Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati

SYLLABUS STRUCTURE OF
Bachelor of Business Administration (Computer Application)

Syllabus(CBCS Pattern) under Academic Autonomy for the year 2019-2020

Semester – I (w. e. f. A.Y. 2019-2020)

Subject Code	Name of Subject	Marks			Credit
		Int.	Ext.	Total	
1101	Logic in Computer Science	40	60	100	3
1102	Data Structure and Algorithm	40	60	100	3
1103	Business Accounting	40	60	100	3
1104	Business Communication	40	60	100	3
1105	Principles and Practices of Management and Organizational Behavior	40	60	100	3
1106	Practical Lab-I [Based on Paper 1102 & 1103]	40	60	100	3
	Physical Education	-	-	-	2
Total		**300**	**300**	**600**	**20**

Semester – II (w. e. f. A.Y. 2019-2020)

Subject Code	Name of Subject	Marks			Credit
		Int.	Ext.	Total	
1201	Object Oriented Programming using C++	40	60	100	3
1202	Database Management System	40	60	100	3
1203	Software Engineering	40	60	100	3
1204	Technical Report Writing	40	60	100	3
1205	Business Commerce	40	60	100	3
1206	Practical Lab-II [Based on Paper 1201 ,1202]	40	60	100	3
	Certificate Course	-	-	-	2
Total		**300**	**300**	**600**	**20**

Class: F.Y.BBA (C.A.) (Semester - I)

Paper Code: 1101

Paper: - I   Title of Paper: Logic in Computer Science

Credit: 3   No. of. Lectures: 48

A) Learning Objectives:
1. To introduce the concepts of mathematical logic and its importance.
2. To discuss propositional, predicate, temporal and modal logic and their Applications.

B) Learning Outcome:

Student will able to understand fundamental concepts in propositional, predicate and temporal logic and apply resolution techniques. Also students should able to apply the concept of program verification in real-world scenarios.

Topics/Contents

Unit 1:   Introductory Concepts   **(02L)**

      1.1 Propositional Logic
      1.2 Predicate Logic
      1.3 Modal and Temporal logic
      1.4 Program Verification

Unit 2:   Propositional Logic   **(12L)**

      2.1 Declarative Sentence
      2.2 Natural Deduction
      2.3 Syntax and Semantic
      2.4 Meaning of logical connectives
      2.5 Mathematical induction
      2.6 Soundness and Completeness
      2.7 Normal form- semantic Equivalence, Satisfiability & Validity
      2.8 Conjunctive Normal form & Validity
      2.9 Horn clauses and Satisfiability

Unit 3:
    Binary Decision Diagrams   **(05L)**
      3.1 Definition
      3.2 Reduced and ordered Binary Decision Diagrams, Operators.

Unit 4: Predicate Logic
(10L)

4.1 Terms and formulas
4.2 Logic programming
4.3 Free and bound variables
4.4 Substitution
4.5 Proof theory of predicate logic
4.6 Natural deduction
4.7 Quantifier equivalence
4.8 Syntax and semantic

Unit 5: Temporal logic
(05L)

5.1 Syntax and Semantics
5.2 Models of Time
5.3 Linear time Temporal Logic
5.4 Deduction System of Temporal Logic

Unit 6: Program Verification
(10L)

6.1 Need for verification
6.2 Framework for software verification
6.3 Verification of sequential programs
6.4 Deductive system, verification, synthesis

Unit 7: Modal Logic
(04L)

7.1 Need for Modal Logic
7.2 Syntax and Semantics

Reference Books:

1. Arindhama Singh, Logics for Computer Science, Prentice Hall India, 2004

2. Modechai Ben-Ari, Mathematical Logic for Computer Science, Springer, 3/e, 2012.

3. Michael Huth, Mark Ryan, Logic in Computer Science: Modeling and Reasoning about Systems, Cambridge University Press, 2005.

SYLLABUS (CBCS) FOR F.Y.BBA (C.A.) (w. e. from June, 2019)

Academic Year 2019-2020

Class: F.Y.BBA (C.A.) (Semester - I)

Paper Code: 1102

Paper: - II   Title of Paper: Data Structure and Algorithm

Credit: 3   No. of. Lectures: 48

A) Learning Objectives:
1. To understand concepts of data structure and algorithms
2. To understand concepts about searching and sorting techniques
3. To understand basic concepts about stacks, queues, lists, trees and graphs

B) Learning Outcome:
   Student will able to-
1. Analyze algorithms and algorithm correctness, searching and sorting techniques.
2. Describe stack, queue and linked list operation
3. Have knowledge of tree and graphs concepts

Topics/Contents

Unit 1: Introduction to Data Structure   **(16L)**

      1.1 Fundamentals of Data Structure

          1.1.1 Algorithm Analysis (Space Complexity ,Time Complexity, Asymptotic notation)

      1.2 Operations of Data Structure

          1.2.1 Traversing

          1.2.2 Searching (Linear and Binary Search)

          1.2.3 Sorting (Bubble, Insertion, Selection, Heap, Quick and Merge sort)

      1.3 Analysis of All Sorting techniques

      1.4 Arrays as Data Structure

      1.5 Storage Representation of Arrays

      1.6 Polynomial Representation of Arrays

          1.6.1 Addition of Two Polynomial

          1.6.2 Evaluation of Polynomial

      1.7 Self Referential Structure

Unit 2: Stack   (05L)

    2.1 Introduction and Definition

    2.2 Representation of Stacks

    2.3 Primitive Operations on Stacks

    2.4 Applications of Stacks

    2.5 Representation of Arithmetic Expressions

        2.5.1 Infix

        2.5.2 Postfix

        2.5.3 Prefix

    2.6 Evaluation of Postfix and Prefix Expression

    2.7 Conversion of Expressions

        2.7.1 Infix to Prefix

        2.7.2 Infix to Postfix

Unit 3: Queue   (05L)

    3.1 Introduction and Definition

    3.2 Representation of Queues

    3.3 Primitive Operation on Queues

    3.4 Applications of Queues

    3.5 Types of Queue

        3.5.1 De queue

        3.5.2 Circular Queue

        3.5.2 Priority Queue

Unit 4: Linked List   (10L)

    4.1 Definition of Linked List

    4.2 Dynamic Memory Management

    4.3 Representation of Linked List

    4.4 Operations on Linked List

        4.4.1 Inserting

        4.4.2 Deleting

        4.4.3 Searching

        4.4.4 Sorting

    4.5 Merging Nodes

    4.6 Double Linked List (Create, Display)

Unit 5: Trees   (07L)

5.1 Introduction and Definition

5.2 Terminology

5.3 Static and Dynamic Representation

5.4 Types of Tree

5.5 Operations on Binary Tree

5.6 Binary Search Tree(BST)

5.7 Tree Traversal

    5.7.1 In Order

    5.7.2 Pre Order

    5.7.3 Post Order

5.8 AVL Tree

Unit 6: Graphs   (05L)

6.1 Definition of Graph

6.2 Basic Concepts of Graph

6.3 Representation of Graph

    6.3.1 Adjacency Matrix

    6.3.2 Adjacency List

6.4 In Degree Out Degree of Graph

6.5 Graph Traversal

    6.5.1 DFS

    6.5.2 BFS

6.6 Spanning Tree

6.7 Minimum Spanning Tree

    6.7.1 Kruskal's Algorithm

    6.7.2 Prim's Algorithm

Reference Books:

1. Lipschutz Schaum's, "Data Structure", Outline Series,TMH, ISBN-0-07-060168-2.
2. D. Samanta, "Classical Data Structure", PHI, ISBN: 8120318749.
3. Fundamental of DS using C++ by Horowitz Sahani, Galgotia pub.
4. Practical Approach to Data Structures by Hanumanthappa.
5. Tenenbaum," Data Structures Using C and C++", Second Edition, PHI, ISBN-81317-0328-2
6. Data Structures Using C and C++ by Langsam Y, PHI,2nd Ed
7. The Essence of Data Structures using C++ by Brownesy,Kan
8. Data Structure and Algorithms in C++ by Joshi Brijendra Kumar
9. Data Structures with C++: Schaums Outlines by Hubbard John

Class: F.Y.BBA (C.A.) (Semester - I)

Paper Code: 1103

Paper: - III	Title of Paper: Business Accounting
Credit: 3	No. of. Lectures: 48

A) Learning Objectives:
1. To enable the students to acquire sound knowledge of basic concepts of accounting.
2. To impart the knowledge about recording of transactions and preparation of final accounts.
3. To acquaint the students about accounting software packages.

