

Introduction to Algorithms

Teacher:
Muhammad Faizan

Agenda

1. Introduction to Algorithms
2. Class activity



Time	Lecture Segment	Activity
0:00 - 0:05 (5 minutes)	Revision of Previous Lecture	Review key concepts from the last lecture.
0:05 - 0:20 (15 minutes)	Study Session 1	Cover the first portion of the lecture material.
0:20 - 0:25 (5 minutes)	Q/A Session 1	Address questions related to the first segment.
0:25 - 0:35 (10 minutes)	Study Session 2	Continue with the lecture material.
0:35 - 0:40 (5 minutes)	Break	Take a short break to refresh.
0:40 - 0:50 (10 minutes)	Study Session 3	Proceed with the next part of the lecture.
0:50 - 1:00 (10 minutes)	For discussion	General discussion.

What are Algorithms

- Definition of an Algorithm
- Explanation



Why Algorithms Matter

- Efficiency
- Problem solving



A Common Day to Day Life Example



How to boil water?

1. Fill the Pot or Kettle
2. Place the Pot on the Stove
3. Turn On the Stove
4. Wait for Boiling
5. Observe Rolling Boil
6. Turn Off the Stove
7. **Use Boiled Water**

The steps that we are going to follow to reach our goal are basically inputs.

Our goal is basically the output



Turn on the stove

Turn off the stove

Turn on

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Class Activity



Characteristics of Algorithms

- Correctness:
- Efficiency:
- Input and Output:
- Finiteness: Well defined endpoint
- Determinism: No randomness
- Generality: Handles a wide range of inputs in a problem domain



Historical Fact





Historical Fact

- **Historical Roots:** Algorithms have deep historical ties to Muslim scholars.
- **Al-Khwarizmi's Origin:** The term "algorithm" originated from the 9th century when it was coined by the Persian mathematician Al-Khwarizmi.
- **Father of Algebra:** Al-Khwarizmi is celebrated as "The Father of Algebra".



Problem Solving Methodologies

1. Understand the problem
2. Plan a solution
3. Implement the solution
4. Test and Evaluate
5. Seek Feedback



Any Question?

