ITS202: Algorithms and Data Structures
Symbol Tables

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Symbol Tables

A **symbol table** is a data structure for key-value pairs that supports two operations: insert (put) a new pair into the table and search for (get) the value associated with a given key.

Symbol Tables

Figure 1: Example

Symbol Tables

Figure 2: Typical symbol-table applications

Symbol Tables

Figure 3: API for a generic basic symbol table

Elementary Implementation

- Sequential search (unordered list)
- Binary search (ordered array)

Figure 4: Trace of linked-list ST implementation

Figure 5: Summary

Elementary Implementation: Binary search in an Ordered array

Figure 6: Search

Figure 7: Insertion

Figure 8: Summary

Figure 9: Example

Ordered Operations

Figure 10

Figure 11: order of growth of the running time for ordered symbol table operations