B) Learning outcomes:

Student should be able to:

1. Define book-keeping and accounting.
2. Explain the differences between management and financial accounting.
3. Describe the main elements of financial accounting information – assets, liabilities, revenue and expenses.

Topics/Contents

Unit 1   Introduction: (06L)
　　　　　1.1 Financial Accounting- Definition, Scope, Objectives & Limitations

　　　　　1.2 Distinction between Accounting & Book Keeping

　　　　　1.3 Types of Account

　　　　　1.4 Branches of Accounting

　　　　　1.5 Rules of Debit and Credit

Unit 2   Conceptual Framework: (06L)
　　　　　2.1 Accounting Concept

　　　　　2.2 Principles & Conventions

　　　　　2.3 Accounting Standards-Concept, Objectives, Benefits, Overview of
　　　　　　　Accounting Standards in India

　　　　　2.4 Accounting Policies

　　　　　2.5 Accounting as a Measurement Discipline

　　　　　2.6 Valuation Principles

　　　　　2.7 Accounting Estimates

Unit 3   Recording of Transactions: (14L)
　　　　　3.1 Accounting Process

　　　　　3.2 Journals

　　　　　3.3 Ledger

　　　　　3.4 Types of Cash Book

　　　　　3.5 Subsidiary Books

　　　　　3.6 Trial Balance.

Unit 4	**Final Accounts**	**(10L)**

4.1 Introduction

4.2 Preparation of Trading and Profit and Loss Account and Balance Sheet of a Proprietary and Partnership Firms

Unit 5	**Introduction to GST**	**(06L)**

5.1 Introduction

5.2 Objectives

5.3 GST Benefits – Advantages and Disadvantages of GST

5.4 Features of GST

5.5 Classification of GST

5.6 Types of GST – CGST, SGST, IGST

5.7 Types of Dealer

Unit 6	**Accounting in Computerized Environment:**	**(06L)**

6.1 Computers and Financial Application

6.2 Introduction to Accounting Software Package - Tally 9.0

6.3 An Overview of Computerized Accounting Systems -Salient Features and Significance

6.4 Generating Accounting Reports

Reference Books:

1. Fundamentals of Accounting & Financial Analysis: By Anil Chowdhry (Pearson Education)
2. Financial accounting: By Jane Reimers (Pearson Education)
3. Accounting Made Easy By Rajesh Agarwal & R Srinivasan (Tata McGraw –Hill)
4. Financial Accounting for Management: By Amrish Gupta (Pearson Education)
5. Financial Accounting for Management: By Dr. S. N. Maheshwari (Vikas Publishing)
6. Advanced Accounts – M.C. Shukla and S P Grewal (S.Chand & Co., New Delhi)

SYLLABUS (CBCS) FOR F.Y.BBA (C.A.) (w. e. from June, 2019)

Academic Year 2019-2020

Class: F.Y.BBA (C.A.) (Semester - I)

Paper Code: 1104

Paper: - IV   Title of Paper: Business Communication

Credit: 3   No. of. Lectures: 48

A) Learning Objectives:

1. To understand the concept, process and importance of communication.
2. To develop an integrative approach where reading, writing, presentation skills are used to get here
   enhance the student's ability to communicate and write effectively.
3. To create awareness among students about methods and media of communication.
4. To make students familiar with information technology and improve job seeking skills.

B) Learning outcomes:

Student should be able to communicate effectively in real life situation.

Topics/Contents

Unit 1: Introduction to Communication   (06L)

      1.1 Role of Communication in Business

      1.2 Objectives of Communication

      1.3 Process of Communication

      1.4 Principles of Communication

      1.5 Barriers to Communication

      1.6 Overcoming Barriers

Unit 2: Media of Communication   (06L)

      2.1 Written Communication

      2.2 Oral Communication

      2.3 Face of Face Communication

      2.4 Visual Communication

      2.5 Audio Visual Communication Skills

Unit 3: Oral Communication (12L)

3.1 Listening, Importance of listening, Guidelines of
Effective Listening.

3.2 Group Communication/Discussion-Activity.

3.3 Speeches- Characteristics of good Speech, Model Speech

3.4 Presentation- Elements of presentation, designing a
presentation, Practicing Delivery of Presentation, Media
management, Press Conference, Seminars, workshop,
Conferences, Business etiquettes.

3.5 Dialogue Skills- Need for Dialogue and Conversation Skill, Good
Manners and Etiquettes

3.6 Interview- Mock Interview

Unit 4: Written Communication (10L)

4.1 Layout of Business Letter, Enquiry letter, Order Letter, Complaint
letter, Sales Letter, Office Memo

4.2 Job Application Letter- Appointment, Promotion, Resignation
letter

4.3 Report Writing- Introduction ,Reports by Individuals, Reports by
Committees.

4.4 Agenda and Minutes of Meeting

4.5 Notices- Public Notices, Tender Notices

4.6 Copy Writing for Advertisement – Introduction, Structure of
an Advertisement

4.7 Email Etiquette

Unit 5: Information Technology for Communication (08L)

5.1 Introduction

5.2 Advantages and Limitations of–Telex, Telegram, Fax, Voice
Mail, Teleconferencing, Video Conferencing, Internet and
Social Media Sites, E-communication at workplace.

Unit 6: Oral, Visual and Audio –Visual Communication (06L)

6.1 Telephone Skills

6.1.1 Basics of Telephone Communication

6.1.2 handle calls- telephone manners

6.1.3 Teleconference handling, Handling Tele interviews for Call Centre's.

Reference Books:

1. Business Communication (Principles,Methods andTechniques) Nirmal Singh Deep & Deep PublicationsPvt. Ltd,NewDelhi.
2. Essentials of Business Communication Rajendra Pal & J.S.Korlhalli Sultan Chand & Sons, New Delhi.
3. Media and Communication Management– C.S. Raydu Himalaya Publishing House, Mumbai.
4. ProfessionalCommunication-ArunaKoneru-TataMcGraw-HillPublishingCo. Ltd, New Delhi.
5. Creating a Successful CV –Siman Howard–Dorling Kindersley.
6. Business Communication–Dr. Anjali Kalkar, Ashapak G. Nadaf, Tech-Max Publication, Pune
7. Effective Documentation and Presentation-Urmila Rai & S.M. Rai– Himalaya Publishing House, Mumbai.
8. Principles Practices of Business Communication– Aspi Doctor & Rhoda Doctor–Sheth Publishers Pvt. Ltd

Class: F.Y.BBA (C.A.) (Semester - I)

Paper Code: 1105

Paper: - V   Title of Paper: Principles and Practices of Management and

Organizational Behavior

Credit: 3   No. of. Lectures: 48

A) Learning Objectives:

1. Improve students understanding of Management & human behavior in organization and the ability to lead people to achieve more effectively toward increased organizational performance.
2. Students should understand the Impart that individual, group and structures have on their behavior within the Organization.
3. Students should identify the required behavioral model in the Organization.

