

MANGALORE UNIVERSITY



National Education Policy – 2020 [NEP-2020]

BLOWNUP SYLLABUS FOR

VI SEMESTER BCA

CURRICULUM STRUCTURE FOR VI SEMESTER BCA

Semester	Course No	Theory/Practical	Credits	Paper Title	S.A	L.A
VI	DSC16	Theory	4	PHP and MySQL	60	40
	DSC16-Lab	Practical	2	PHP and MySQL Lab	25	25
	DSC17	Theory	4	Advanced JAVA and J2EE	60	40
	DSC17-Lab	Practical	2	Advanced JAVA and J2EE Lab	25	25
	DSC18	Theory	4	Artificial Intelligence and Applications	60	40
	DSE-E2	Theory	3	A.Fundamentals of Data Science B. Mobile Application Development	60	40
	Voc-2	Theory	3	Web Content Management System	60	40
	SEC-5	Theory/Practical	2	Mini Project	30	20

Program Name	B.C.A	Semester	VI
Course Title	PHP & MySQL		
Course Code:	DSC16	No.of Credits	04
Contact hours	52 Hours	Duration of SEA/Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

UNIT-I			
Contents	Hours	Book	Pages / Sections
Introduction to PHP: Introduction to PHP, History, and Features of PHP, Installation & Configuration of PHP, Embedding PHP code in Your Web Pages, Understanding PHP, HTML and White Space, Writing Comments in PHP, Sending Data to the Web Browser, Data types in PHP, Keywords in PHP, Using Variables, Constants in PHP, Expressions in PHP, Operators in PHP.	13	1	Chapter 1 (1-11)
		1	Chapter 2 (15-47)
UNIT-II			
Programming with PHP: Conditional statements: if, if-else, switch, The ? Operator, looping statements: while Loop, do-while Loop, for Loop Arrays in PHP: Introduction- What is Array?, Creating Arrays, Accessing Array elements, Types of Arrays: Indexed v/s Associative arrays, Multidimensional arrays, Creating Array, Accessing Array, Manipulating Arrays, Displaying array, Using Array Functions, Including and Requiring Files- use of Include() and Require(), Implicit and Explicit Casting in PHP.	13	2	Chapter 4 (84-99)
		3	Chapter 2 (54-61)
		2	Chapter 6 (131-144)
UNIT-III			
Using Functions and Strings: Functions in PHP, Function definition, Creating and invoking user-defined functions, Formal parameters versus actual parameters, Function and variable scope, Recursion, Library functions, Date and Time Functions Strings in PHP: What is String?, Creating and Declaring String, String Functions	13	1	Chapter 3 (64-75)
		1	Chapter 4 (77-85, 92-99)

Class & Objects in PHP: What is Class & Object, Creating and accessing a Class & Object, Object properties, object methods, Overloading, inheritance, Constructor and Destructor.		1	Chapter 6 (147-163)
UNIT-IV			
Creating HTML Form, Handling HTML Form data in PHP	13	2	Chapter 12 (279-294)
Database Handling Using PHP with MySQL: Introduction to MySQL: Database terms, Data Types. Accessing MySQL –Using MySQL Client and Using php MyAdmin, MySQL Commands, Using PHP with MySQL: PHP MySQL Functions, Connecting to MySQL and Selecting the Database, Executing Simple Queries, Retrieving Query Results, Counting Returned Records, Updating Records with PHP		3	Chapter 4 (111-127)
		3	Chapter 9 (268-284, 290-297)
<p>Text Books</p> <ol style="list-style-type: none"> 1. Kevin Tatroe, Peter MacIntyre & Rasmus Lerdorf, Programming PHP, 3rd Edition, O'Reilly 2. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, 3rd Edition, O'Reilly 3. Larry Ullman, PHP and MySQL for Dynamic Web Sites, 4th Edition, Peachpit Press <p>Reference Books</p> <ol style="list-style-type: none"> 4. Larry Ullman, PHP & MySQL for Dynamic Web Sites, Fourth Edition 5. SAMS Teach Yourself PHP in 24 hours, Author: Matt Zandstra, Sams Publishing 			

