Discrete mathematical Structures with application to computer science”, McGraw Hill, 1987.

### 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: Computer Science & Application	Programme: BCA (Bachelor of Computer Application)
Year: First Year	Semester -II
Course: Computer Architecture	Course Code: BCA202
Theory : 3 Hrs/Week	Max. University Theory Examination: 60 Marks
	Continuous Internal Assessment: 40 Marks
Max. Time for Theory Exam.: 2:30 Hrs	Credit: 4

## Objectives :

1	To conceptualize the basics of organizational and architectural issues of a digital computer .
2	To understand various Number Systems and their conversions.
3	To analyze registers, instruction sets and memory references.
4	To understand various data organization techniques of CPU.
5	To study programming, addressing modes and I/O organization

Unit No.	Details	Hours
1	<b>Introduction:</b> Logic gates, Boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexors, registers, counters and memory units.	8
2	<b>Data Representation and basic Computer Arithmetic:</b> Number systems, complements, fixed and floating point representation, character representation, addition, subtraction, magnitude comparison.	9
3	<b>Basic Computer Organization and Design:</b> Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output and interrupt.	10
4	<b>Central Processing Unit:</b> Register organization, arithmetic and logical micro-operations, stack organization, micro programmed control.	8
5	<b>Programming the Basic Computer:</b> Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming. <b>Input-output Organization:</b> Peripheral devices, I/O interface, Modes of data transfer, direct memory access.	10
Total (Hrs)		45

Course Outcome	
Student Should able to :	
CO1	Understand the design of a basic computer.
CO2	Explain the organization and architecture of CPU.
CO3	Compute computer arithmetic operations and show the procedures for implementing them with digital hardware.
CO4	Discuss various concepts in input and output organization.

Resources	
Recommended Books	1. M. Mano, Computer System Architecture, Pearson Education 1992. 2. W. Stallings, Computer Organization and Architecture Designing for Performance, 8th Edition, Prentice Hall of India ,2009
Reference Books	1. A. J. Dos Reis, Assembly Language and Computer Architecture using C++ and JAVA, Course Technology, 2004 2. Digital Design, M.M. Mano, Pearson Education Asia, 1979
E-Resources	<a href="http://nptel.ac.in/">http://nptel.ac.in/</a>

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School: Computer Science & Application	Programme: BCA (Bachelor of Computer Application)
Year: First Year	Semester -II
Course: Object Oriented Programming	Course Code: BCA203
Theory : 3 Hrs/Week	Max. University Theory Examination: 60 Marks
Tutorial : 1Hr/Week	Continuous Internal Assessment: 40 Marks
Max. Time for Theory Exam.: 2:30 Hrs	Credit: 4

## Objectives :

1	To understand how C++ improves C with object-oriented features.
2	To learn the syntax and semantics of the C++ programming language.
3	To understand the concept of data abstraction and encapsulation and to learn how to overload functions and operators in C++.
4	To learn how containment and inheritance promote code reuse in C++ and how inheritance and virtual functions implement dynamic binding with polymorphism.
5	To design and implement generic classes with C++ templates and to learn how to use exception handling in C++ programs.

Unit Number	Details	Hours
1	<b>Object Oriented Methodology:</b> Elements of Object Oriented programming, Objects, Classes, OOPs features. <b>Classes &amp; Objects:</b> Specifying a Class, Creating Objects, Accessing Class members, Defining member function, Outside Member Functions as inline, Accessing Member Functions within the class, Static data member, Access Specifiers: Private, Protected and Public Members.	10
2	<b>FUNCTION, CONSTRUCTORS &amp; DESTRUCTORS:</b> Introduction to functions, Parameters passing to functions, function overloading. Introduction to Constructor, Parameterized Constructors, Constructor Overloading, Constructors with Default Arguments, Copy Constructor, Destructor, Order of Construction and Destruction, Static data members with Constructor and Destructors.	8
3	<b>OPERATOR OVERLOADING:</b> Definition, Overloadable Operators, Unary Operator Overloading, Unary & Binary overloading, Rules for Operators Over-	10

