Specification of my hash-table:

1.General description: a hash table with linked list is a data structure that implements a hash table where collisions are handled by linked lists. The data structure allows efficient management and efficient access of key-value pairs.

2. Description of stored data:

- Key: Unique identifier by which stored values can be accessed.

- Value: The stored data that can be retrieved based on the key.

- Maximum number of inserted items should be 10000. Altough it is capable of storing many more items, but the efficiency will decrease proportionally in this case.

3. Specification of operations:

- A hash function that calculates the index in the hash table based on a data.

Precondition: the data structure exists.

Postcondition: A hash value (index) is returned.

-Constructor, creates an empty hash table.

Precondition: No hash table exists.

Postcondition: A new empty hash table is created.

- Destructor, frees used resources (e.g. concatenated lists).

Precondition: There is an existing hash table.

Postcondition: The hash table and its associated linked lists are freed.

-Insert: Inserts a new key-value pair into the hash table.

Precondition: The data structure exists and there is no key in the data structure that matches the key to be inserted.

Postcondition: The inserted key-value pair will be available in the data structure.

- Write-out: Write out the stored value based on the specified key.

Precondition: The data structure exists and there is a key in the data structure that matches the specified key.

Postcondition: The stored value is written to the output.

- Writeout (total): Write out all key-value pairs in the hash table.

Precondition: The data structure exists.

Postcondition: All key-value pairs are written to the output.

-Check: Checks whether a given key is present in the hash table.

Precondition: The data structure exists.

Postcondition: Returns a true value if the key exists in the data structure, otherwise returns a false value.

- Delete: Deletes the specified key-value pair from the hash table.

Precondition: The data structure exists and there is a key in the data structure that matches the specified key.

Postcondition: The given key-value pair is deleted from the hash table.

- Insert from file: Inserts data from a file into the hash table.

Precondition: The data structure exists.

Postcondition: Data is inserted into the hash table based on the corresponding hash value.