Program Name	B.C.A	Semester	VI
Course Title	PHP and MySQL Lab		
Course Code:	DSC16-Lab	No.of Credits	02
Contact hours	4 Hours per week	Duration of SEA/Exam	3 hours
Formative Assessment Marks	25	Summative Assessment Marks	25

Evaluation Scheme for Lab Examination:

Assessment Criteria		
Program-1	PART-A Writing:4 Marks Execution:4Marks	8 Marks
Program-2	PART-B Writing:6 Marks Execution:6Marks	12 Marks
Practical Record		05 Marks
Total		25 Marks

UNIT 2[13 HOURS]

The collections and Framework: Collections Overview, Recent Changes to Collections, The Collection Interfaces, The Collection Classes, Accessing a collection Via an Iterator,

Storing User Defined Classes in Collections, The Random Access Interface, Working With Maps, Comparators, The Collection Algorithms, Why Generic Collections?, The legacyClasses and Interfaces, Parting Thoughts on Collections.

MVC Architecture in Java: What is MVC architecture in Java, Advantages of MVC Architecture, Implementation of MVC using Java, MVC Architecture Layers,

BOOK-1

Chapter-17(Page No:437-501)

STUDY MATERIAL
SUPPLIED BY BOS**UNIT 3[13 HOURS]**

String Handling :The String Constructors, String Length, Special String Operations, String Literals, String Concatenation, String Concatenation with Other Data Types, String Conversion and toString() Character Extraction, charAt(), getChars(), getBytes()toCharArray(), String Comparison, equals() and equalsIgnoreCase(), regionMatches()startsWith() and endsWith(), equals() Versus == , compareTo() Searching Strings, Modifying a String, substring(), concat(), replace(), trim(), Data Conversion Using valueOf(), Changing the Case of Characters Within a String, Additional String Methods, StringBuffer , StringBuffer Constructors, length() and capacity(), ensureCapacity(), setLength(), charAt() and setCharAt(), getChars(), append(), insert(), reverse(), delete() and deleteCharAt(), replace(),

BOOK-1

Chapter-15(Page No:359-384)

References

- 1. Y. Daniel Liang: Introduction to JAVA Programming, 7th Edition, Pearson Education, 2007.**
- 2. Stephanie Bodoff et al: The J2EE Tutorial, 2nd Edition, Pearson Education, 2004.**
- 3. Uttam K Roy, Advanced JAVA programming, Oxford University press, 2015. McGraw Hill 3rd edition,**

Program Name	B.C.A	Semester	VI
Course Title	Advanced JAVA and JEE		
Course Code:	DSC17-Lab	No.of Credits	02
Contact hours	4 Hours per week	Duration of SEA/Exam	3 hours
Formative Assessment Marks	25	Summative Assessment Marks	25

Evaluation Scheme for Lab Examination:

Assessment Criteria		
Program-1	PART-A Writing:4 Marks Execution:4Marks	8 Marks
Program-2	PART-B Writing:6 Marks Execution:6Marks	12 Marks
Practical Record		05 Marks
Total		25 Marks

Program Name	BCA	Semester	VI
Course Title	Artificial Intelligence and Applications		
Course Code:	DSC18	No.of Credits	04
Contact hours	52 Hours	Duration of SEA/Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Topics	Book	Chapter /Page No/Section
UNIT 1[13 HOURS]		
Introduction- What is Artificial Intelligence, Foundations of AI, History, AI - Past, Present and Future Intelligent Agents- Environments- Specifying the task environment, Properties of task environments, Agent based programs- Structure of Agents , Types of agents- Simple reflex agents, Model-based reflex agents, Goal-based agents; and Utility-based agents.	BOOK-1	1.1,1.2,1.3,1.4(Page No-1-29) 2.1,2.2,2.3,2.4(Page No-32-55)
UNIT 2[13 HOURS]		
Problem Solving by Searching- Problem-Solving Agents, Well-defined problems and solutions, examples Problems, Searching for Solutions, Uninformed Search Strategies-Breadth-first search, Uniform-cost search, Depth-first search, Depth-limited search, Iterative deepening depth-first search, Bidirectional search, Greedy best-first search, A* Search, AO* search Informed (Heuristic) Search	BOOK-1	3.1,3.2,3.3,3.4,3.5.3.6(Page No-59-87) 4.1,4.2,4.3(Page No-94-116)