B) Learning Outcomes:
    Student will able to-
1. Describe various aspects of management.
2. Analyze the interactions between multiple aspects of management.
3. Justify the role of leadership qualities.
4. Analyze the role of planning and decision making.
    Topics/Contents

Unit 1:	**Management**	**(08L)**
	1.1 Meaning and Definition	
	1.2 Need, Scope and Process of Management	
	1.3 Managerial Levels/Hierarchy	
	1.4 Managerial Functions – Planning, Organizing, Staffing, Directing, Controlling	
	1.5 Types of Managers and it's Skill – Functional, Specialize, Generalize	
	1.6 Leadership – Meaning, Qualities of Effective Leadership and Functions of Leader.	
Unit 2:	**Evolution of Management Thoughts**	**(05L)**
	2.1 Introduction to Scientific Management by Taylor	
	2.2 Administrative management by Fayol	
Unit 3:	**Decision Making**	**(05L)**
	3.1 Introduction	
	3.2 Decision Making Environment – Decision Making under Certainty, under Uncertainty, under Risk	

3.3 Types of Decision
3.4 Decision making Process and Tools

Unit 4: Organization and Organizational Behavior (07L)
4.1 Definition and Need for Organization
4.2 Introduction to Organizational Behavior
4.3 Goals of Organizational Behavior
4.4 Fundamental Concepts of Organizational Behavior

Unit 5: Motivation (07L)
5.1 Concept of Motivation, Benefits to Organization ad Manager
5.2 Motivation Process
5.3 Maslow's Need Hierarchy Theory
5.4 McGregor's Theory 'X' and Theory 'Y'
5.5 Herzberg's Two Factor Theory of Motivation

Unit 6: Group Dynamics and Team Building (07L)
6.1 Concept of Group, Effect & Characteristics of Group
6.2 Types of Groups
6.3 Five Stage Model of Group Development
6.4 Concept of Team, Nature and Benefits from Team
6.5 Creating Effective Teams

Unit 7: Stress Management and Conflict Management (09L)
7.1 Work Stress - Meaning of Stress, Stressors
7.2 Sources of Stress- Individual Level, Organizational Level
7.3 Types of Stress
7.4 Type A and Type B Assessment of Personality
7.5 Effect of Stress – Physiological Effect, Psychological Effect, Behavioral Impact
7.6 Stress Management – Individual Strategies, Organizational Strategies
7.7 Concept of Conflict
7.8 Five Stage Process of Conflict
7.9 Types of Conflict- Inter-Personal, Intra-Personal, Inter-Group Organizational, Johari Window
7.10 Effects of Conflict
7.11 Conflict Management Strategies.

Reference Books:

1. Principles and Practices of Management- Shejwalkar

2. Essential of management- 7th edition Koontz H &Weitrich H TMH

3. Management Today Principles And Practices - Burton & Thakur

4. Mgmt. Principles and Functions - Ivancevich & Gibson, Donnelly

5. Organizational behavior Keith Davis

6. Organizational behavior Fred Luthans TMH 10th edition

7. Organizational behavior Dr.Ashwatthapa THI 7th edition

Class: F.Y.BBA (C.A.) (Semester - I)

Paper Code: 1106

Paper: -   VI   Title of Paper: Practical Lab-I

Credit: 3

C programming

Programs based on Control Structures and Loops

1. Write a C Program to accept a four digit number from user and count zero , odd and even digits of the entered number.
2. Write a C program to generate the following pattern for n lines:

    Aa

    Aa   Bb

    Aa   Bb   Cc

    Aa   Bb   Cc   Dd

3. Write a 'C' Program to check whether a given number is Armstrong or not.
4.   Write a C program to generate the following pattern for n lines:

    1   2   3   4

    5   6   7

    9

    10

5.   Write a C program to calculate sum of Fibonacci series up to a given number. .
6. Write a C program to check whether given number is Palindrome or not.
7. Write a C program to display multiplication table up to given number.
8.   Write a C program to covert temperature from Celsius to Fahrenheit.
9.   Write a program, which accepts a number n and displays each digit in words. Example: 6702 Output = Six-Seven-Zero-Two.

10. Write a C program to generate following pattern for n lines:

```
        *

      *   *

    *   *   *

  *   *   *   *
```

Data Structure

1. Write a 'C' program for implementing Linear Search method using function.
2. Write a 'C' program to sort array elements using Insertion sort method.
3. Write a 'C' program to sort array elements in ascending order using Selection sort method.
4. Write a 'C' program to sort the array elements in ascending order using Merge sort method
5. Write a 'C' program to sort array elements using Bubble sort method.
6. Write a 'C' program to reverse a string using Static implementation of Stack.
7. Write a menu driven program using 'C' for singly linked list-

   - To create linked list.
   - To display linked list
   - To insert node at last position of linked list.
   - To delete node from specific position of linked list.

8. Write a 'C' program to create linked list with given number in which data part of each node contains individual digit of the number.

   (Ex. Suppose the number is 584 then the nodes of linked list should contain 5, 8, 4)

9. Write a 'C' program that creates a 2-D table of integers whose size will be specified at run time. (Dynamic Memory Allocation)

10. Write a 'C' program to create a singly linked list and count total number of nodes in it and display the result.

11. Write a 'C' program to create two singly linked lists and perform the union of two lists and display it.

12. Write a C program that create a 1-D table of integers whose size will be specified at run time. (Dynamic Memory Allocation)

13. Write a 'C' program to create a singly linked list, reverse it and display both the list.

14. Write a menu driven program using 'C' for Dynamic implementation of Queue for integers. The menu includes

   - Insert
   - Delete

- Display
- Exit

15. Write a 'C' program to read n integers and create two lists such that all positive numbers are in one list and negative numbers are in another list. Display both the lists.

16. Write a 'C' program to accept an infix expression, convert it into its equivalent prefix expression and display the result.

17. Write menu driven program using 'C' for Dynamic implementation of Stack. The menu includes following operations:

- push
- pop
- display
- exit

Tally

1. **Practical Based on Journal Entry**

   a) **Journalized the transaction in the book of Ram Bandhu & balance the same for Jan. 2008.**
      ➢ Started business with cash Rs 18,500.
      ➢ Opened an account with Bank of Baroda depositing Rs 6,000.
      ➢ Purchase stationery Rs 25.
      ➢ Purchase goods on credit from Meera Sales Corporation Rs 1,500.
      ➢ Purchase machinery from Vishal Engineering co. ltd for cash Rs 750.
      ➢ Sold goods for cash Rs 550.
      ➢ Paid salary to Menon Rs 250.
      ➢ Deposited into Bank of India Rs 500.
      ➢ Received commission from Mahesh Rs 100.
      ➢ Withdraw cash Rs 100 for personal use.
      ➢ Paid to Meera Sales Corporation Rs 1,000 by cheque.

   b) **Journalize the following transaction of Manmohan Singh and post them into their respective Ledger account for April ,2008**
      ➢ Placed an order for purchase of goods worth Rs, 6000 for which advance Rs. 1000 was given to Mohana Singh, the supplier.
      ➢ Purchased stationery for office use Rs 950.
      ➢ Bought furniture worth Rs. 3800 from Pavan and paid him cash Rs 800 on spot
      ➢ Received goods from Mohan as per our order dated 4th April and settled his account in cash.
      ➢ Paid cartage on goods Rs.150.
      ➢ Goods distributed as free sample costing Rs. 200.
      ➢ Sold goods worth Rs. 8,000 to Deouchand @ 25% T.D, 50% of which on credit.
      ➢ Paid freight Rs 200 on behalf of Deouchand.
      ➢ Sold goods for cash Rs 5,600 net @ 10% cash discount.