	loading. <b>INHERITANCE:</b> Defining, Abstract classes, Single, Multilevel, Multiple, Hierarchical, Hybrid Inheritance, Constructor and Destructor in Derived Classes.	
4	<b>POLYMORPHISM:</b> Definition, Application and demonstration of Data Abstraction, Encapsulation and Polymorphism. Early Binding, Polymorphism with pointers, Virtual Functions, Late binding, pure virtual functions, abstract classes.	10
5	<b>EXCEPTION HANDLING:</b> Exception Handling Model, List of Exceptions, Handling Uncaught Exceptions, Fault Tolerant Design Techniques, Memory Allocation Failure Exception, Rules for Handling Exception Successfully.	7
Total (Hrs)		45

### Course Outcome

Student Should able to :

CO1	Understand and Apply Object oriented features and C++ concepts.
CO2	Apply the concept of polymorphism and inheritance.
CO3	Implement exception handling and templates.
CO4	Develop applications using Console I/O and File I/O.

### Resources

Recommended Books	1. Object Oriented Programming with C++ by E. Balagurusamy, McGraw Hill 2. Mastering C++ by K R Venugopal Tata McGraw-Hill , New Delhi. 3. Herbert Schild, “Complete Reference of C++”, McGraw Hill
Reference Books	1. The C++ Programming Language –Bjarne Stroustrup 2. Programming with C++ - Ravichandran 3. Programming with C++ - Robert Lafore
E-Resources	<a href="http://nptel.ac.in/">http://nptel.ac.in/</a>



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School: Computer Science & Application	Programme: BCA (Bachelor of Computer Application)
Year: First Year	Semester -II
Course: Data Structure	Course Code: BCA204
Theory : 3 Hrs/Week	Max. University Theory Examination: 60 Marks
Tutorial : 1 Hr/Week	Continuous Internal Assessment: 40 Marks
Max. Time for Theory Exam.: 2:30 Hrs	Credit: 4

## Objectives :

1	Explain fundamentals of data structures and their applications essential for programming/problem solving.
2	Illustrate linear representation of data structures: Stack, Queues, Lists.
3	Illustrate linear representation of data structures: Trees, Graphs.
4	Demonstrate sorting and searching algorithms.
5	Find suitable data structure during application development/Problem Solving.

Unit Number	Details	Hours
1	<b>Introduction:</b> Data Structures, Classifications (Primitive & Non Primitive), Data structure Operations, Review of Arrays, Structures, Self-Referential Structures, and Unions. Pointers and Dynamic Memory Allocation Functions. Representation of Linear Arrays in Memory, Dynamically allocated arrays, <b>Array Operations:</b> Traversing, inserting, deleting, searching, and sorting. Multidimensional Arrays, Polynomials and Sparse Matrices. <b>Strings:</b> Basic Terminology, Storing, Operations and Pattern Matching algorithms. Programming Examples.	8
2	<b>Stacks and Queues</b> <b>Stacks:</b> Definition, Stack Operations, Array Representation of Stacks, Stacks using Dynamic Arrays, Stack Applications: Polish notation, Infix to postfix conversion, evaluation of postfix expression, <b>Recursion</b> - Factorial, GCD, Fibonacci Sequence, Tower of Hanoi, Ackerman's function. <b>Queues:</b> Definition, Array Representation, Queue Operations, Circular Queues, Circular queues using Dynamic arrays, Dequeues, Priority Queues,	8