Strategies, Heuristic Functions		
UNIT 3[13 HOURS]		
Knowledge Representation - Knowledge-Based Agents, The Wumpus World , Logic, Propositional Logic, Propositional Theorem Proving, Effective Propositional Model Checking, Agents Based on Propositional Logic, First-Order Logic-Syntax and Semantics of First-Order Logic, Using First-Order Logic, Unification and Lifting Forward Chaining, Backward Chaining.	BOOK-1	7.1,7.2,7.3,7.4,7.5,7.6,7.7 Page No-194-232) 8.1,8.2,8.3,8.4(Page No-240-266) 9.1,9.2,9.3,9.4(272-294)
UNIT 4[13 HOURS]		
Learning – Forms of Learning, Supervised Learning, Machine Learning - Decision Trees, Regression and Classification with Linear Models, Artificial Neural Networks, Support Vector Machines Applications of AI - Natural Language Processing, Text Classification and Information Retrieval, Speech Recognition , Image processing and computer vision, Robotics	STUDY MATERIAL	STUDY MATERIAL SUPPLIED BY BOS
<p>Text Books:</p> <ol style="list-style-type: none"> 1. Stuart Russel, Peter Norvig: Artificial Intelligence A Modern Approach, 2nd Edition, Pearson Education, 2003 <p>References</p> <ol style="list-style-type: none"> 1. Tom Mitchell, “Machine Learning”, 1st Edition, McGraw-Hill,2017 2. Elaine Rich, Kevin Knight, Shivashankar B Nair: Artificial Intelligence, Tata McGraw Hill 3rd edition, 		

Program Name	B.C.A	Semester	VI
Course Title	Fundamentals of Data Science (Theory)		
Course Code:	DSE-E2	No.of Credits	03
Contact hours	42 Hours	Duration of SEA/Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Topics	Book / Chapter	Page No/Section
UNIT 1[11 HOURS]		
Data Mining: Introduction, Data Mining as a subject, Definitions, Knowledge Discovery in Databases (KDD) Vs Data Mining, DBMS Vs Data Mining, DM techniques, Problems, Issues and Challenges in DM, DM applications.	BOOK-1 Chapter 3	3.1, 3.2, 3.3, 3.4, 3.5, 3.7, 3.8, 3.9, 3.10
UNIT 2[11 HOURS]		
Data Warehouse: Introduction- What is Data Warehouse, Difference between Operational Database System and Data Warehouses, Why Have a Separate Data Warehouse. Definition, Multidimensional Data Model- From Tables and Spreadsheets to Data Cubes, Stars,Snowflakes, and Fact Constellations, Measures, Concept Hierarchies, OLAP Operations in the Multidimensional Data Model. Data Warehouse Architecture- Steps for	BOOK-2 Chapter 3	105-117, 119-137

