Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2022
'B++' Grade (CGPA 2.96)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: Computer Science

Name of the Course: B.Sc. II (Sem–III & IV)

(w. e. f. June 2023)

Subject/ Core Course	Name and Type of the Paper			No. of papers/ Practical	Hrs/week			Total Marks Per Paper	UA	CA	Credits
	Type		Name		L	T	P				
Class :			B.Sc.- II Semester – III								
Core Courses (*Students can opt any Three subjects among the Four Subjects offered at B. Sc. I. **OR** Students can opt any Two subjects among the Four Subjects offered at B. Sc. I and any one from the Additional Interdisciplinary subjects.	DSC 1C	AIC-1A	Data Structures	Paper-V	3	--	--	50	40	10	4.0
			Software Engineering	Paper-VI	3	--	--	50	40	10	
	DSC 2C			Paper-V	3	--	--	50	40	10	4.0
				Paper-VI	3	--	--	50	40	10	
	DSC 3C			Paper-V	3	--	--	50	40	10	4.0
				Paper-VI	3	--	--	50	40	10	
Total Sem.-III					**18**	**--**	**--**	**300**	**240**	**60**	**12**
	$ SEC-1		Web Design using Bootstrap and WordPress		4	--	--	100	80	20	4
Class :			B.Sc.- II Semester –IV								
Core Courses (*Students can opt any Three subjects among the Four Subjects offered at B.Sc. I. **OR** Students can opt any Two subjects among the Four Subjects offered at B.Sc. I and any one from the Additional Interdisciplinary subjects.	DSC 1D	AIC-1B	Core Java	Paper-VII	3	--	--	50	40	10	4.0
			DBMS Using Oracle	Paper-VIII	3	--	--	50	40	10	
	DSC 2D			Paper-VII	3	--	--	50	40	10	4.0
				Paper-VIII	3	--	--	50	40	10	
	DSC 3D			Paper-VII	3	--	--	50	40	10	4.0
				Paper-VIII	3	--	--	50	40	10	
	Environmental Studies				3	--	--	50	40	10	NC
Total Sem-IV					**18**			**300**	**240**	**60**	**12**
Total (Theory)					**36**	**--**	**--**	**600**	**480**	**120**	**24**
Core Practical	DSC 1C & 1D	AIC 1A & 1B		Pr. II &III	--	--	8	200	160	40	4.0
	DSC 2C & 2D			Pr. II & III	--	--	8	200	160	40	4.0
	DSC 3C & 3D			Pr. II & III	--	--	8	200	160	40	4.0
Total (Practicals)							**24**	**600**	**480**	**120**	**24**
Grand Total					**36**		**24**	**1200**	**960**	**240**	**48**
	$ SEC-1				4			100	80	20	4

*Core Courses: Chemistry/Physics/ /Mathematics/Statistics/Botany/Zoology/ Microbiology/ Electronics/Computer Science   Geology/ Geography/Psychology

Additional Interdisciplinary Courses - Geochemistry/Biochemistry/Meteorology/Plant Protection/NCC etc.

$The students can choose MOOCs/ NPTEL/SWAYAM/Path Shala/Add-on / Skill based courses of university/college-initiated courses of same credits.

$ These courses are not compulsory, but after completion of these courses students get additional credits on their mark lists.

$ SEC courses run by colleges should be communicated to university for information & necessary action.

Note: Nature of internal examination, passing standard, ATKT and the conversion of marks into grades and credits are as per guidelines of Science Faculty Credit and Grading System.

Equivalence papers for B.Sc-II Sem III and IV (Computer Science)

Sr.no.	Old Paper	New Paper
1	Paper-V Data Structure	Paper-V-Data Structure
2	Paper-VI Design analysis and Algorithm	No equivalence
3	Paper-VII-Software Engineering	Paper-VI-Software Engineering
4	Paper-VIII-Database Management System	Paper-VIII-Database Management System

B.Sc. (Computer Science)-II Semester – III
Paper – V: Data Structures

Teaching Scheme:
Lectures – 3 Hours/week, 2 Credits

Examination Scheme:
UA – 40 Marks
CA – 10 Marks

Course objectives:
1. To impart the basic concepts of data structures and algorithms
2. To understand concepts about searching and sorting techniques
3. To understand the concepts about stacks, queues, lists, trees and graphs
4. To impart the basic concepts of data structures and algorithms

Unit 1 (10)

Introduction of Data Structure, Need of Data Structure, Types of Data Structure, ADT,
Stack: Introduction to stack, Representation-static & dynamic, stack Operations, Application -infix to postfix & prefix, postfix evaluation, recursion, expression validity. Queues: Introduction to Queue, Representation -static & dynamic, Operations, Circular queue, Double ended queue, priority queues, Applications of Queue.