   c) **Accounting Assignment using Tally.**

      Vishal Mega Mart has requested you to write their account for following transaction for current year

- Ms Usha brought her capital Rs 10,00,000in cash
- Ms Ayesha brought her capita cheque 5,00,000 deposited in Bank of Baroda
- Company has opened new current account with "Bank of Baroda" with Rs 10,000
- Conveyance paid to Meenal Rs 200 by cash for office work
- Rent received Rs 45000 from Deodatta in cash
- Invested in vision system in cash in shares for Rs 1000
- Rs 120 paid as a property tax in cash
- Cash deposited in bank Rs 20,000
- Cash withdrawn from bank Rs 5,000

d) **Accounting Assignment using Tally.**

Amruta Capital Investment Company has requested you to write their accounts for the year 1.4.2007-31.3.2008 & find profit or loss during the year

- Amruta capital cheque 10,00,000 deposited in Bank Of India, Laxmi Road
- Anuradha capital cheque rs 2,00,000 deposited into ICICI Bank Bhandarkar Road Pune
- Sharmil's capital RS 3,00,000 in cash
- Meghana brought capital in cash Rs 2,00,000
- Audit fees Rs 10,000 paid to Sonali Kulkarni ,Pune by cheque no.99850 ICICI bank
- Office Ganpati festival exp. Is Rs 200 by cash
- Bonus paid to employee Rs 24,000 in cash

2. **Practical Based on Ledger**

a. **Record the following transaction and post them into Ledger.**

- Started business with a capital of Rs. 5,000.
- Sold goods to Mr. X for Rs. 500.
- Received cash from Mr. X Rs. 450 in full settlement.
- Purchased goods from Mr. T for Rs. 1,500.
- Paid Mr. P in full in cash Rs. 1,450.
- Paid salary to Mr. Z Rs. 300.
- Purchased plant for Rs. 1,000.
- Sold goods for cash Rs. 1,300.
- Received interest Rs. 50.
- Deposited cash into bank Rs. 1,000.
- Paid wages Rs. 1,000.
- Withdraw cash from bank for personal use Rs. 200.

3. **Practical Based on Cash Book**

a) **You are asked to prepare Anil A/C in the book of Sunil for May 2008**

- Anil purchased goods from Sunil worth Rs. 20,000 @ 10 % T.D.
- Return goods to Sunil Rs. 1,000
- Anil sold goods worth Rs. 6,000 @ 10 % T.D to Sunil.
- Sunil returned goods to Anil Rs. 500.
- Anil paid Rs. 8,000 to Sunil.
- Anil paid Rs. 3,000 to Sunil.
- Anil placed an order with Sunil worth Rs. 200.
- Sunil executed Anil's order of Rs. 200 on25th May.

b) **Enter the following transaction in the purchase book**

➢ Purchase goods from Mala Rs.10, 000.

➢ Purchase food from Rajan subject to T.D at 5% Rs.20,000

➢ Purchase goods from Anand Rs. 35,000.

➢ Brought goods from Karthik subject to T.D. at 2% Rs. 45,000.

➢ Purchase goods for cash from Raja Rs.20,000.

➢ Purchase machinery from Karthik Rs. 2,000.

➢ Purchase goods from Selvi, subject to T.D at 25% Rs. 50,000.

Class: F.Y.BBA (C.A.) (Semester - II)
Paper Code: 1201
Paper: - I   Title of Paper: Object Oriented Programming using C++
Credit: 3   No. of. Lectures: 48

A) Learning Objectives:
1. Acquire an understanding of basic object-oriented concepts and the issues involved in effective class design.
2. Enables student to write C++ programs that use: object-oriented concepts such as Information hiding, constructors, destructors, inheritance.

B) Learning Outcome:
  Student will able to-

1. To understand how C++ improves C with object-oriented features.
2. To learn design C++ classes for code reuse.
3. To understand the concept of data abstraction and encapsulation.
4. To learn design and implement generic classes with C++ templates.
5. To learn use exception handling in C++ programs.

Topics/Contents

Unit 1: Introduction to C++   **(02L)**
          1.1 Basic concepts of OOP, benefits, applications of OOP
          1.2 A simple C++ program
          1.3 Structure of C++ program
          1.4 Creating a source file, compiling and Linking

Unit 2:   **Tokens, Expressions and Control structures**   **(03L)**

2.1 Introduction
2.2 Tokens, keywords, Identifiers and constants
2.3 Data types-Basic, User defined and Derived
2.4 Symbolic constant
2.5 Type Compatibility
2.6 Variables-Declaration and Dynamic initialization
2.7 Reference variable
2.8 Operators in C++
    2.8.1 Scope resolution operator
    2.8.2 Member Referencing operators
    2.8.3 Memory management operators
    2.8.4 Manipulators
    2.8.5 Type cast operators
2.9 Expression and their types
2.10 Special Assignment Expressions
2.11 Implicit conversions
2.12 Operator overloading introduction
2.13 Operator precedence

Unit 3:   **Functions in C++**   **(05L)**

3.1 Introduction
3.2 The main function
3.3 Function prototyping
3.4 Call by reference
3.5 Return by reference
3.6 Inline function–Making an outside function Inline
3.7 Arguments-default, constant
3.8 Math library functions

Unit 4:   **Classes and Objects**   **(10L)**

4.1 Introduction
4.2 Creating a class and objects
4.3 Defining member functions inside and outside class definition
4.4 Nesting of member functions
4.5 Private member functions
4.6 Arrays within a class
4.7 Memory allocation of objects
4.8 Static data members and static member functions
4.9 Array of objects
4.10 Objects as function arguments
4.11 Friend functions
4.12 Returning objects
4.13 Constructors
4.14 Types of constructor
4.15 Destructors

Unit 5: Inheritance   **(09L)**
5.1 Introduction
5.2 Base class and derived class examples
5.3 Types of Inheritance
5.4 Virtual base class
5.5 Abstract class
5.6 Constructor in derived class

Unit 6: Polymorphism   **(08L)**
6.1 Compile Time Polymorphism

  6.1.1 Function overloading

  6.1.2 Operator Overloading Introduction

  6.1.3 Overloading unary and binary operator

  6.1.4 Overloading using friend function

  6.1.5 Overloading insertion and extraction operators

  6.1.6 String manipulation using operator overloading
6.2 Runtime Polymorphism
   6.2.1 this Pointer, pointers to objects, pointer to derived classes
   6.2.2 Virtual functions and pure virtual functions

Unit 7: Managing console I/O operations   **(03L)**
7.1 Introduction
7.2 C++ streams and C++ stream classes
7.3 Unformatted I/O operations
7.4 Formatted console I/O operations
7.5 Managing output with manipulators

Unit 8: Working with Files   **(05L)**
8.1 Classes for File Stream operations
8.2 File operations-Opening, Closing and updating
8.3 Error handling during File operations
8.4 Command Line arguments

Unit 9: Templates   **(03L)**
9.1 Introduction
9.2 Class Templates
9.3 Function Templates
9.4 Exception Handling(Introduction)

Reference Books:
1. Object oriented programming with C++ -by EBalagurusamy
2. Object Oriented Programming with C++ by Robert Lafore
   3. Object Oriented Programming in C++ by Dr. G.T.Thampi, Dr.S.S.Mantha, Dream Tech Press

Class: F.Y.BBA (C.A.) (Semester - II)

Paper Code: 1202

Paper: - II   Title of Paper: Database Management system

Credit: 3   No. of. Lectures: 48

A) Learning Objectives:

  1. The objective of this course is to study the basics of DBMS and to learn SQL.

  2. Enables students to understand relational database concepts and transaction management concepts in database system.

B) Learning outcomes:

Student should be able to:

1. Create conceptual and logical database designs for a business information problem.
2. Analyze the core terms, concepts, and tools of relational database management system.