<p>the Design and Construction, A Three-Tier Architecture, Metadata Repository, Types of OLAP Servers.</p> <p>Data Processing: Why Preprocess the Data, Data Cleaning- Missing Value, Noisy Data, Data Cleaning Process. Data Integration and transformation- Data Integration, Data Transformation. Data reduction- Data Cube Aggregation, Attribute Subset Selection, Dimensionality Reduction, Numerosity Reduction. Data Discretization and Concept Hierarchy Generation</p>	<p>Chapter 2</p>	<p>47-50,61-96</p>
<p>UNIT 3[10 HOURS]</p>		
<p>Mining Frequent Patterns: Basic Concept –Market Basket Analysis, Frequent Item Set Mining Methods, frequent Pattern Mining.</p> <p>Efficient and Scalable Frequent Itemset Mining Methods- Apriori and Frequent Pattern Growth (FPGrowth) algorithms, Generating Association Rule, Improving the efficiency of Apriori, Mining Frequent Itemsets without Candidate Generation, Mining Frequent Itemsets using vertical Data Format, Mining Closed Frequent Itemsets.</p> <p>Mining Association Rules- Mining Multilevel Association Rules, Mining Multidimensional Association Rules, (5.4.1 excluded) From Association Analysis to Correlation Analysis. Constraint based Association Mining.</p>	<p>Book 2 Chapter 5</p>	<p>227-272</p>
<p>UNIT 4[10 HOURS]</p>		
<p>Classification: Basic Concepts, Issues,</p>	<p>Book 2</p>	

And Algorithms: Decision Tree Induction. Bayes Classification Methods, Rule-Based Classification, Lazy Learners (or Learning from your Neighbours), k Nearest Neighbour. Prediction: Linear Regression, Nonlinear Regression.	Chapter 6	(285-327, 347-350, 354-358)
Clustering: Cluster Analysis, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods.	Chapter 7	(383-386, 401-429)

Text Books:

1. Arun K Pujari – “Data Mining Techniques” 3rd Edition, Universities Press
2. Jiawei Han and Micheline Kambar – “Data Mining Concepts and Techniques” Second Edition

Reference Book

1. Pang-Ning Tan, Michael Steinbach, Vipin Kumar: Introduction to Data Mining, Pearson Education, 2012.
2. K.P.Soman, Shyam Diwakar, V.Ajay: Insight into Data Mining – Theory and Practice, PHI 5
3. Pang-Ning Tan, Michael Steinbach, Vipin Kumar - “Introduction to Data Mining”, Pearson Education

Program Name	B.C.A	Semester	VI
Course Title	Mobile Application Development (Theory)		
Course Code:	DSE-E2	No.of Credits	03
Contact hours	42 Hours	Duration of SEA/Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

UNIT-I			
	Hours	Book	Pages / Sections
Android OS design and Features: Android development framework, SDK features, Installing and running applications on Android Studio, Creating AVDs, Types of Android applications, Best practices in Android programming, Android tools, and Building your First Android application.	11	1	Chapter-1 Chapter-2
UNIT-II			
Android Application Design Essentials: Anatomy of an Android application, Android terminologies, Application Context, Activities, Services, Intents, Receiving and Broadcasting Intents, Android Manifest File and its common settings, Using Intent Filter, Permissions.	11	2 1 2	Chapter 2, Section 5 Chapter-3 Chapter 2, Section 6
UNIT-III			
Android User Interface Design Essentials: User Interface Screen Elements, Designing User Interfaces with Layouts, Drawing, and Working	10	1	Chapter 4 (101-123)

with Animation. Testing Android applications, Publishing Android applications, Using Android preferences, Managing Application resources in a hierarchy, and working with different types of resources.		1	Chapter 5 (148-185, 191-198)
UNIT-IV			
Using Common Android APIs: Using Android Data and Storage APIs, Managing data using Sqlite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs, and Deploying Android Applications to the World.	10	1	Chapter 7 (246-266)
		1	Chapter 8 (270-294)
<p>Text Books</p> <ol style="list-style-type: none"> 1. J. F. DiMarzio, Beginning Android Programming with Android Studio, 4th Edition, Wrox 2. Lauren Darcey & Shane Conder, Android Wireless Application Development- Volume I: Android Essentials, III Edition, Wesley <p>Reference Books</p> <ol style="list-style-type: none"> 3. Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd 4. Wei-Meng Lee, Beginning Android 4 Application Development, Wiley India (Wrox), 2013 5. Reto Meier, Professional Android 4 Application Development, Wiley India, (Wrox), 2012 			