	A Mazing Problem. Multiple Stacks and Queues. Programming Examples.	
3	<b>Linked Lists: Definition, Representation of linked lists in Memory, Memory allocation; Garbage</b> Collection. Linked list operations: Traversing, Searching, Insertion, and Deletion. Doubly Linked lists, Circular linked lists, and header linked lists. Linked Stacks and Queues. Applications of Linked lists – Polynomials, Sparse matrix representation. Programming Examples	8
4	<b>Trees:</b> Terminology, Binary Trees, Properties of Binary trees, Array and linked Representation of Binary Trees, Binary Tree Traversals - Inorder, postorder, preorder; Additional Binary tree operations. Threaded binary trees, Binary Search Trees – Definition, Insertion, Deletion, Traversal, Searching, Application of Trees-Evaluation of Expression, Programming Examples	8
5	<b>Graphs:</b> Definitions, Terminologies, Matrix and Adjacency List Representation Of Graphs, Elementary Graph operations, Traversal methods: Breadth First Search and Depth First Search. <b>Sorting and Searching:</b> Insertion Sort, Radix sort, Address Calculation Sort. <b>Hashing:</b> Hash Table organizations, Hashing Functions, Static and Dynamic Hashing. <b>Files and Their Organization:</b> Data Hierarchy, File Attributes, Text Files and Binary Files, Basic File Operations, File Organizations and Indexing	8
Total (Hrs)		45

Course Outcome	
Student Should able to :	
CO1	Use different types of data structures, operations and algorithms
CO2	Apply searching and sorting operations on files
CO3	Use stack, Queue, Lists, Trees and Graphs in problem solving
CO4	Implement all data structures in a high-level language for problem solving.

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. An Introduction to Data Structures with Applications- Jean-Paul Tremblay & Paul G. Sorenson, 2 <sup>nd</sup> Edition, McGraw Hill, 2013
E-Resources	<a href="http://nptel.ac.in/">http://nptel.ac.in/</a>

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School: Computer Science & Application	Programme: BCA (Bachelor of Computer Application)
Year: First Year	Semester -II
Course: Object Oriented Programming Lab	Course Code: BCA21L
Practical : 3 Hrs/Week	Max. University Practical Examination: 25 Marks
	Lab Continuous Internal Assessment: 25 Marks
Max. Time for Exam.: 3 Hrs	Credit: 1

Objectives:	
1	To help the students understand the basic programming concepts of OOP
2	Demonstrate adeptness of object oriented programming in developing solutions to problems demonstrating usage of data abstraction, encapsulation, and inheritance.
3	Develop a greater understanding of the issues involved in programming language design and implementation.

Sr. No.	Description
	Group A: <b>C++ Assignments (Any SIX Assignments)</b>
1	<b>Classes and Objects</b> : Encapsulation To create a class 'staff', to create different objects and to test the functioning of member functions.
2	<b>Constructors and Destructors:</b> To create a class 'Student', to create different objects using constructor and de allocate the same using destructor.
3	<b>Arrays of Objects</b> To create Class 'student' To create an array of students To find out the student who get the first rank
4	<b>Pointers</b> To create pointers, pointer to objects.
5	<b>Static Polymorphism:</b> Operator Overloading To perform complex number arithmetic or Matrix arithmetic
6	<b>Inheritance</b> To create a class 'College' To create another class 'department' by using 'college' as a base class To verify the functions in the derived and base classes. Also to verify by keeping the two functions with same name (one in the base class and another in derived class)
7	<b>Abstract Class</b> To create an Abstract class 'Vehicle' and demonstrate its use by creating sub-

	classes
8	<b>Dynamic Polymorphism:</b> virtual function To draw various shapes: viz Square, Circle, Triangle and Rectangle.
9	<b>Exception Handling</b> To Test the classes and functions using different exceptions.
	<b>Group B: (Any Three Assignments)</b>
10	<b>Inheritance</b> To demonstrate multilevel and multiple inheritance extending the ‘College’ and ‘department’ class
11	<b>New and Delete Operator</b> To demonstrate the use of new and delete operator, using the ‘Student Class’
12	<b>Pointers</b> To demonstrate pointer arithmetic.
	<b>Group C: (Any One Assignments)</b>
13	To create a classes and objects that demonstrates the working of an employee payroll system.
14	To create classes and objects that demonstrates the working of Project Management System.