Topics/Contents

Unit 1: **Database Management System**   **(08L)**

    1.1 Introduction

    1.2 Need of DBMS, Applications of DBMS, Advantages and
        Disadvantages of DBMS

    1.3 Users, Views , Schema,

    1.4 Structure of DBMS

    1.5 Data Models
      1.5.1 Object Based Logical Model
         -Object Oriented Data Model, Entity Relationship Data
    Model 1.5.2 Relational Model

    1.6 ER diagrams, Extended features of ERD.

Unit 2: **Relational Database Model and Design**   **(10L)**

    2.1 Terms-Relation, Tuple, Attribute, Cardinality, Degree of
        Relationship set, Domain

    2.2 Keys -Super Key, Candidate Key, Primary Key, Foreign
        Key, Constraints

    2.3 Anomalies of un normalized database

    2.4 Normalization

    2.5 Normal Form -1NF, 2NF, 3NF, BCNF)

Unit 3:   SQL (Structured Query Language)   **(10L)**

    3.1 Introduction

    3.2 Basic Structure

    3.3 DDL Commands

    3.4 DML Commands

    3.5 Simple Queries

    3.6 Nested Queries

    3.7 Aggregate Functions

Unit 4: Transaction processing and Concurrency

    4.1 Concept of transaction processing, ACID properties, States of   **(12L)**
      transaction

    4.2 Concurrency Execution,

    4.3 Serializability and Recoverability

    4.4 Locking Based Protocol-Locks, Granting of Locks and 2PL

    4.5 Timestamp based protocols-Timestamp, timestamp ordering
Protocol, Thomas's Write Rule.

    4.6 Deadlocks handling –Detection, Prevention and Recovery.

Unit 5:   Recovery System   **(08L)**

    5.1 Failure Classification

        5.1.1 Transaction Failure

        5.1.2 System Crash

        5.1.3 Disk Failure

    5.2 Storage Structures

        5.2.1 Storage Types

        5.2.2 Data Access

    5.3 Recovery & Atomicity

        5.3.1 Log based Recovery

        5.3.2 Deferred Database Modification

        5.3.3 Immediate Database Modification

        5.3.4 Checkpoints

    5.4 Recovery with Concurrent Transaction

        5.4.1 Transaction Rollback

        5.4.2 Restart Recovery

    5.5 Remote Backup System

Reference Books:

1. Database System Concepts by Henry korth and A. Silberschatz
2. SQL, PL/SQL the Programming Language Oracle: - Ivan Bayross, BPB Publication.
3. Database Systems Concepts, Designs and Application by Shio Kumar Singh, Pearson
4. Introduction to SQL by Reck F. van der Lans by Pearson
5. Modern Database Management by Jeffery A Hoffer, V.Ramesh, Heikki Topi , Pearson
6. Database Management Systems by Debabrata Sahoo, Tata Macgraw Hill

Class: F.Y.BBA (C.A.) (Semester - II)
Paper Code: 1203
Paper: - III   Title of Paper: Software Engineering
Credit: 3   No. of. Lectures: 48

 A) Learning Objectives:
   1. This course enables students to understand system concepts and its application in Software
       development.

B) Learning outcomes:

 Student should be able to:

 1.   apply the software engineering lifecycle by demonstrating competence in communication,
      planning, analysis, design and deployment.

Topics/Contents

Unit 1:	**Introduction to System Concepts**	**(06L)**
	1.1 Definition, Elements of System	
	1.2 Characteristics of System	
	1.3 Types of System	
	1.4 System Concepts	
Unit 2:	**Requirement Analysis**	**(08L)**
	2.1 Definition of System Analysis	
	2.2 Requirement Anticipation	
	2.3 Knowledge and Qualities of System Analyst	
	2.4 Role of a System Analyst	
	2.5 Feasibility Study And It's Types	
	2.6 Fact Gathering Techniques	
	2.7 SRS(System Requirement Specification)	
Unit 3:	**Introduction to Software Engineering**	**(06L)**
	3.1 Definition Need for software Engineering	
	3.2 Software Characteristics	
	3.3 Software Qualities(McCall's Quality Factors	
Unit 4:	**Software Development Methodologies**	**(06L)**
	4.1 SDLC(System Development Life Cycle)	
	4.2 Waterfall Model	
	4.3 Spiral Model	
	4.4 Prototyping Model	
	4.5 RAD MODEL	

Unit 5:   **Analysis and Design Tools**   **(10L)**

5.1 Entity-Relationship Diagrams

5.2 Decision Tree and Decision Table

5.3 Data Flow Diagrams(DFD)

5.4 Data Dictionary

      5.4.1 Elements of DD

      5.4.2 Advantage of DD

5.5 Pseudo code

5.6 Input And Output Design

5.7 Case Studies(Based on Above Topic

Unit 6:   **Use-Case Driven Object Oriented Analysis**   **(12L)**

6.1. Introduction to oops concepts

      6.1.1. Class and object

      6.1.2. Abstraction and encapsulation

      6.1.3. Method and messages

      6.1.4. Interface, Inheritance and polymorphism

      6.1.5. Structural Diagram - Class Diagram and Object diagram

      6.1.6. Associations and links

      6.1.7. Aggregation , Composition and Generalization

      6.1.8. Inheritance, Sub Types and IS-A hierarchy

6.2. Behavioral Diagram

      6.2.1. Use case Diagram

            6.2.1.1. Identify Actors

            6.2.1.2. Identify Use cases: describing how the user will use the system

            6.2.1.3. Develop Use-Case Model

            6.2.1.4. Description of Use case Diagram.

      6.2.2. Activity Diagram

      6.2.3. Sequence diagram

      6.2.4. Collaboration Diagram.

      6.2.5. Component Diagram

      6.2.6. Deployment Diagram

      6.2.7. State Transition Diagram Case studies should be covered on the above topic

Reference Books:

1. Software Engineering-Rogers. Pressman.

2. SADSE (System Analysis Design)-Prof. Khalkar and Prof. Parthasarathy.

SYLLABUS (CBCS) FOR F.Y.BBA (C.A.) (w. e. from June, 2019)

Academic Year 2019-2020

Class: F.Y.BBA (C.A.) (Semester - II)
Paper Code: 1204
Paper: -   IV   Title of Paper: Technical Report Writing
Credit: 3   No. of. Lectures: 48

A) Learning Objectives:

1. Write clearly and in the correct style for your readers.
2. Use correct language and grammar.
3. Use layout, typography and illustrations to help get your message across.
4. Check & edit your own drafts

B) Learning Outcomes:

Student should be able to:

1. Produce a documentation plan, including estimates and schedules
2. Design and structure a document by analyzing the readership and selecting the right information

Topics/Contents

Unit 1: Introduction To Technical Communication   (03L)
    1.1 Basics of Technical Communication
    1.2 Components
    1.3 Process

Unit 2: Elements of Style   (06L)
    2.1 Definition of Style
    2.2 Choice of Words and Phrases
    2.3 Sentence and Paragraphs Constructions and Length