Unit 2 (15)

Linked List:-Introduction to List, Implementation of List – static & dynamic representation, Types of Linked List, Operations on List, Applications of Linked List – polynomial manipulation
Trees: Concept & Terminologies, Binary tree, binary search tree, Representation – static &dynamic, Operations on BST – create, Insert, delete, traversals (preorder, inorder, postorder), counting leaf, non-leaf & total nodes, Height balance tree- AVL,B tree,B+ Tree,
Graph- Graph terminology, Representation of graphs, Graph Traversal–BFS (breadth first search),DFS (depth first search), Minimum spanning Tree

Unit 3 (15)

Sorting: Bubble sort, Quick sort, Simple Insertion sort, Shell sort, Address calculation sort, Selection Sort, Heap Sort, Merge sort, Radix Sort.
Searching: Linear Search, Binary Search, and Tree searching methods, Multiway search tree, Hash function (open and close).

Course Outcome: -
1. Differentiate primitive and non-primitive structures
2. Choose appropriate data structures and algorithms, understand the ADT/libraries, and use it to design algorithms for a specific problem
3. Design and apply appropriate data structures for solving computing problems.
4. Apply sorting and searching algorithms to the small and large data sets.

Reference Books
1. Data Structures and Algorithms‖, Pearson Education, Reprint 2006 by Alfred V. Aho, John E. Hopcroft and Jeffrey D. Ullman
2. Algorithms, data structures, Programs by Nikaulus Wirth:
3. File Systems, Structures and Algorithms (PHI). By Thoms Horbron:
4. Art of computer Programming Vol – I. by D. E. Kunth:
5. Data structures using C and C++ (PHI). By Tanenbaum:
6. Fundamentals of computer algorithms by 2nd edition galgotia publication by Ellis horowitz, sartaj sahni

B.Sc. (Computer Science)-II Semester – III
Paper – VI: Software Engineering

Teaching Scheme: **Examination Scheme:**
Lectures – 3 Hours/week, 2 Credits   UA – 40 Marks
                                                                      CA – 10 Marks

Course objectives:
1. To study fundamental concepts in software engineering, SDLC, software requirements specification, formal requirements specification and verification.
2. To study the basic techniques for improving quality of software.
3. Understand the fundamental principles of Software Engineering & will also have a good knowledge of responsibilities of project manager and how to handle these.
4. To understand the basic knowledge of different models.

Unit 1   (10)
System concepts: Introduction system, characteristics, Elements of system, Types of system, System Analysis, Role of System Analyst. Software Engineering: Definition, Characteristics of software, Qualities of software. System Development life cycle- Waterfall model, V-shape model, Spiral model, Prototyping, incremental, RAD, Agile.

Unit 2   (15)
Software requirements: Types of Requirements: System, Functional, Non-functional, User. Fact finding techniques: Interviews, Questionnaire, Record reviews, Observation. Analysis and Design Tools: Flow chart, Decision tables and Trees, Structured English, HIPO. System Design: Data flow Diagram (Physical, Logical), Entity relation diagram ERD, Data Dictionary, structured chart, Input and output design,
Case studies: Pay Roll, Fixed Deposit, Inventory system, College Admission System, Library System, Loan system etc.

Unit 3   (15)
Coding: Coding standards, Size Estimation, Effort Estimation, and Cost Estimation, Software Testing: Need of Testing, types of testing, Software Implementation and Maintenance: Traditional and incremental approaches, conversion methods, Overview of maintenance process, types of maintenance. Software Quality Assurance: SQA Tasks, Goals and Metrics, Software Reliability. Software risk management: definition, types of risk, risk identification-risk monitoring and management.

Course Outcome: -
1. At the end of the course, the student should be able to:
2. Basic knowledge and understanding of the analysis and design of software systems.
3. Ability to apply software engineering principles and techniques to develop, maintain and evaluate large-scale software systems.
4. To produce efficient, reliable, robust and cost-effective software solutions.
5. Ability to perform independent research and analysis.
6. Ability to work as an effective member or leader of software engineering teams.

