***INMEDIA – Activity 3***

**Project Description**

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|  | DESCRIPTION |
| Project Title | Binary Search Tree Analyzer and Traverser |
| Target Audience | Computer science students and enthusiasts |
| Purpose and Need | To provide a Python program that analyzes and performs traversals on a Binary Search Tree (BST) based on user input data. This program helps users understand the structure and properties of BSTs. |
| Overall App Objectives | Develop a Python program that allows users to input data from a file, construct a Binary Search Tree from the data, perform pre-order, post-order, and in-order traversals, and generate a table displaying detailed information about each node in the BST. |
| Technology used to build the application (e.g. Android/iOS) | PyCharm |
| Budget (min, average, high budget) | Minimum |
| Programming Language used to develop software | Python |
| Software Features | * Imports the os module for file interaction. * Prompts the user to input the name and extension of the data file. * Constructs the file path based on the script's location and user input. * Checks file existence and handles errors. * Reads the contents of the input file and processes the data. * Defines a Node class to represent BST nodes. * Inserts values into the BST. * Creates and populates the BST based on the input data. * Performs pre-order, post-order, and in-order traversals of the BST. * Generates a table with detailed information about each node in the BST, including parent, sibling, left child, right child, degree, and depth. |
| Design Strategy | Command-line Python program |
| Review and Approval | Approved and successfully accomplishes the objectives of analyzing and traversing a Binary Search Tree based on user input. |