Unit 3: Business and Technical Report   (10L)
    3.1 Characteristic
    3.2 Importance
    3.3 Types of Reports
      3.3.1 Oral Report
      3.3.2 Written Report-
         3.3.2.1 Informal Report
         3.3.2.2 Formal Report - Informational ,Interpretive, Routine Report
    3.4 Routine Report
      3.4.1 Progress Report
      3.4.2 Laboratory Report
      3.4.3 Inspection report
      3.4.4 Inventory Report
      3.4.5 Annual Confidential Report on Employee

Unit 4:   Planning and Preparation   **(10L)**
        4.1 Preparatory Steps
        4.2 Sources of Data
          4.2.1 Internal Records
          4.2.2 Library
          4.2.3 Internet
        4.3 Methods of Data Collection
          4.3.1 Personal Observation
          4.3.2 Telephone Interview
          4.3.3 Personal Interview
          4.3.4 Questionnaires
        4.4 Mail Questionnaires

Unit 5:   Structure and Layout
                                                       (08L)
        5.1 Element of Structure
          5.1.1 Front Matter
          5.1.2 Main Body
          5.1.3 Back Matter

Unit 6:   Use of Illustrations   **(06L)**
        6.1 Purpose
          6.2 Characteristics of Good Illustrations
        6.3 Types
          6.3.1 Tables
          6.3.2 Graphs
          6.3.3 Drawings

Unit 7:   Report Writing   **(05L)**
        7.1 Rough Draft
        7.2 Process of Writing
        7.3 Order of Writing
        7.4 The Final Draft
        7.5 Check-List for Reports
        7.6 Communication Core

Reference Books:

1. Business Correspondence and Report Writing, 4e - by R C Sharma Krishna Mohan Handbook of Technical)
2. Technical communication_ principles and practice - by Raman, Meenakshi and Sangeeta Sharma

3.

Class: F.Y.BBA (C.A.) (Semester - II)

Paper Code: 1205

Paper: - V   Title of Paper: Business Commerce

Credit: 3   No. of. Lectures: 48

A) Learning Objectives:
1. Understand key business concepts and strategies applicable to business commerce.
2. Understand the impact of business commerce applications.

B) Learning outcomes:

Student should be able to:

1. Gain an Understanding on how innovative use of the Business Commerce can help developing competitive advantages.
2. Develop an understanding on how internet can help business grow.
3. Gain an Understanding on the importance of security, privacy, and ethical issues as they relate to Business Commerce.

Topics/Contents

Unit 1: Introduction to Electronic Commerce   **(07)**
         1.1 E-Commerce(Introduction and Definition)
         1.2 Main activities E-Commerce
         1.3 Goals of E-Commerce
         1.4 Technical Components of E-commerce
         1.5 Functions of E-commerce
         1.6 Advantages and Disadvantages of E-commerce
         1.7 Scope of E-Commerce
         1.8 Electronic Commerce Applications
         1.9 Electronic Commerce and Electronic Business
         (C2C)(2G , G2G , B2G , B2P,B2A,P2P,B2A,C2A,B2B,B2C)

Unit 2: Building own website   **(06L)**
         2.1 Reasons for building own website
         2.2 Benefits of web site
         2.3 Bandwidth requirements
         2.4 Cost, Time , Reach
         2.5 Registering Domain Name
         2.6 Web promotion
         2.7 Target email, Banner Exchange , Shopping Bots

Unit 3: Internet and Extranet (07L)

3.1 Definition of Internet

3.2 Advantages and Disadvantage of the Internet

3.3 Component of a Intranet Information technology structure

3.4 Development of a Intranet

3.5 Extranet and Intranet Difference

3.6 Role of Intranet in B2B Application

Unit 4: Electronic payment System (08L)

4.1 Introduction

4.2 Types of Electronic payment system

4.3 Payment types

4.4 Traditional payment

4.5 Value exchange system

4.6 Credit card system

4.7 Electronic funds transfer

4.8 Paperless bill

4.9 Modern payment cash

4.10 Electronic cash

Unit 5: Technology Solution (07L)

5.1 Protecting Internet Communications

5.2 Encryption

5.3 Symmetric Key Encryption

5.4 Public key Encryption

5.5 Digital Envelopes

5.6 Digital Certificates

Unit 6: Security and Security issues in e-commerce: (07L)

6.1 Security risk of e-commerce

6.2 Type and Sources of Threats

6.3 Phishing and Identity Theft

6.4 Spoofing

6.5 Hacking

6.6 Protecting the Electronic Commerce Assets

6.7 Client Server Network Security

6.8 Data and Message Security

6.9 Digital Identification

Unit 7: Internet Marketing (06L)

7.1 The PROS and CONS of online shopping

7.2 The cons of online shopping

7.3 Justify an Internet business

7.4 Internet marketing techniques

7.5 The E-cycle of Internet marketing

7.6 Personalization e-commerce

Reference Books:

1. E-Commerce-Kenneth C. Laudon and Carol Guercio Traver
2. E-Commerce by --Kamlesh KBajajand Debjani Nag
3. Internet marketing and E-commerce-Ward Hansonand Kirthi Kalyanam
4. E-Commerce Concepts ,Models , Strategies by--G.S. VMurthy
5. Electronic Commerce by--GaryP. Schneider

Class: F.Y.BBA (C.A.) (Semester - II)
Paper Code: 1206
Paper: -VI   Title of Paper: Practical Lab-II
Credit: 3

OOP'S using C++

1. Write a C++ program to create a class Worker with data members as Worker_Name, No_of_Hours_worked, Pay_Rate. Write necessary member functions to calculate and display the salary of worker. (Use default value for Pay_Rate)

2. Create class Person which contains data member as Passport_Id, Person_name,

   Nationality, Gender, Date_of_Birth, Date_of_Issue, Date_of_expiry .

3. Write a c++ program to perform following member functions:

   i.   Enter details of all persons
   ii. Display passport details of one person
   iii. Display passport details of all persons
   (Use Function overloading and Array of object).

4. Write a C++ program using class which contains two data members of type integer. Create and initialize the object using default constructor, parameterized constructor and parameterized constructor with default value. Write a member function to display maximum from given two numbers for all objects.

5. Create a class ComplexNumber containing members as:

   - real

   - imaginary

 Write a C++ program to calculate and display the sum of two complex numbers. (Use friend

   function and return by object)

6.   Write a C++ program to create a class Date which contains three data members as dd, mm, yyyy. Create and initialize the object by using parameterized constructor and display date in dd-mon-yyyy format. (Input: 19-12-2014 Output: 19-Dec-2014) Perform validation for month.

7. Create a base class Account (Acc_Holder_Name, Acc_Holder_Contact_No). Derive a two classes as Saving_Account(S_Acc_No., Balance) and Current_Account(C_Acc_No., Balance) from Account. Write a C++ menu driven program to perform following functions :

     i.   Accept the details for 'n' account holders.
     ii.   Display the details of 'n' account holders by adding interest amount where interest rate for Saving account is 5% of balance and interest rate for Current account is 1.5% of balance.