Reference Books:
1. Analysis and Design of Information Systems By James Senn.
2. System analysis and Business application (for case studies) By Rajesh Nike / swapna kishore.
3. Software Engineering By Pressman.
4. System Analysis and Design By Parthsarty / Khalkar.
5. Practical guide to structure System Design By Miller/Page/jones.

B.Sc. (Computer Science)-II Semester – III
SEC-1: Web Design using Bootstrap and WordPress

Teaching Scheme:
Lectures & Practical – 4 Hours/week, 4 Credits

Examination Scheme:
UA – 80 Marks
CA – 20 Marks

Course Objectives:
1. to study development of responsive website using bootstrap
2. To get knowledge about bootstrap built-in components design, grids, fluid grids, and responsive layout.
3. To get knowledge about global Bootstrap CSS classes for images, typography, tables, grids, forms, buttons, and more
4. To understand the reusable bootstrap components including icons, dropdowns, alerts navbars, breadcrumbs, popovers, and many more.
5. To Understand CMS and what are themes, Plugins and widgets in WordPress

Unit 1 (15)
Introduction about Bootstrap, Bootstrap History, Why Use Bootstrap, Downloading Bootstrap, Bootstrap CDN, Downloading the Bootstrap Files, Understanding the File Structure
Layout- Bootstrap Grid System, Creating Fixed Layout, Fluid Layout, Responsive Web Design or Layout, Bootstrap Typography
Bootstrap Forms- Form control, Select, Checks & radios, Range, Input group, Floating labels, Layout, Validation
Bootstrap Tables, Lists, Images, Media Objects, Icons

Unit 2 (25)
Bootstrap Components-Accordion, Alerts, Badge, Breadcrumb, Buttons, Button group, Card, Carousel, Close button, Collapse, Dropdowns, List group, Modal, Navbar, Navs & tabs, Offcanvas, Pagination, Placeholders, Popovers, Progress, Scrollspy, Spinners, Toasts, Tooltips
Case study-Design e-commerce and your college website

Unit 3 (20)
Introduction CMS And WordPress, Why CMS, Advantages and Disadvantages of CMS, com vs. WordPress.org
Creating a WordPress Site, Installing WordPress, Setting up WordPress in Local Server, Logging Into the WordPress Admin & General Site Settings
Writing Posts & Formatting Text : Posts versus Pages, Creating a New Blog Post, Using the Visual Editor, Pasting Without Formatting & Clearing Formatting, Formatting Headings, Formatting Bulleted & Numbered Lists, Formatting Blockquotes, Publishing a Post, Deleting a Post, Restoring a Post from the Trash (or Deleting it Delete Permanently)
Creating Pages, formatting page, Publishing pages, Menu, Installing Themes, adding plugins, Working with Widgets

Course Outcome:
1. To build and experiment websites
2. Get Knowledge of bootstrap built-in components design, grids, fluid grids, and responsive layout.
3. Understand global Bootstrap CSS classes for images, typography, tables, grids, forms, buttons, and more
4. Understand the reusable bootstrap components including icons, dropdowns, alerts navbars, breadcrumbs, popovers, and many more.
5. Utilize the bootstrap javascript Plugins to develop modern web pages.
6. Customize Bootstrap's elements with fewer variables and jQuery plugins to build our version.
7. Build attractive website using WordPress or BootStrap.

Reference Books:
1. Bootstrap 5 Foundations by Daniel Foreman, Foreman Technology LTD; 2nd edition
2. Bootstrap: Responsive Web Development by Jake Spurlock, Shroff; First Edition
3. https://getbootstrap.com/docs/5.3/
4. WordPress 4.0 Site Blueprints 2nd Edition: Build Your Own Website Using Best Practices,
5. WordPress 5 Complete: Build beautiful and feature-rich websites from scratch, 7th Edition, by Karol Król, Packt Publishing

B.Sc. (Computer Science)-II Semester – IV
Paper – VII: Core Java

Teaching Scheme:
Lectures – 3 Hours/week, 2 Credits

Examination Scheme:
UA – 40 Marks
CA – 10 Marks

Course objectives: -
1. To understand how to design, implement, test, debug programs that use basic data types and computation, simple I/O, conditional and control structures, string handling and functions in Java.
2. To understand the importance of Classes & objects along with constructors and Arrays in Java.
3. To understand the principles of inheritance, interface and packages and demonstrate though problem analysis assignments how they relate to the design of methods, abstract classes and interfaces.
4. To understand importance of multi-threading & different exception handling mechanisms.
5. To understand how to develop GUI applications using Swing and JDBC technology