### Term Work

Term Work assessment shall be conducted for the Project, Tutorials and Seminar. Term work 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 institute. At the end of the semester, the final grade for a Term Work shall be assigned based on the performance of the student and is to be submitted to the University.

### Notes:

1	The experiments from the regular practical syllabus will be performed (15 Marks).
2	The regular attendance of students during the syllabus practical course will be monitored and marks will be given accordingly (5 Marks).
3	Good Laboratory Practices (5 Marks)

### 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.

### Notes:

1	One experiment from the regular practical syllabus will be conducted. (Total 15 Marks).
2	Complete laboratory journal (05 Marks).
3	Viva-voce (05 Marks).

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School: Computer Science & Application	Programme: BCA (Bachelor of Computer Application)
Year: First Year	Semester -II
Course: Data Structure Lab	Course Code: BCA 22L
Practical : 3 Hrs/Week	Max. University Practical Examination: 25 Marks
	Lab Continuous Internal Assessment: 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

Sr. No.	Practical Description
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### Laboratory Experiments:

1. Design, Develop and Implement a menu driven Program in C for the following **Array** operations

- Creating an Array of **N** Integer Elements
- Display of Array Elements with Suitable Headings
- Inserting an Element (**ELEM**) at a given valid Position (**POS**)
- Deleting an Element at a given valid Position(**POS**)
- Exit.

Support the program with functions for each of the above operations.

2. Design, Develop and Implement a Program in C for the following operationson **Strings**

- Read a main String (**STR**), a Pattern String (**PAT**) and a Replace String (**REP**)
- Perform Pattern Matching Operation: Find and Replace all occurrences of **PAT** in **STR** with **REP** if **PAT** exists in **STR**. Report suitable messages in case **PAT** does not exist in **STR**

Support the program with functions for each of the above operations. Don't use Built-in functions.

3. Design, Develop and Implement a menu driven Program in C for the following operations on **STACK** of Integers (Array Implementation of Stack with maximum size **MAX**)

- a. **Push** an Element on to Stack
- b. **Pop** an Element from Stack
- c. Demonstrate how Stack can be used to check **Palindrome**
- d. Demonstrate **Overflow** and **Underflow** situations on Stack
- e. Display the status of Stack
- f. Exit

Support the program with appropriate functions for each of the above operations.

4. Design, Develop and Implement a Program in C for converting an Infix Expression to Postfix Expression. Program should support for both parenthesized and free parenthesized expressions with the operators: +, -, \*, /, **%(Remainder)**, **^(Power)** and **alphanumeric** operands.

5. Design, Develop and Implement a Program in C for the following Stack Applications

- a. Evaluation of **Suffix expression** with single digit operands and operators: +, -, \*, /, %, ^
- b. Solving **Tower of Hanoi** problem with **n** disks

6. Design, Develop and Implement a menu driven Program in C for the following operations on **Circular QUEUE** of Characters (Array Implementation of Queue with maximum size **MAX**)

- a. Insert an Element on to Circular QUEUE
- b. Delete an Element from Circular QUEUE
- c. Demonstrate **Overflow** and **Underflow** situations on Circular QUEUE
- d. Display the status of Circular QUEUE
- e. Exit

Support the program with appropriate functions for each of the above operations

7. Design, Develop and Implement a menu driven Program in C for the following operations on **Singly Linked List (SLL)** of Student Data with the fields: **USN, Name, Branch, Sem, PhNo**

- a. Create a **SLL** of **N** Students Data by using **front insertion**.
- b. Display the status of **SLL** and count the number of nodes in it
- c. Perform Insertion / Deletion at End of **SLL**
- d. Perform Insertion / Deletion at Front of **SLL(Demonstration of stack)**
- e. Exit

8. Design, Develop and Implement a menu driven Program in C for the following operations on **Doubly Linked List (DLL)** of Employee Data with the fields: **SSN, Name, Dept, Designation, Sal, PhNo**