8. Write a C++ program to create a class Item with data members Item_Code, Item_Name, Item_Price. Write member functions to accept and display Item information also display number of objects created for a class. (Use Static data member and Static member function)

9. Write C++ program to Create two classes Array1 and Array2 which contains data members as Integer array of a specified size. Write necessary member functions to accept and display array elements of both the classes. Find and display smallest number from both the array. (Use Friend function and Memory Management operators)

10. Write a C++ program to create a class which contains two dimensional integer array of size mXn. Write a member function to display sum of all elements of entered matrix. (Use Dynamic Constructor for allocating memory and Destructor to free memory of an object)

11. Create a class Time which contains data members as: Hours, Minutes and Seconds. Write C++ program to perform following necessary member functions:

     i.   To read time
     ii.   To display time in format like: hh:mm:ss
             To add two different times (Use Objects as argument)

12. Write a C++ program to create a class Employee which contains data members as Emp_Id, Emp_Name, Basic_Salary, HRA, DA, Gross_Salary. Write member functions to accept Employee information. Calculate and display Gross salary of an employee. (DA=12% of Basic salary and HRA = 30% of Basic salary) (Use appropriate manipulators to display employee information in given format :- Emp_Id and Emp_Name should be left justified and Basic_Salary, HRA, DA, Gross salary Right justified with a precision of two digits)

13. Create a class Date containing members as:

   -   dd
   -   mm
   -   yyyy
Write a C++ program for overloading operators >> and << to accept and display a Date also

write a member function to validate a date.

14. Create two base classes Learning_Info(Roll_No, Stud_Name, Class, Percentage) and Earning_Info(No_of_hours_worked, Charges_per_hour). Derive a class Earn_Learn_info from above two classes. Write necessary member functions to accept and display Student information. Calculate total money earned by the student. (Use constructor in derived class)

15. Write a C++ program to read two float numbers. Perform arithmetic binary operations like +, - , *, / on these numbers using Inline Function. Display resultant value with a precision of two digits.

16. Create a class MyString which contains a character pointer (using new operator). Write a

    C++ program to overload following operators:

    >   to compare length of two strings

    !=   to check equality of two strings

    +   to concatenate two strings

17. Write a C++ program to calculate area of cone, sphere and circle by using function overloading.

18. Create a base class Shape. Derive three different classes Circle, Rectangle and Triangle from Shape class. Write a C++ program to calculate area of Circle, Rectangle and Triangle. (Use pure virtual function).

19. Write a C++ program to create a class which contains two data members. Write member functions to accept display and swap two entered numbers using call by reference.

20. Write a C++ program to accept 'n' numbers from user through Command Line Argument. Store all positive and negative numbers in two different arrays. Display contents both arrays.

21. Write a C++ program to create a class Integer. Write necessary member functions to overload the operator unary pre and post increment '++' for an integer number.

22. Write a C++ program to read the contents of a text file. Count and display number of

    characters, words and lines from a file. Find the number of occurrences of a given word present in a file.

23. Write a C++ program to calculate maximum of two integer numbers of two different classes using friend function.

24. Write a C++ program to swap two integer values and two float values by using function template.

25. Create a C++ class Sumdata to perform following functions:

    int sum(int, int) – returns the addition of two integer arguments.

    float sum(flaot, float, float) – returns the addition of three float arguments.

    int sum(int [ ] ,int) – returns the sum of all elements in an array of size 'n'.

Database Management System and RDBMS

1) **Consider the following Entities and Relationships**
   Customer (cust_no, cust_name, address, city)

   Loan (loan_no, loan_amt)

   Relation between Customer and Loan is **Many to Many**

   Constraint: Primary key, loan_amt should be > 0.

Create a Database in 3NF & write queries for following.

- Find details of all customers whose loan is greater than 10 lakhs.
- List all customers whose name starts with 'ba'.
- List names of all customers in descending order who has taken a loan in Nasik city.
- Display customer details having maximum loan amount.
- Calculate total of all loan amount.

2) **Consider the following Entities and Relationships**

   Book (Book_no, title, author, price, year_published)

   Customer (cid, cname, addr)

   Relation between Book and Customer is **Many to Many** with quantity as descriptive

   attribute.

   Constraint: Primary key, price should be >0.

   Create a Database in 3NF & write queries for following.

- Display customer details from 'Mumbai'.
- Display author wise details of book.
- Display all customers who have purchased the books published in the year 2013.
- Display customer name that has purchased more than 3 books.
- Display book names having price between 100 and 200 and published in the year 2013.

3) **Consider the following Entities and Relationships**

   Department (dept_no, dept_name, location)

   Employee (emp_no, emp_name, address, salary, designation)

   Relation between Department and Employee is **One to Many**

Constraint: Primary key, salary should be > 0.

Create a Database in 3NF & write queries for following.

- Find total salary of all computer department employees.
- Find the name of department whose salary is above 10000.
- Count the number of employees in each department.
- Display the maximum salary of each department.
- Display department wise employee list.

4) **Consider the following Entities and**

Relationships Property (pno, desc, area, rate)

Owner (owner_name, addr, phno)

Relation between owner and Property is **One to**

Many. **Constraint:** Primary key, rate should be > 0

Create a Database in 3NF & write queries for following.

- Display area wise property details.
- Display property owned by 'Mr.Patil' having minimum rate.
- Display all properties with owner name that having highest rate of properties located in Chinchwad area.
- Display owner wise property detail.
- Display owner name having maximum no. of properties.

5) **Consider the following Entities and Relationships**

Bus (bus_no, capacity, depot_no)

Route (rout_no, source, destination, no_of_stations)

Relation between Bus and Route is **Many to One**.

Constraint: Primary key.

Create a Database in 3NF & write queries for following.

- Find out the route details on which buses whose capacity is 20 runs.
- Display number of stations from 'Chinchwad' to ' Katraj'.
- Display the route on which more than 3 buses runs.
- Display number of buses of route 'Swargate' to 'Hadapsar'.
- Find the bust having maximum capacity from 'Nigadi' to 'Kothrud'..

6) **Consider the following Entities and Relationships**

Person (pno, person_name, birthdate, income)

Area (area_name, area_type)

Relation between Person and area is **Many to One**.

Constraint: Primary key, income should be > 0, area_type should be rural or urban.

Create a Database in 3NF & write queries for following.

- Display persons having income less than 1 lakhs in PCMC Area.
- Display population of each area.
- Display person's details from 'Urban' area.
- Display the details of area having population greater than that of in Pune.
- Display details of person from each area having minimum income.

7) **Consider the following Entities and Relationships**

Room (roomno, desc, rate)

Guest (gno, gname, no_of_days)

Relation between Room and Guest is **One to One**.

Constraint: Primary key, no of days should be > 0.

Create a Database in 3NF & write queries for following.

- Display room details according to its rates in ascending order.
- Find the names of guest who has allocated room for more than 3 days.
- Find no. of AC rooms.
- Display total amount for NON-AC rooms.
- Find names of guest with maximum room charges.

8) **Consider the following Entities and Relationships**

Branch (bname , bcity ,assets)

Loan (loan_no, amount)

Relation between Branch and Loan is **One to Many**.

Constraint: Primary key, amount and assets should be > 0.

Create a Database in 3NF & write queries for following.

- Display total loan amount given by DYP branch.
- Find total number of loans given by each branch.
- Find the name of branch that have maximum assets located in Mumbai.
- Display loan details in descending order of their amount.
- Display all branches located in Mumbai, Pune and Nasik.

PL/SQL Practical

1) Consider the following entities and their relationship.
   Customer (c_no, c_name, c_city, c_ph_no)
   Ticket (t_no, booking_date, fare, traveling_date)

Relationship between Customer and Ticket is one-to-many.

Constraints: primary key, foreign key
              c_name should not be null,
              fare should be greater than zero.

