Instaventory

A convenience store inventory management solution

Olivier Chan
Luis Guerrero
Hiren Rathod
Yue Pan

What is Inventory Management (software)?

- Inventory Management
  - The small or large scale control and overseeing of physical materials and goods.
  - Examples of use cases:
    - Helping to decide when to purchase new goods for retail
    - Calculating profits/margins
- Can be accomplished with paper records, spreadsheets, software, etc.

Instaventory

- Inventory Management software
  - Designed for individual, small scale stores
    - Gas stations
    - Convenience stores (7-Eleven, Liquor stores)
- Features
  - Save and load data records from a file
  - Add and delete data records
  - View ordered lists of records
  - View records ordered by profit margin
  - And more!

User Interface

- Menu / Option based
  - Navigation by choosing a number option
- Input validation
  - Can't enter invalid options/data - reason will be given and asked to retry

How Products/Items are stored in file

- UID - Unique Identifier
- UPC - Universal Product Code
  - A.K.A. Barcode
- Name
- Size (Number, Weight, Volume)
- Category
  - Snacks
  - Drinks
  - Tobacco
  - Lottery & Scratch Cards
  - Miscellaneous
- Wholesale / Retail Price
- Quantity in Stock

```
<item>
        <UID>2000</UID>
        <UPC>049000418347</UPC>
        <name>Coca-Cola</name>
        <size>16oz</size>
        <category>2</category>
        <wholesale>1.50</wholesale>
        <retail>2.60</retail>
        <quantity>60</quantity>
</item>
```

Data Structures

- Dynamic Array (std::vector-like)
    - Used as the primary structure for storing data
    - All other ADTs reference from the dynamic array
- Linked List
    - Used in general use cases
    - Used in hash table ADT for separate chaining
- Hash Table
    - Used to retrieve items by UID efficiently
- Binary Search Tree
    - Used to efficiently print items by sorted profit margins
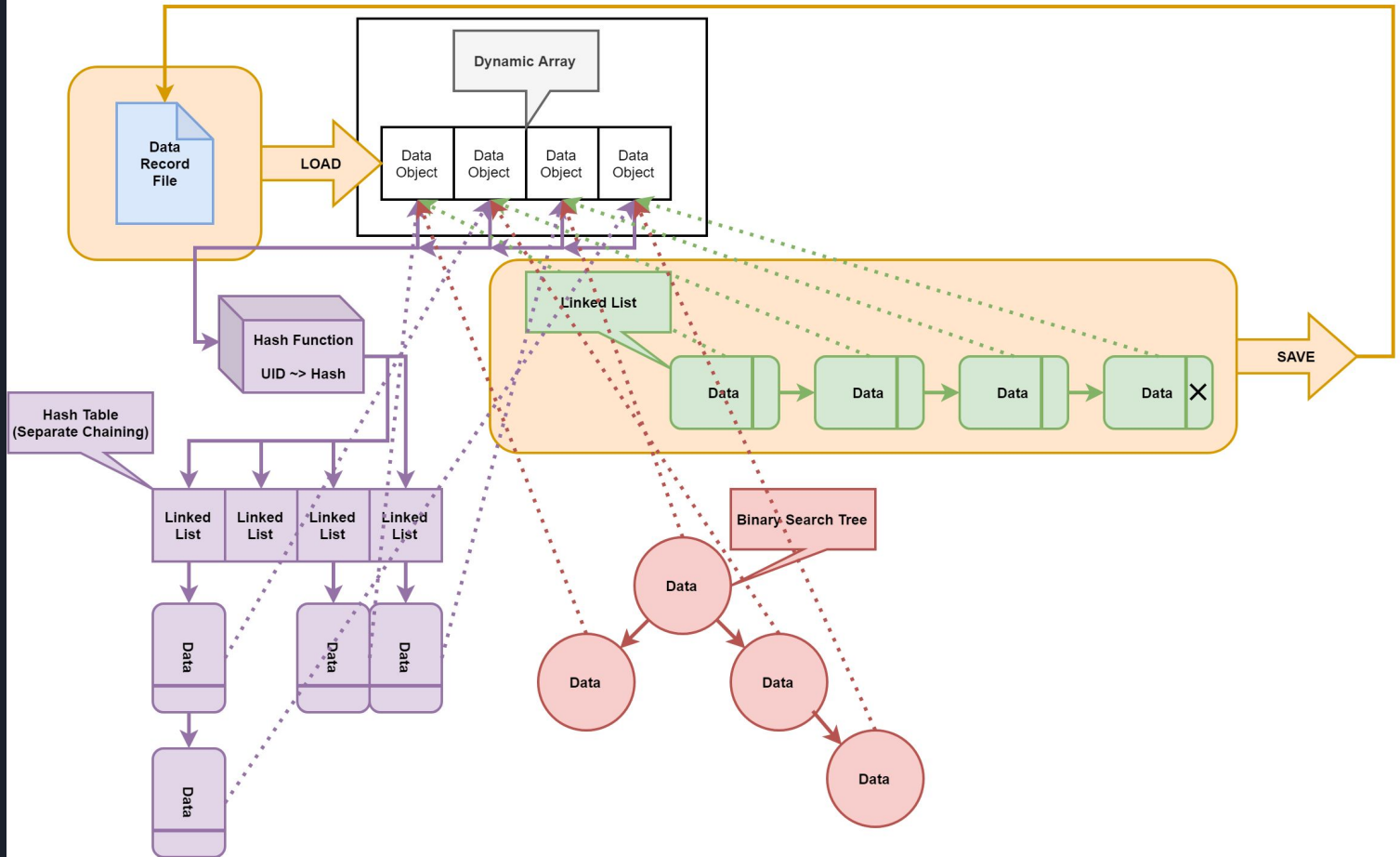
Efficiency
What counts as an operation?

- Does count as an operation:
  - Allocating or deleting dynamic memory
  - Accessing data objects
    - Search, edit, add, remove, insert, etc.
  - Traversing through nodes
- Does not count as an operation:
  - Direct or indirect access of primitive member variables, eg. getCount(), getSize(), etc.
  - Arithmetic
    - Next prime number
    - Modulo

Data Structure Diagram

Demonstration and Q&A