



**KIDS & TEENS FREELANCING TRAINING INSTITUTE**

# **Data Structure & Algorithms (DSA)**

## **Course Outline**

### **Module 1: What is DSA (Data Structures & Algorithms)?**

- Simple definition: DSA helps organize and solve problems in code
  - Data structures = how we store data; Algorithms = how we use it
  - Real-life example: Organizing books (data) and finding them quickly (algorithm)
  - Activity: Group different objects and explain how to find one fast
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### **Module 2: Getting to Know Data Structures**

- Arrays, lists, stacks, and queues explained simply
  - How each type works like tools in a toolbox
  - Real-life example: Stack of plates or line at the cafeteria
  - Activity: Match a real-world object with the correct data structure
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### **Module 3: Algorithms Made Easy**

- What are algorithms? Step-by-step instructions to solve tasks
  - Sorting, searching, and decision-making examples
  - Real-life example: Steps to make a sandwich = an algorithm!
  - Activity: Write a step-by-step “algorithm” for your morning routine
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### **Module 4: When to Use What**

- Choosing the right data structure or algorithm for the job
- Real-life example: Using a queue in a printer system
- Problem-solving with better tools = faster apps

- Activity: Choose a structure and explain how it helps solve a problem
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## **Module 5: Visualizing DSA in Action**

- Flowcharts and diagrams to show how things move
  - Tracing steps of sorting or searching
  - Real-life example: Sorting your toy collection from biggest to smallest
  - Activity: Create a “bubble sort” with drawings or blocks
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## **Module 6: Code + DSA = Smart Programs**

- Why DSA is used in coding interviews and real jobs
  - Helps apps run faster, smoother, and smarter
  - Real-life example: Google search and YouTube suggestions
  - Activity: Watch how a simple algorithm is coded and try one yourself
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## **Module 7: Real-World Uses of DSA**

- Websites, apps, games, and smart machines using DSA
  - Real-life example: Traffic light system using algorithms
  - Story: How big companies use DSA to save time and money
  - Activity: Imagine a game and draw what DSA it might use inside
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## **Module 8: The Future of DSA Learning**

- Careers: Software Engineer, Data Analyst, App Developer
  - Building a strong coding foundation
  - Real-life example: DSA helps in AI, web, mobile, and more
  - Activity: Create your own “toolbox” of 3 favorite data structures
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## **Bonus Materials**

- Printable DSA concept cards
- Fun DSA flash quiz
- Real-life object-to-structure matching game
- Problem-solving challenge ideas

- Certificate of Completion for DSA