Program Name	B.C.A	Semester	VI
Course Title	Web Content Management System (Theory)		
Course Code:	Voc-2	No.of Credits	03
Contact hours	42 Hours	Duration of SEA/Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Topics	Book	Chapter /Page No/Section
UNIT 1[11 HOURS]		
Web Content Development and Management, Content Types and Formats, Norms and Guidelines of Content Development, Creating Digital Graphics, Audio Production and Editing.		STUDY MATERIAL SUPPLIED BY BOS
UNIT 2[11 HOURS]		
Web Hosting and Managing Multimedia Content, Creating and Maintaining a Wiki Site. Presentation Software Part I, Presentation Software Part II, Screen casting Tools and Techniques, Multilingual Content Development.		STUDY MATERIAL SUPPLIED BY BOS
UNIT 3[10 HOURS]		
Planning and Developing Dynamic Web Content Sites, Website Design Using CSS Creating and Maintaining a WIKI Site, Creating and Managing a Blog Site,		STUDY MATERIAL SUPPLIED BY BOS
UNIT 4[10 HOURS]		

E- Publication Concept, E- Pub Tools, Simulation and Virtual Reality Applications, Creating 2D and 3 D Animations. Introduction to Moodle ,Creating a New Course and Uploading, Create and Add Assessment, Add and Enroll User and Discussion Forum, Content Management System: Joomla, Content Management System: Drupal		STUDY MATERIAL SUPPLIED BY BOS
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References:

1. Web Content Management: Systems, Features, and Best Practices 1st Edition by Deane Barker.
2. Content Management Bible (2nd Edition) 2nd Edition by Bob Boiko.
3. Using Joomla!: Efficiently Build and Manage Custom Websites 2nd Edition by Ron Severdia

Additional Reading:

https://onlinecourses.swayam2.ac.in/cec20_lb09/preview

Program Name	B.C.A	Semester	VI
Course Title	Mini Project		
Course Code:	SEC-5	No.of Credits	02
Contact hours	30 Hours	Duration of SEA/Exam	2 hours
Formative Assessment Marks	30	Summative Assessment Marks	20

**REFER COMMON GUIDELINES PROVIDED BY UNIVERSITY TO
CONDUCT OF MINI PROJECT**

MANGALORE UNIVERSITY



National Education Policy – 2020 [NEP-2020]

PRACTICAL LIST FOR

VI SEMESTER BCA

Program Name	B.C.A	Semester	VI
Course Title	PHP and MySQL Lab		
Course Code:	DSC16-Lab	No.of Credits	02
Contact hours	4 Hours per week	Duration of SEA/Exam	3 hours
Formative Assessment Marks	25	Summative Assessment Marks	25

PART-A

1. Create an HTML form with fields for user's name, email, and message. Write a PHP script to handle form data submission and display the submitted information.

Contact Form

Name:

Email:

Message:

Form Submission Result

Name: No Name

Email: noname@gmail.com

Message: Welcome to PHP

2. Write a PHP program that collects input from the user through a textbox and checks whether the given number is an Armstrong number or not.
 1. If the number is indeed an Armstrong number, display all numbers in range from 1 to that specified number (Note : 0 is Not an Armstrong Number).
 2. Perform text validation, including checks for positive integers and general text input.

Armstrong Number Checker

Enter a number:

153 is an Armstrong number.

Armstrong numbers from 1 to 153 are: 1 2 3 4 5 6 7 8 9

Armstrong Number Checker

Enter a number:

100 is not an Armstrong number.

Armstrong Number Checker

Enter a number:

Please enter a valid positive integer.

- Write a PHP program demonstrating the usage of sessions to store and retrieve user credentials like username and password. Combine the login, welcome, and logout functionalities into two files – ‘index.php’ and ‘welcome.php’.

Login

Username:

Password:

Welcome user2

This is a secure area. You're logged in.