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:

- Write a procedure to display names of customer who have booked bus on given date.
- Write a trigger that restricts insertion of ticket having traveling date smaller than booking date.(Raise user defined exception and give appropriate message)

2) Consider the following entities and their relationship.
   Student (s_reg_no, s_name, s_class)
   Competition (comp_no, comp_name, comp_type)

Relationship between Student and Competition is many-to-many with descriptive attribute rank and year.

Constraints: primary key, foreign key,
              primary key for third table(s_reg_no, comp_no,
              year), s_name and comp_name should not be null,
              comp_type can be sports or academic.

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:

- Write a function which will accept s_reg_no of student and returns total number of competition in which student has participated in a given year.
- Write a cursor which will display year wise details of competitions held. (Use parameterized cursor)

**3) Consider the following entities and their
   relationship. Owner** (o_no, o_name, o_city, o_ph_no)
   Estate (e_no, e_type, e_city, e_price)
   Relationship between Owner and Estate is one-to-many.

   Constraints: primary key, foreign key,
                 o_name should not be null,
                 e_type can be flat, bungalow or land

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:

- Write a procedure which will accept owner number and display details of all estates of given owner which belongs to pune city.
- Write a cursor which will display type wise estate details. (Use parameterized cursor)

4) Consider the following entities and their relationship.
   Drug(d_no, d_name, company, price)
   Medical _store(m_no, m_name, m_city, ph_no)

   Relationship between Drug and Medical_Store is many-to-many with descriptive attribute quantity.

   Constraints: primary key, foreign key,
               m_name and d_name should not be null,
               m_city can be pune or pimpri.

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:

- Write a package, which consists of one procedure and one function. Pass drug number as a parameter to procedure and display details of that drug. Pass city as a parameter to a function and return total number of medical_store in given city.

- Write a trigger that restricts insertion and updation of drug having price less than zero. (Raise user defined exception and give appropriate message)

5) Consider the following entities and their relationship.

   Route(route_no, source, destination, no_of_station)
   Bus (bus_no, capacity, depot_name)

   Relationship between Route and Bus is one-to-many

   Constraints: primary key, foreign key,
   depot_name should not be null,
   bus capacity should be greater than 40.

   Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:
   - Write a procedure which will display all bus details for a given route.
   - Write a trigger that restricts insertion of route having number of station less than zero. (Raise user defined exception and give appropriate message)

6) **Consider the following entities and their relationship. University** (u_no, u_name, u_city)
   College (c_no, c_name, c_city, year_of_establishment)

   Relationship between University and College is one-to-many

   Constraints: primary key, foreign key,
   u_name and c_name should not be null.

   Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:
   - Write a package, which consists of one procedure and one function. Pass university number as a parameter to procedure and display details of that university. Pass city as a parameter to a function and return total number of colleges in given city.

   - Write a cursor which will display university wise their college details. (Use parameterized cursor)

7) **Consider the following entities and their relationship.**
   Patient (p_no, p_name, p_addr)
   Doctor (d_no, d_name, d_addr, city)
   Relationship between Patient and Doctor is many-to-many with descriptive attribute disease and no_of_visits.

   Constraints: primary key, foreign key,
   Primary key for third table(p_no, d_no, disease),
   p_name and d_name should not be null.

   Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:

   - Write a procedure which will display patient detail who has visited more than 3 times to the given doctor for 'Diabetes'.
   - Write a trigger which will restrict insertion or updation of doctor_patient details having no_of_visits less than zero. (Raise user defined exception and give appropriate message)

8) **Consider the following entities and their relationship.**
   Crop (c_no, c_name, c_season, pesticides)
   Farmer (f_no, f_name, f_location)
   Relationship between Crop and Farmer is many-to-many with descriptive attribute year.

   Constraints: primary key, foreign key,
   primary key for third table(c_no, f_no, year),
   c_name and f_name should not be null,
   c_season can be rabi or kharif.

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:

- Write a function which will return total number of farmers harvesting given crop in a given year.
- Write a cursor which will display season wise information of crops harvested by the farmers. (Use parameterized cursor)

9) **Consider the following entities and their relationship.**

Researcher (r_no, r_name, r_city)

Research_Paper (rp_no, rp_title, rp_subject, rp_level)

Relationship between Researcher and Research_Paper is many-to-many with descriptive attribute year.

Constraints: primary key, foreign key,
r_name and rp_title should not be null,
rp_subject can be computer, electronics or finance.
rp_level can be state, national or international.

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:
- Write a procedure which will display details of research paper of a given subject for a specified year.
- Write a trigger before insert or update of each row of research_paper published after 2010 be entered into table. (Raise user defined exception and give appropriate message)

10) **Consider the following entities and their relationship.**

Client (c_no, c_name, c_addr, birth_date)

Policy_info (p_no, p_name, maturity_amt, prem_amt, policy_term)

Relationship between Client and Policy_info is many-to-many with descriptive attribute date_of_purchase.

Constraints: primary key, foreign key,
c_name and p_name should not be null,
policy_term should be greater than zero.

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:
- Write a procedure which will display all policy details of given client for a given year.
- Write a trigger which restricts insertion of policy_info having maturity amount less than premium amount. (Raise user defined exception and give appropriate message)

11) Consider the following entities and their relationship.

Customer (c_no, c_name, c_city, c_ph_no)
Ticket (t_no, booking_date, fare, traveling_date)

Relationship between Customer and Ticket is one-to-many.

Constraints: primary key, foreign key,
c_name should not be null,
fare should be greater than zero.

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:

- Write a function which will calculate and return total fare collected from customers on given date.

- Write a cursor which will display date wise ticket booked by customer. (Use parameterized cursor)

12) Consider the following entities and their relationship.

Company (c_no, c_name, c_city, c_share_value)
Person (p_no, p_name, p_city, p_ph_no)

Relationship between Company and Person is many-to-many with descriptive attribute no_of_shares.

Constraints: primary key, foreign key,
c_name and p_name should not be null,
no_of_shares should be greater than zero.

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:

- Write a procedure which will display names of person who are shareholder of the given company.
- Write a trigger which get activated when share value of company become less than Rs. 10. (Raise user defined exception and give appropriate message)

13) Consider the following entities and their relationship.

Donor (donor_no, donor_name, city)
Blood_donation_detail (bd_no, blood_group, qty, date_of_collection)

Relationship between Donor and Blood_donation_detail is one-to-many.

Constraints: primary key, foreign key,
donor_name should not be null,

<center>blood_group can be A+, A-, B+, B-, AB+, AB-, O+, O-</center>

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:
- Write a procedure which will display blood group wise total amount of quantity of blood available.
- Write a trigger that restricts insertion of blood_donation_details having quantity greater than 300ml. (Raise user defined exception and give appropriate message)

14) Consider the following entities and their relationship.

Train (t_no, t_name)
Passenger (p_no, p_name, addr, age)

Relationship between Train and Passenger is many-to-many with descriptive attribute date, seat_no and amt.

Constraints: primary key, foreign key,
        primary key for third table (t_no, p_no, date),
        t_name and p_name should not be null,
        amt should be greater than zero.

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:
- Write a function which will display train details having maximum passenger for a given date.
- Write a cursor which will display date wise train and their passenger details.

15) Consider the following entities and their relationship.
Person (p_no, p_name, p_addr)
Investment (inv_no, inv_name, inv_date, inv_amt)

Relationship between Person and Investment is one-to-many.

Constraints: primary key, foreign key,
        p_name and inv_name should not be null,
        inv_amt should be greater than 10000.

Create a RDB in 3NF and write PL/SQL blocks in Oracle for the following:
- Write a procedure which will display details of person, made investment on given date.
- Write a trigger that restricts insertion or updation of investment having inv_date greater than current date. (Raise user defined exception and give appropriate message)