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ESTD:2002

20 YEARS Academic Excellence

(Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka and Affiliated to Visvesvaraya Technological University, Belagavi)

Department of Computer Science and Engineering

Six - days Hands-on Skill Training on

PYTHON WITH ADVANCED DATA STRUCTURES

Academic Year	2024-25	Targeted Audience from	CSE 3rd 'A' & 'B'
Name of the Event	*Workshop On Python with advanced data structures*	Number of Participants	135
Date of Conduction	26th to 31st Aug 2024	Time	09.00 AM to 05:00PM
Venue	Project Lab CNR Lab	Resource	Jamin Enock Sujnaan

Details of Training:

Objective	The **primary objectives** of the workshop were: **-** Understand fundamental data structures: Arrays, Linked Lists, Stacks, Queues, Trees, Graphs, Hash Tables, etc. **-** Learn implementation techniques: How to implement data structures in a programming language **-** Analyze time and space complexity: Understand the trade-offs between different data structures and algorithms. **-** Develop problem-solving skills: Learn to analyze problems, identify the appropriate data structure, and implement solutions. **-** Apply data structures to real-world problems: Understand how data structures are used in practical applications. **-** Prepare for technical interviews: Focus on common data structures and algorithm questions. - Foster collaboration and knowledge sharing: Encourage group work, discussions, and learning from peers.
Details of the Activity	The workshop on *Python* ***with advanced data structures*** was organized and conducted by the CSE dept. This Workshop was conducted for **6 days** from Monday to Saturday. The students from the CSE dept showed a huge interest in this workshop. All the students gathered in the PROJECT LAB and CNR LAB by **9:00 am to 5.00 pm** on every day of workshop. On the first day briefly explain to the students about the basic of python was taught to the students and various doubts were solved. On that day onwards this Workshop Content:- followed The workshop covered various topics and modules essential for building skills. **DAY – 1: Basic Python Programming: Revision** ❖ Defining Functions ❖ Function Parameters and Arguments ❖ Modules and Packages ❖ Introduction to Algorithms and Data Structures ❖ Algorithms Basics ❖ Linear Search and Binary Search **DAY – 2: Introduction to Linked Lists** ❖ Problem: Create an expense tracker app ❖ Complexity Analysis of Searching Algorithms ❖ Analyze the performance of different algorithms ❖ Compare time complexity of searching algorithms within the expense tracker app. ❖ Expense Tracker with gradio **DAY – 3: Advanced Data Structures and Recursion** ❖ Problem: Develop a task manager app: ❖ Store tasks in a linked list for efficient insertion, deletion, and traversal. ❖ Implement priority-based task sorting.

| | ❖ Allow users to add sub-tasks and dependencies.
❖ Link: Linked Lists in Python

DAY – 4: Advanced Data Structures and Recursion
    ❖ Hands-on Practice
    ❖ Problem: Implement a shopping list application:
    ❖ Manage items in a shopping list using linked lists.
    ❖ Support features like adding, removing, and updating items.
    ❖ Provide options for categorizing items (e.g., groceries, electronics).

DAY – 5: Advanced Data Structures and Recursion
    ❖ Morning Session: Binary Search Trees
    ❖ Binary Search Trees (BST)
    ❖ Problem: Create a contact management system
    ❖ Store contacts in a binary search tree for fast lookup.
    ❖ Allow users to search, add, delete, and update contact details.

DAY – 6: Advanced Data Structures and Recursion
    ❖ Implement features to sort contacts alphabetically or by recently added.
    ❖ Link: Binary Search Trees in Python
    ❖ Projects (With Gradio UI)
       - Pizza Billing System
       - Expense tracker app (With Stremlit)
       - Analysing the expense and visualising
       - Rock Paper Sceassor game -Number guessing Game
       - Task Manager App |
| **Outcome** | Python for Data Structures is the basic process for starting with any of the projects. Participants can understand and implement arrays, linked lists, stacks, queues, trees, graphs, and hash tables in Python. Hands-on practice writing clean, efficient, and well-documented Python code. All Beneficial Students can develop a project that demonstrates their own understanding of data structures in python, and They can gain a solid foundation to continue learning advanced data structures and algorithms in Python. |

