

Problem Solving Techniques Part-1

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Introduction

- ▶ **Problem-solving techniques** refer to the systematic methods, strategies, or approaches used to address and resolve challenges or tasks efficiently.
- ▶ These techniques are used to find solutions to problems, especially when a direct or obvious solution is not readily available.
- ▶ These methods help in breaking down complex issues into small parts, and then solving them gives optimal or best solution.
- ▶ Provides a step-by-step approach to tackle a problem. This ensures that every aspect of the problem is considered.

Steps to implement these Techniques

- ▶ **Step 1:Identifying the problem:** Understand the problem statement,desired outcome and identify the specific constraints.
- ▶ **Step 2:Analyzing the problem:** Breaking down the problem into smaller parts is crucial for effective problem solving.
 - 1.Decomposition
 - 2.Pattern Recognition
 - 3.Abstraction

- ▶ **Step 3:Developing a solution strategy:** We have to develop a plan to address the problem.This involves choosing the best approach.
- ▶ **Step 4:Implementing the solution:** Translating the solution strategy into executable code.
 - 1.code design
 - 2.Algorithm selection
 - 3.data structures
- ▶ **Step 5:Testing and debugging:** They help us to ensure that our solution is working correctly and identify the errors.It involves bug identification,unit testing and error correction.

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- ▶ **Step 6:Optimizing the solution:** Once the solution is working,then we have to improve its performance,efficiency and minimize memory consumption.Then we get a optimized solution.
 - ▶ **Step 7:Solution evaluation:** A final evaluation is essential to assess its success and then identify areas for future improvement.

Types of Problem Solving Techniques

- ▶ 1.Divide and Conquer
- ▶ 2.Dynamic Programming
- ▶ 3.Greedy Algorithms
- ▶ 4.Back Tracking

Conclusion

By mastering these problem solving techniques, we can tackle any problems easily. Also we can improve our problem solving skills and we get the optimized and best solution for any problem.