Unit 1: **(15)**
Introduction to Java Programming: Overview of Java, Features of Java as programming language /Platform, JDK Environment and Tools
Java Programming Fundaments: -Data types, Variables, Operators, Keywords, Naming Conventions, Structure of Java Program, Flow Control- Decision, Iterations, Arrays,
Object oriented programming in Java: Class – Members access control, Objects, Constructors, Use of 'this' keyword, Static, non-static data members and methods., public, private & protected data members
Inheritance & Polymorphism-Access/Scope specifiers protected, Super, extends, single, multiple inheritance, Method overriding, Abstract classes & ADT, 'final' keyword, Extending interfaces

Unit 2: **(10)**
Exception Handling: Exceptions and Types, try..catch, finally block, throw & throws statement, user-defined exceptions, Java I/O package, byte & character stream, reader & writer, file reader & writer
Threading-Java thread lifecycle, Thread class & run able interface Thread priorities & synchronization, Usage of wait & notify
Collection framework: - Collection overview, Collection interfaces, Collection classes Vector, Array list, Hash map, Hash table

Unit 3: **(15)**
Introduction to JDBC, Components of JDBC, Architecture of JDBC, JDBC Drivers
Introduction to swing, difference between AWT and swing, hierarchy of Swing classes, Swing controls: - JButton, JTextfield, JLabel, JCheckBox, JRadionButton, JFame, Jtable, JList, JoptionPane, JMenuitem and JMenu ,etc

Course Outcomes: -
1. Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity using Java.
2. Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem in Java.
3. Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
4. Demonstrate understanding and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
5. Able to develop GUI applications using Swing technology.

Reference Books:
1. Java 2 for professional developers by Michael Morgen
2. Core Java Vol 1 and vol 2 by Cay. S. Horstmann, Gray Cornell.
3. Java by Nutshell
4. Java The complete Reference by Herbert Schildt
5. Thinking in java by Brucel

B.Sc. (Computer Science)-II Semester – IV
Paper – VIII: DBMS Using Oracle

Teaching Scheme:
Lectures – 3 Hours/week, 2 Credits

Examination Scheme:
UA – 40 Marks
CA – 10 Marks

Course objectives:
1. To understand the fundamental concepts of database.
2. It helps in developing skills for the design and implementation of a database applications
3. To understand user requirements and frame it in data model.
4. To understand creations, manipulation and querying of data in databases.
5. Undersetting SQL and PL/SQL

Unit 1: (15)
Introduction to database system:-Definition, Limitations of traditional file system, Advantages of DBMS, Components of DBMS, Database Architecture, Database Users, Schemas and instances, 2 tier and 3 tier architecture, Database languages, Types of data models- relational, Network, Hierarchical, Distributed
E-R model: E-R Diagram, entities, attributes and its types, Relationship and relationship sets, Cardinality, Degree, Generalization, Specialization, Aggregation. Relational Model and Database design:-Relation, Domain, Tuples, types of keys, relational integrity rules, Dr. Codd's rules, Relational Algebra operations: - Select, Project, Cartesian Product, Union, Set difference, Natural Join, Outer Join, Dependencies and its types, Normalization and its types-1NF, 2NF, 3NF, BCNF, lossless joins.

Unit 2: (10)
Transaction Management & Concurrency Control: -Introduction, Definition, properties, transaction states, scheduling and its types, conflict and view serializability. Introduction to Concurrency Control, problems of concurrency control. lock based protocols, timestamp-based protocol, deadlock, deadlock handling. Database recovery and Atomicity: - Introduction, recovery algorithms, log base recovery, shadow paging, checkpoints or syncpoints or savepoints.

