Learning about...

Binary Search

Overview

In this card, we are going to help you understand the general concept of Binary Search. What is Binary Search? Binary Search is one of the most fundamental and useful algorithms in Computer Science. It describes the process of searching for a specific value in an ordered collection. Terminology

Background

The goal of this chapter is to explain the mechanics of how Binary Search works, different ways to identify Binary Search, and give a brief introduction to the 3 commonly used Binary Search Templates.

Template I

This chapter shows a snippet of code for Template #1. It gives a brief explanation of when to use the template and highlights the key syntax differences between the 3 templates.

Template II

This chapter shows a snippet of code for Template #2. It gives a brief explanation of when to use the template and highlights the key syntax differences between the 3 templates.

Template III

This chapter shows a snippet of code for Template #3. It gives a brief explanation of when to use the template and highlights the key syntax differences between the 3 templates.

Template Analysis

This chapter sums up the 3 different templates that we introduced earlier and analyzes them for specific use cases. Furthermore, a brief explanation of their key differences is emphasized.

Conclusion

Binary Search is an immensely useful technique used to tackle different algorithmic problems. Practice identifying Binary Search Problems and applying different templates to different search conditions. Improve your approach to tackling problems, notice the patterns and repeat! This chapter concludes

More Practices

In this chapter, we have provided more practice problems for improving your Binary Search skills.

More Practices II

We also have a collection of harder problems in Binary Search, where it may not be obvious how to apply Binary Search on these problems.

Discuss

(/discuss/explore/binary-search)

570 topics - share ideas and ask questions about this card

Introduction

In this card, we are going to help you understand the general concept of Binary Search.

What is Binary Search?

Binary Search is one of the most fundamental and useful algorithms in Computer Science. It describes the process of searching for a specific value in an ordered collection.

Terminology used in Binary Search:

- Target - the value that you are searching for
- Index - the current location that you are searching
- Left, Right - the indices from which we use to maintain our search Space
- Mid - the index that we use to apply a condition to determine if we should search left or right

Other Binary Search Definitions:

(Wikipedia (https://en.wikipedia.org/wiki/Binary_search_algorithm))

Background

- [x] How does it work?
- [ ] Binary Search
- [x] Identification and Template Intr...

Template I

- [x] Binary Search Template I
- [ ] Sqrt(x)
- [ ] Guess Number Higher or Lower
- [ ] Search in Rotated Sorted Array

Template II

- [x] Binary Search Template II
- [ ] First Bad Version

- [ ] Find Peak Element
- [ ] Find Minimum in Rotated Sorted...

Template III

- [x] Binary Search Template III
- [ ] Search for a Range
- [ ] Find K Closest Elements
- [ ] Find Peak Element

Template Analysis

- [x] Binary Search Template Analysis
- [ ] Closest Binary Search Tree Value
- [ ] Search in a Sorted Array of Unkn...

Conclusion

- [ ] Pow(x, n)
- [ ] Valid Perfect Square
- [ ] Find Smallest Letter Greater Tha...

More Practices

- [ ] Find Minimum in Rotated Sorted...
- [ ] Find Minimum in Rotated Sorted...
- [ ] Intersection of Two Arrays
- [ ] Intersection of Two Arrays II
- [ ] Two Sum II - Input array is sorted

More Practices II

- [ ] Find the Duplicate Number

- [ ] Median of Two Sorted Arrays
- [ ] Find K-th Smallest Pair Distance
- [ ] Split Array Largest Sum