KIDS & TEENS FREELANCING TRAINING

Data Structure Course Outline

MODULE 1: Introduction to Data & Structures

- What is data?
- Why do we need to organize it?
- Real-life examples (bookshelf, backpack, contacts list)
- Intro to common structures: lists, stacks, queues

MODULE 2: Arrays & Lists

- What is an array/list?
- How to create a list in Python
- Adding, removing, and changing items
- Real example: List of favorite games or movies

MODULE 3: Stacks – LIFO Structure

- Stack definition with real-life example (plates, undo button)
- Push and pop operations
- Visualize stack behavior in Python
- Build a simple browser history stack

MODULE 4: Queues – FIFO Structure

- What is a queue?
- Real-life example (line at a store or printer tasks)
- Enqueue and dequeue operations
- Code a queue for game players in Python

MODULE 5: Dictionaries & Hash Maps

- What is a dictionary in Python?
- Store and find info with keys (e.g., name: score)
- Add, update, and delete values
- Build a mini phone book project

MODULE 6: Trees (Intro Only)

- What is a tree?
- Real example: folder structure on a computer
- Understand parent-child nodes
- Visual activity: build a family tree

MODULE 7: Linked Lists (Conceptual)

- Difference between arrays and linked lists
- Nodes and pointers explained simply
- Real example: playlist or treasure map
- Visualization using arrows and paper cutouts

MODULE 8: Final Project & Review

- Review: Lists, Stacks, Queues, Dictionaries
- Choose a project (student tracker, quiz app, etc.)
- Build and present
- Get feedback and earn a certificate