

3. Hashing & Hash table

Tropical Delight, a prominent fruit distributor in the Grand Line, is looking to improve their data management system using a hash table. They have hired you as a programmer to design their data storage system. During your meeting with the company's IT team, the head of the division asks you to create a hash table with the following criteria:

The hash function used to enter data in the hash table involves 3 stages:

Stage 1: Multiply all decimal values of characters.

Stage 2: Extract the last 3 digits of the number.

Stage 3: Perform modulo operation with the table size.

To handle data collision, the company decides to use open addressing with **linear probing**. You are asked to simulate the storage of data with the given hash function criteria to produce an index in the hash table.

Notes:

- The maximum length of the hash table is 200
- For reference, the character 'a' has a decimal value of 97 in ASCII table

The following are the key-value pairs that must be entered in the hash table:

pineapple-45

papaya-32

banana-12

coconut-67

Your task is to create a simulation of how these key-value pairs would be stored in the hash table according to the specified hash function and collision handling technique. Here's an ASCII table to help. Good luck!