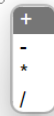
[Logout](#)

- Write a simple PHP program with a user interface for a mathematical calculator using HTML forms.

Perform division by zero operation with appropriate display of messages.

Perform text validation, special character validation for textboxes with appropriate display of messages

PHP Calculator



- Write a PHP program with a user interface for calculating age based on the user's birth date. Display the age in years, months, and days

Age Calculator

Enter your birth date:

Your age is 19 years, 9 months, and 8 days.

- Write a PHP program to create an associative array representing a dictionary with words as keys and their meanings as values. Allow users to input a word and display

its meaning if found, otherwise, display a "Word not found" message. (Please keep 10 pairs of keys and their meanings)

Dictionary

Enter a word:

Meaning: A fruit that grows on trees.

Dictionary

Enter a word:

Word not found.

7. Write a PHP program that includes a user form with a text field and submit buttons for various string manipulations. It will display the result accordingly. (for replace, replace 'a' with 'x').

String Manipulation

Enter a string:

Shuffled string: niIda

8. Write a PHP user interface program with an HTML form to input a string. Upon submission, it will display the number of times each word occurs, ignoring the distinction between capital and lowercase letters. It should also print the most and least used words. Additionally, include buttons for sorting data in ascending order and descending order.

Word Frequency Analyzer

Enter a string:

Word Frequencies:

a: 1 times
b: 2 times
c: 3 times
d: 4 times

The most used word is: d (used 4 times)

The least used word is: a (used 1 times)

Word Frequency Analyzer

Enter a string:

Word Frequencies:

d: 4 times
c: 3 times
b: 2 times
a: 1 times

The most used word is: d (used 4 times)

The least used word is: a (used 1 times)

PART-B

1. PHP program to implement student registration form using Labels, Text Boxes, Text Area, Checkbox, Radio Buttons, Select and Submit button. (First Name, Last Name, Address, E-Mail, Mobile, City, State, Gender, Hobbies, Blood Group). Display user inserted value in a new PHP page in a neat format.

2. Develop a PHP program that facilitates the addition, multiplication of two matrices. Utilize HTML for the user interface and PHP for the backend logic. Dynamically generate the required number of textboxes based on the specified number of rows and columns. Implement three distinct buttons to perform each matrix operation For instance, consider the addition of two matrices as an example.

Matrix Addition

Enter the number of rows:

Enter the number of columns:

Matrix A

<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="6"/>
<input type="text" value="4"/>	<input type="text" value="2"/>	<input type="text" value="-2"/>

Matrix B

<input type="text" value="5"/>	<input type="text" value="6"/>	<input type="text" value="2"/>
<input type="text" value="3"/>	<input type="text" value="5"/>	<input type="text" value="4"/>

Result Matrix

8	10	8
7	7	2

3. Write a PHP program that implements a class to add and find the difference of two distance values given in feet and inches. The user inputs are collected through an HTML form.

Distance Calculator

Distance 1:

Feet:

Inches:

Distance 2:

Feet:

Inches:

Results:

Sum: 9' 5"

Difference: 5' 8"

4. Program to implement a login form where users enter their username and password. Validate the credentials against data stored in a MySQL database and grant access if they are correct.
5. Program to create a feedback form with fields for name, email, subject, and message. Store the submitted feedback data in a MySQL database for later review.
6. Develop a dynamic PHP application to efficiently manage and store customer information, encompassing key fields like Customer Number, Customer Name, Item Purchased, and Mobile Number in Database. This application should provide a user-friendly interface with strategically placed buttons to trigger specific functionalities. These functionalities include:
 1. Add Customer Information: Clicking this button should dynamically reveal a form for entering new customer details. Include proper validation checks for mobile numbers (10 digits), and also for Customer id ensuring accuracy in data input.
 2. Delete Customer Records: Triggering this button should prompt the appearance of a form, specifically requesting the Customer ID to identify and delete the corresponding customer record. And provide appropriate messages for incorrect inputs.
 3. Search for Particular Entries: This function should unveil a search form when activated, allowing users to input Customer id to find specific customer records.

