

# Google Guava

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Guava is an open source, Java based library developed by Google. It facilitates best coding practices and helps reduce coding errors. **It provides utility methods for collections, caching, primitives support, concurrency, common annotations, string processing, I/O, and validations.** This is managed by **Google**.

## Features of Guava

- **Optional** is an immutable object used to contain a not-null object. Optional object is used to represent null with absent value.
- **Preconditions** provide static methods to check that a method or a constructor is invoked with proper parameter or not. It checks the pre-conditions. Its methods throw `IllegalArgumentException` on failure.
- **Ordering** can be seen as an enriched comparator with enhanced chaining functionality, multiple utility methods, multi-type sorting capability, etc.
- **Objects** class provides helper functions applicable to all objects such as equals, hashCode, etc.
- Guava introduces many advanced collections based on developers' experience in application development works. Given below is a list of useful collections:
  - **Multiset**  
Multiset interface extends 'Set' to have duplicate elements, and provides various utility methods to deal with the occurrences of such elements in a set.
  - **Multimap**  
An extension to Map interface so that its keys can be mapped to multiple values at a time.
  - **BITMAP**  
An extension to Map interface to support inverse operations. A BiMap is a special kind of map which maintains an inverse view of the map while ensuring that no duplicate values are present in the map and a value can be used safely to get the key back.
  - **Table**  
Table represents a special map where two keys can be specified in combined fashion to refer to a single value. It is similar to creating a map of maps.
- **Guava provides a very powerful memory based caching mechanism by an interface `LoadingCache<K,V>`.** Values are automatically loaded in the cache and it provides many utility methods useful for caching needs.
- As primitive types of Java cannot be used to pass in generics or in collections as input, Guava provided a lot of **Wrapper Utilities classes to handle primitive types as Objects.**
- Guava provides Mathematics related Utilities classes to handle int, long and BigInteger.

## References

1. <https://github.com/google/guava/wiki>
2. <https://github.com/google/guava>