Unit 3: (20)
SQL: DDL, DML, DCL, select: From, Where, Order by, Group by, Having, Intersect, Union, Distinct, Between, In, Between, Different types of functions, Delete, Update, Insert, Nested queries, joins, create, alter and drop, constrains, index, views, Triggers, Grant, Revoke, Commit, RollBack, Savepoint
Introduction to PL/SQL, Advantages, Architecture, Datatypes, Variable and Constants, Using Built_in Functions, Conditional, Looping and Iterations Statements. Cursor in PL/SQL: Types of Cursors, Cursor Attributes, Cursor with Parameters, Cursors with LOOPs Nested Cursors, Cursors with Sub Queries and procedure. Procedures in PL/SQL: STORED PROCEDURES, PROCEDURE with Parameters (IN,OUT and IN OUT), Dropping a Procedure.
Functions in PL/SQL: Difference between Procedures and Functions, types of functions and parameter modes
Exceptions in PL/SQL

Course Outcome:-
1. Demonstrate the concepts of Relational database model, ER model and Distributed databases.
2. Design E-R Model for given requirements and convert the same into database tables
3. Implement database operations and transactions using SQL.
4. Apply the concepts of Transaction processing, Concurrency control, Database Recovery and Back-up in applications.
5. Use database techniques such as SQL & PL/SQL.

Reference Books:
1. Database System Concepts By KorthSilberschetz
2. Fundamentals of Database Systems by Elmsari, Navathe
3. Teach Yourself SQL in 14 Days by Jeff Parkins and Bryan Morgan
4. An Introduction to Database Systems by Bipin Desai
5. SQL and PL/SQL Programming by Ivan Bayross
6. SQL and PL/SQL Programming by Oracle Press

Sample Practical Assignment on Data Structure

1. Write a program on recursive function

2. Write a program to implement stack using array.

3. Write a program to implement stack using list.

4. Write a program to check whether the expression is valid or not.

5. Write a program to convert infix expression to postfix.

6. Write a program to implement queue using static.

7. Write a program to implement queue using dynamic method.

8. Write a program to implement Circular queue.

9. Write a menu driven program to implement singly, doubly, singly circular , doubly circular linked list with operation a) insert at beginning of linked list b) insert at specific position c) insert at end d) delete the first node e) delete specific node f) delete last node g) display the list

10. Write a menu driven program to implement singly linked list with operation a) sort list b) maximum value c) minimum value d) find & replace a value e) count the number of nodes.

11. Write a program to create binary search tree and display its contents by using inorder, preorder and postorder traversal method.

12. Write programs to implement a) Bubble Sort Technique. b) Straight Selection Sort Technique. c) Simple Insertion Sort Technique. d) Shell Sort Technique. e) Quick Sort Technique. f) heap sort technique. g) address calculation Sort Technique. h) Radix Sort Technique. i) Merge Sort Technique.

13. Write programs to implement a) sequential searching Technique. b) indexed searching Technique. c) Binary searching technique

14. Write a program to add, subtract two polynomials by using Linked list

15. Write a program to implement Graph traversing technique.

Sample Practical Assignment on Core Java

1. To learn use of single dimensional array by defining the array dynamically.

2. Write a program that show working of different functions of String and StringBufferclasss like setCharAt(), setLength(), append(), insert(), concat()and equals().

3. Write a program to create a ―distance‖ class with methods where distance is computed in terms of feet and inches, how to create objects of a class and to see the use of this pointer

4. Modify the ―distance‖ class by creating constructor for assigning values (feet and inches) to the distance object. Create another object and assign second object as reference variable to another object reference variable. Further create a third object which is a clone of the first object.

5. Write a program to show the difference between public and private access specifiers. The program should also show that primitive data types are passed by value and objects are passed by reference and to learn use of final keyword

6. Create a multi-file program where in one file a string message is taken as input from the user and the function to display the message on the screen is given in another file (make use of Scanner package in this program).

7. Write a program to create a multilevel package and creates a reusable class to generate Fibonacci series, where the function to generate Fibonacci series is given in a different file belonging to the same package.

8. Write a program to show the use of nested try statements that emphasizes the sequence of checking for catch handler statements.

9. Write a program to create your own exception types to handle situation specific to your application (Hint: Define a subclass of Exception which itself is a subclass of Throwable).

10. Write a program to demonstrate priorities among multiple threads.

11. Write a program to demonstrate multithread communication by implementing synchronization among threads (Hint: you can implement a simple producer and consumer problem).

12. Write a program to demonstrate different mouse handling events like mouseClicked(), mouseEntered(), mouseExited(), mousePressed, mouseReleased() and mouseDragged() and keyboard handling events.