Glimpse of course conduction are as follows…
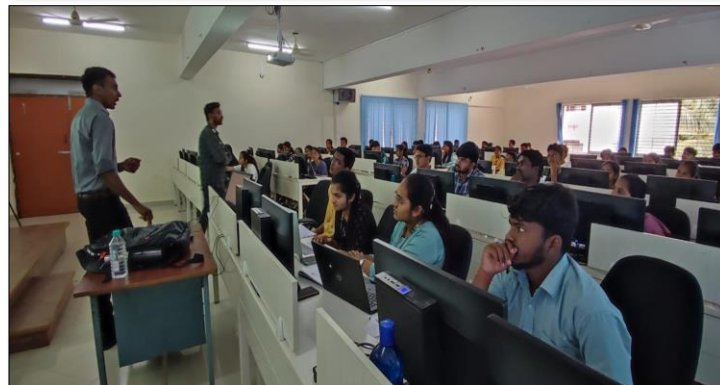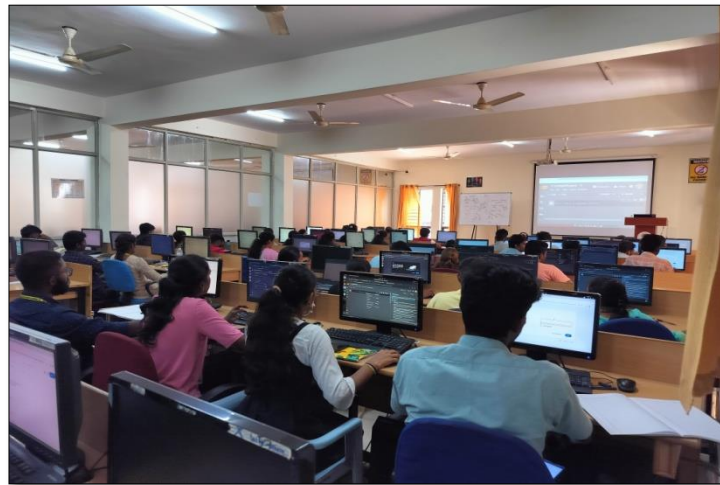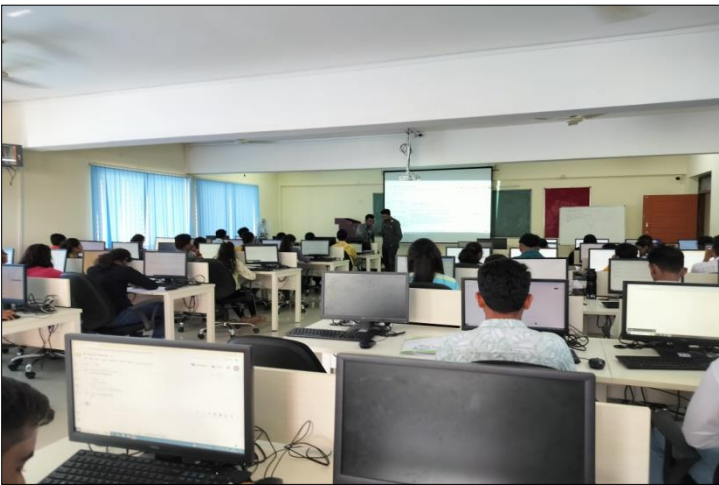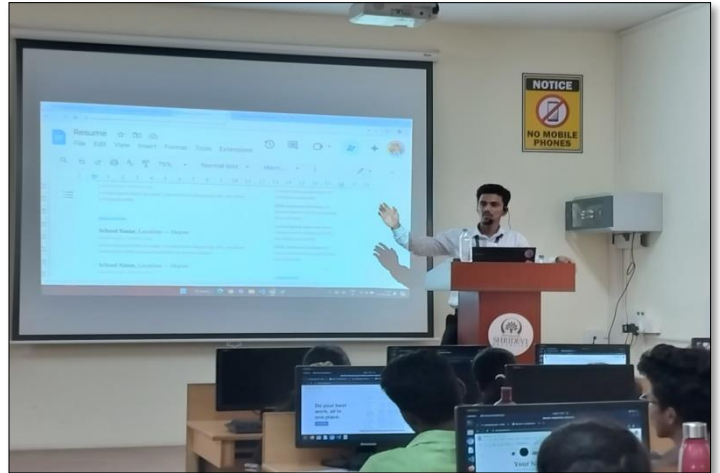
Six - Days Hands on Skill Training on
PYTHON WITH ADVANCED DATA STRUCTURES
from 26th August to 31st August 2024
IIIrd A & B SEC

Dr. Basavesha D
HOD, CSE