4. Sort Database Based on Customer Id: Clicking this button should facilitate the sorting of the entire database based on customer id.
 5. Display Complete Set of Records: Activating this function should present a comprehensive display of all customer records.
 6. Interface Design: Initially, the interface should only showcase functional buttons. Upon clicking a button, the respective form should dynamically appear, offering a tailored and focused user experience.
 7. Give proper messages after every transaction.
-
7. A PHP and MySQL programme that features a book shopping form that takes in the book number, book title, price, quantity, and a option to choose the book code. The bill with the discounted amount and net bill amount is then displayed. Additionally, bill data are stored in the table.

Code	Discount rate
101	15%
102	20%
103	25%
Any other	5%

Find the discount amount and Net bill amount. Display the bill.
-
8. Develop a web application for proficiently managing hotel reservations, employing PHP for backend logic and MySQL for data storage. The application should feature a well-structured database table encompassing essential fields such as Room Number (primary key), Room Type (e.g., single semi, single deluxe, double semi, double deluxe, dormitory), Capacity, and Status (booked or available). Within the application's user interface, provide a textbox for entering the room number and two distinct buttons for check-in and check-out functionalities. Ensure that both check-in and check-out operations are executed based on the entered room number, facilitating a seamless and intuitive user experience
 - A. Insert 5 records into the table through interface, reflecting both available and booked rooms.
 - B. Lists all available rooms and booked rooms on the webpage.
 - C. Change the booking status to "booked" when a user checks in.
 - D. Change the room status to "available" when a user checks out.
 - E. Displays appropriate messages for successful booking, check-out, or if the room number is not present or not in the expected status.

valuation Scheme for Lab Examination:

Assessment Criteria		
Program-1	PART-A Writing:4 Marks Execution:4Marks	8 Marks
Program-2	PART-B Writing:6 Marks Execution:6Marks	12 Marks
Practical Record		05 Marks
Total		25 Marks

Program Name	B.C.A	Semester	VI
Course Title	Advanced JAVA and J2EE		
Course Code:	DSC17-Lab	No.of Credits	02
Contact hours	4 Hours per week	Duration of SEA/Exam	3 hours
Formative Assessment Marks	25	Summative Assessment Marks	25

PART-A

1. Write a program to convert numbers into words using Enumerations with constructors, methods and instance variables.(INPUT RANGE-0 TO 99999)
EX: 36 THIRTY SIX
2. Find the second maximum and second minimum in a set of numbers using auto boxing and unboxing.
3. Write a menu driven program to create an Arraylist and perform the following operations
 - i) Adding elements
 - ii) Sorting elements
 - iii) Replace an element with another
 - iv) Removing an element
 - v) Displaying all the elements
 - vi) Adding an element between two elements

- Write a java program to find words with even number of characters in a string, then swap the pair of characters in those words and also toggle the characters in a given string

EX:

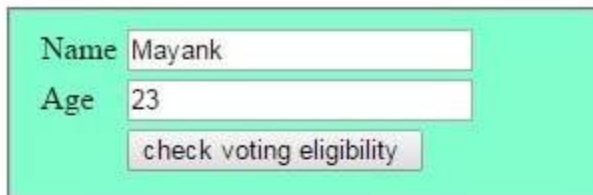
Good Morning everyone

Output: oGdo vereoyen

gOOD mORNING EVERYONE

- Write a Servlet program that accepts the age and name and displays if the user is eligible for voting or not

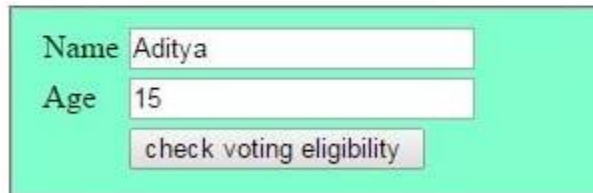
Output:



A screenshot of a web form with a light green background. It contains two input fields: 'Name' with the value 'Mayank' and 'Age' with the value '23'. Below the fields is a button labeled 'check voting eligibility'.

