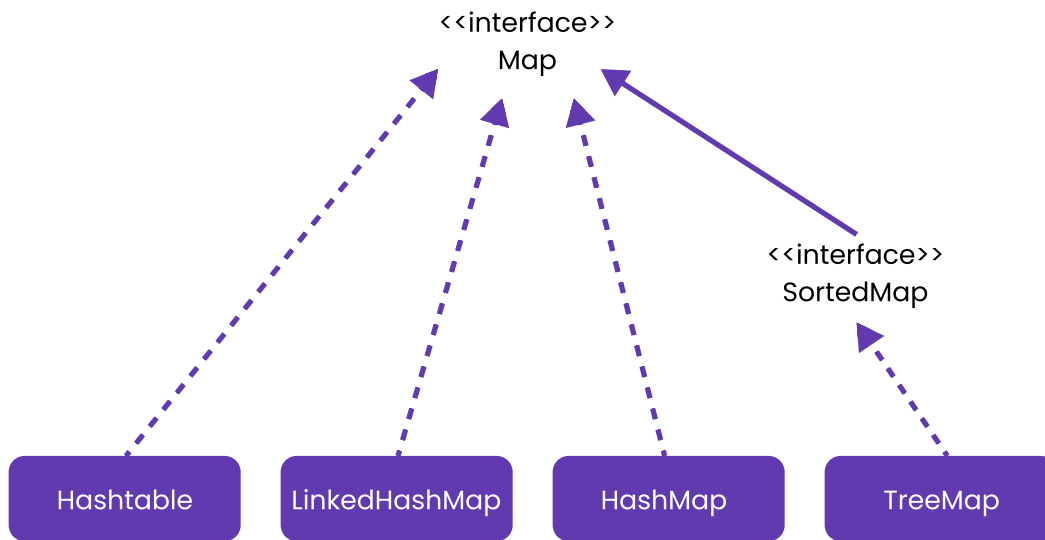# Types of HashMap in Java

HashMap is implemented as a hash table, and there is no ordering on keys or values.

TreeMap is implemented based on red-black tree structure, and it is ordered by the key.

LinkedHashMap preserves the insertion order

Hashtable is synchronized, in contrast to HashMap. It has an overhead for synchronization.
This is the reason that HashMap should be used if the program is thread-safe.

Also concurrent hash map can be used if we want to achieve synchronization in a multi threaded environment

Now we will see an example of each type of Map in java and will see the output of map. The idea is to see the order of keys for different types of maps.

HashMap can store keys in any order.TreeMap sorts the keys and stores them in order.

LinkedHashMap preserves the order of insertion of keys.

Code: LP_Code2.java

```
Value of HashMap is: {1=Piyush, 2=Athar, 3=Ajay, 4=Anil}
Value of TreeMap is: {1=Piyush, 2=Athar, 3=Ajay, 4=Anil}
Value of LinkedHashMap is: {4=Anil, 2=Athar, 3=Ajay, 1=Piyush}
```

Interview problem: Two Sum

Ques: Given an array of integers and an integer target, return indices of the two numbers such that they add up to target. Assume only 1 valid answer exists.

Eg. Input = [2,7,11,15]. target =9
Output = [0,1]