- a. Create a **DLL** of **N** Employees Data by using **end insertion**.
- b. Display the status of **DLL** and count the number of nodes in it
- c. Perform Insertion and Deletion at End of **DLL**
- d. Perform Insertion and Deletion at Front of **DLL**
- e. Demonstrate how this **DLL** can be used as **Double Ended Queue**
- f. Exit

9. Design, Develop and Implement a Program in C for the following operations on **Singly Circular Linked List (SCLL)** with header nodes

- Represent and Evaluate a Polynomial  $P(x,y,z) = 6x^2y^2z - 4yz^5 + 3x^3yz + 2xy^5z - 2xyz^3$
- Find the sum of two polynomials **POLY1(x,y,z)** and **POLY2(x,y,z)** and store the result in **POLYSUM(x,y,z)**

Support the program with appropriate functions for each of the above operations

10. Design, Develop and Implement a menu driven Program in C for the following operations on **Binary Search Tree (BST)** of Integers

- Create a BST of **N** Integers: 6, 9, 5, 2, 8, 15, 24, 14, 7, 8, 5, 2
- Traverse the BST in Inorder, Preorder and Post Order
- Search the BST for a given element (**KEY**) and report the appropriate message
- Exit

11. Design, Develop and Implement a Program in C for the following operations on **Graph(G)** of Cities

- Create a Graph of **N** cities using Adjacency Matrix.
- Print all the nodes **reachable** from a given starting node in a digraph using DFS/BFS method

12. Given a File of **N** employee records with a set **K** of Keys(4-digit) which uniquely determine the records in file **F**. Assume that file **F** is maintained in memory by a Hash Table(HT) of **m** memory locations with **L** as the set of memory addresses (2-digit) of locations in HT. Let the keys in **K** and addresses in **L** are Integers. Design and develop a Program in C that uses Hash function **H: K @L** as  $H(K) = K \text{ mod } m$  (**remainder** method), and implement hashing technique to map a given key **K** to the address space **L**. Resolve the collision (if any) using **linear probing**.

**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

**Notes**

1	The experiments from the regular practical syllabus will be performed (15 Marks).
2	The regular attendance of students during the syllabus practical course will be monitored and marks will be given accordingly (5 Marks).
3	Good Laboratory Practices (5 Marks)

**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: Computer Science & Application	Programme: BCA (Bachelor of Computer Application)
Year: First Year	Semester -II
Course: Personality Development	Course Code: BCA213
Theory: 3 Hrs/Week	
Max. Time for Exam.: 3 Hrs	Lab Continuous Internal Assessment: 50 Marks

## Practical Objectives :

1	To teach about various activity involved in development of personality.
2	To develop the personality of students in broad manner.
3	To enhance the credibility of students about their personality and behavior
4	To give the positive impact on the students about their personality.

Unit No.	Details	Hours
1	Leadership: Introduction to Leadership, Leadership Power, Leadership Styles, Leadership in Administration.	2
2	Interpersonal Relations: Introduction to Interpersonal Relations, Analysis of different ego states, Analysis of Transactions, Analysis of Strokes, Analysis of Life Position.	2
3	Communication: Introduction to Communication, Flow of communication, Listening, Barriers of Communication, How to overcome barriers of communication	3
4	Stress Management: Introduction to Stress, Causes of Stress, Impact Stress, Managing Stress	4
5	Group Dynamics and Team Building: Importance of groups in organization, Interaction in group, Group decision Taking, Team Building, Interaction with the Team, How to build a good team?	4
6	Conflict Management Introduction to conflict, Causes of Conflict, Managing Conflict	4
7	Performance Appraisal: Introduction to Performance Appraisal, Vertical Appraisal, Horizontal	5



	Appraisal, 360° performance Appraisal, Methods of improving Techniques of performance Appraisal	
8	Time Management: Time as a Resource, Identify Important Time Wasters, Individual Time Management Styles, Techniques for better Time Management.	3
9	Motivation: Introduction to Motivation, Relevance and types of Motivation, Motivating the subordinates, Analysis of Motivation	3
<b>Total</b>		30