What is a HashMap, explain the internal working of HashMap (in Java). Explain the insertion, retrieval and deletion process with an example, especially in the context of hash collision.

Ans.

HashMap is a type of data-structure in java.

HashMap stores key-value pairs, in which keys are unique and values can be varied.

While storing a key in a hashmap, the key is converted into the hashcode and the value is stored at the hashcode addresss.

While retrieving a value, the key passed is again converted into the hashcode and is checked if any value is present at the hashcode address.

During deletion, the key converted into hashcode is removed from the memory.

In certain cases, the hashcode of the 2 different keys could be same, this is called hash collision.

In such case, the values begin different are saved in the linked-list at the hashcode address.

While saving the values in the linked list, they keys are also stored with them because as both the keys will give same hashcode, knowing which value to return becomes possible.

Eg.

Key -> 1, value -> 5;

Key -> 2, value ->7;

1 gives hashcode 9220;

2 gives hashcode 9220;

In Linked-List -> 1-5 , 2-7 will be saved at the same hashcode 9220;

Map.get(1) ->will return 5;

Map.get(2) -> will return 7;