Mayank you are eligible to vote

[Home](#)



A screenshot of a web form with a light green background. It contains two input fields: 'Name' with the value 'Aditya' and 'Age' with the value '15'. Below the fields is a button labeled 'check voting eligibility'.

Aditya you are not eligible to vote

[Home](#)

- Write a JSP program to print first 10 Fibonacci and 10 prime numbers.
- Write a JSP Program to design a shopping cart to add items, remove item and to display items from the cart using Sessions

8. Write a java Servlet program to Download a file and display it on the screen(A link has to be provided in HTML, when the link is clicked corresponding file has to be displayed on screen).

PART-B

1. Write a menu driven JDBC program to perform basic operations with Student Table.

MENU
1. Add new Student
2. Delete a specified students Record
3. Update Students Address specified students Record
4. Search for a particular Student
5. Exit

Student

StRegNo	StName	Stdob	StAddress	StClass	StCourse
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2. Write a menu driven JDBC program to perform basic operations with Bank Table.

MENU
1. Add new Account Holder information.
2. Amount Deposit
3. Amount Withdrawal (Maintain minimum balance 500 Rs)
4. Display all information
5. Exit

Bank

ACC_NO	ACC_NAME	ACC_ADDRESS	BALANCE
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3. Write a Java class called Tax with methods for calculating Income Tax. Have this class as a servant and create a server program and register in the rmiregistry. Write a client program to invoke these remote methods of the servant and do the calculations. Accept inputs interactively.

< ₹ 3,00,000	No Tax
₹ 3,00,001 to ₹ 6,00,000	5%
₹ 6,00,001 to ₹ 9,00,000	10%
₹ 9,00,001 to ₹ 12,00,000	15%
₹ 12,00,001 to ₹ 15,00,000	20%
> ₹ 15,00,000	30%

4. Write a Java class called SimpleInterest with methods for calculating simple interest. Have this class as a servant and create a server program and register in the rmiregistry. Write a client program to invoke these remote methods of the servant and do the calculations. Accept inputs at command prompt.
5. Write a Servlet Program to perform Insert, update and View operations on Employee Table
- ### Employee

Name	Password	Email	Country
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Add New Employee

Name:

Password:

Email:

Country:

[view employees](#)

Employees List

Id	Name	Password	Email	Country	Edit
63	Amit Kumar	amtkmj45	amitkumar@gmail.com	India	edit
61	Rahul Kumar	rahul4000	rahulkk@gmail.com	India	edit
62	Sonoo Jaiswal	sonoobsk	sonoojaiswal1987@gmail.com	India	edit
44	adarsh kumar	kkkkk	adarsh232@gmail.com	India	edit

Update Employee

Name:

Password:

Email:

Country:

6. Write a java JSP program to get student information through a HTML and create a JAVA Bean Class, populate Bean and Display the same information through another JSP
7. Write a menu driven program to create a linked list and perform the following operations.
 - a. to Insert some Elements at the Specified Position

- b. swap two elements in a linked list
 - c. to Iterate a LinkedList in Reverse Order
 - d. to Compare Two LinkedList
 - e. to Convert a LinkedList to ArrayList
8. Implement a java application based on the MVC design pattern.
Input student Rollno, name ,marks in three subject calculate result and grade and display the result in neat format.

Percentage of Marks	Grade
Above 90%	A
80% to 90%	B
70% to 80%	C
60% to 70%	D
Below 60%	E

Evaluation Scheme for Lab Examination:

Assessment Criteria		
Program-1	PART-A Writing:4 Marks Execution:4Marks	8 Marks
Program-2	PART-B Writing:6 Marks Execution:6Marks	12 Marks
Practical Record		05 Marks
Total		25 Marks