13. Write a program to demonstrate the use of push buttons.

14. Write a program to demonstrate collection classes.

15. Write a program to implement interface.

Sample Practical Assignment on DBMS Using Oracle

1. Create table employee (eno, name, dept, basic salary, HRA, tax, deduction). Dept are D1, D2, D3 and D4. Use constraints.

    a. Insert 20 records.
    b. Display total amount spend by company on salary.
    c. Display name of dept for which company spend maximum amount.
    d. Display average salary of employee in company.
    e. Display average salary of each dept.
    f. Display total salary for each dept.
    g. Display highest salary for each dept.
    h. Display different between average of max salary for each dept and average of each dept.
    i. Display no of dept in the company.
    j. Display name of all employee whose basic pay is higher then average salary.
    k. Display average, minimum, maximum salary of each dept.
    l. Display dept average of dept whose employee >5.

2. Create following table. Book (id, title, author, publisher, category, year, price) Distributor(did, name, city, discount) and Order(order_no, title, did, qty)

    a. Display title and category of all books.
    b. Display the total no of books per year.
    c. Display list of authors.
    d. Display the books published in 1991,92 and 93.
    e. Display the books published from 1991 to 95.
    f. Display the books whose price is greater than200.
    g. Display the total no of books of each category.
    h. Display titles of all books whose price is greater than average price.
    i. Display the list of all books whose price is greater then average price of "computer" category.
    j. Shoe the name of all the distributors who supply "software testing" books.
    k. Display the details of all books whose price is greater than the maximum of the category average.
    l. Display name of all books who are supplying the books whose author is 'Pressman'.

3. Create the following table & solve given queries.

Table Name : branch

Column_name	Datatype	Constraint	Description
Bno	number(4)	Primary key	Branch number
bname	Varchar2(20)	Not null	
City	Varchar2(15)	Not null	

Table Name : customer

Column_name	Datatype	Constraint	Description
Cust_no	Number(6)	Primary key	
Cust_name	Varchar2(20)	Not null	
City	Varchar2(15)	Not null	

Table Name : deposit

Column_name	Datatype	Constraint	Description
Acc_no	Varchar2(5)	Primary key	Starts from 'D'characcter
Cust_no	Number(6)	Foreign key	references table 'customer'
Bno	Number(4)	Foreign key	Branch number references from table 'branch'
Amount	Number(9,2)	Not null	Default amount is 500.00
Adate	Date	Not null	Date of money deposited

Table Name : borrow

Column_name	Datatype	Constraint	Description
Loan_no	Number(5)	Primary key	
Cust_no	Number(6)	Foreign key	references table 'customer'
Bno	Number(4)	Foreign key	references from table 'branch'
Amount	Number(9,2)	Not null	Default amount is 500.00

a) Insert minimum 10 records.

b) describe tables, which are already created.

c) Give account number and amount of depositors.

d) Give names of borrowers.

e) Give names of customers living in city NAGPUR.

f) Give names of depositors having amount greater than 4000.

g) Give name of customer having living city BOMBAY and branch city DELHI.

h) Give names of customer having the same living city as their branch city.

i) Give name of customers who are borrowers as well as depositors and having living city NAGPUR.

j) Give name of customers who are depositors and have the same branch city as that of sunil.

k) Give names of depositors having the same living city as that of shivani and having deposit amount greater than 200.

l) Give names of borrowers having deposit amount greater than 1000 and loan amount greater than 2000.

m) Give names of borrowers having loan amount greater than the loan amount of anil.

n) Give loanno and loan amount of borrowers having the same branch as that of depositor sunil.

o) Give loanno, loan amount, account no, and deposit amount of customers living in city NAGPUR.

4. Write a block to find maximum number.

5. Write a block for check given number is even or odd.

6. Write a procedure for addition of two number.

7. Write a function which return multiplication of two numbers.

8. Define cursor for display information of student.

9. Write a procedure for addition and subtraction of two numbers. (Return result).

10. Create user A and B. create table student (roll_no, name) by user A. Create trigger for avoid update or delete in table by user B.

11. Create a package for addition and multiplication of two numbers.

12. Create trigger for avoiding inserting the records whose address 'solapur' and deleting the records whose address 'satara'.(use any table with address field).

13. Create package for addition, multiplication.

14. Create function with cursor.

15. Create package which contain procedure, function , cursor.