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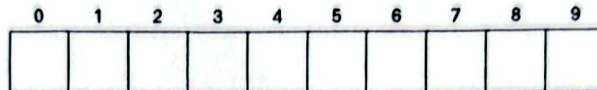
Student Name: 許芷瑜

Definition

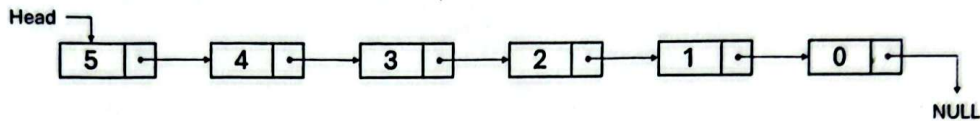
1. Hash Function - A hash function is a function that converts a key (such as a number or string) into an integer index. This index is then used to determine where the data will be stored in a hash table.
2. Hash Table - A hash table is a data structure that stores key-value pairs. It uses a hash function to compute an index in a data structure (called a bucket) where the data will be placed.
3. Collision Handling - A collision occurs when two or more keys are assigned to the same index by the hash function. Collision handling refers to the methods used to store and retrieve these multiple items that share the same index.

Data Structures: Visualization

(1) Array



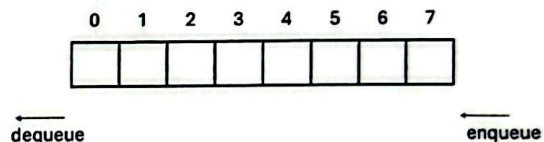
(2) Linked List



(3) Stack

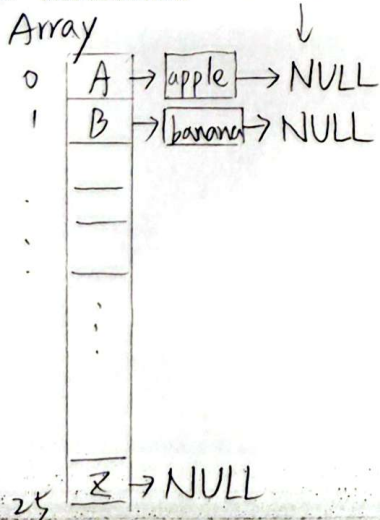


(4) Queue



Note

1. Visualization



$index \leftarrow \text{hash function}$

$0 \leftarrow \text{Hash}(\text{apple})$

$1 \leftarrow \text{Hash}(\text{banana})$

↓
key

collision 頻繁 \rightarrow key 不夠 diverse

\rightarrow 重新設計 Hash Function

\rightarrow key diverse

\rightarrow collision 變少

\rightarrow collision 有效的存取

考慮如何存取
↑
hash function
↓
positive integer
 $A \rightarrow 0$
 $B \rightarrow 1$
 $Z \rightarrow 25$