The Concurrent Mark Sweep (CMS) garbage collector is a garbage collector in the Java HotSpot virtual machine (JVM) that is designed to achieve short garbage collection pauses. It does this by performing most of the garbage collection work concurrently with the application threads.

The CMS collector has two phases:

* Concurrent Marking: This phase is performed concurrently with the application threads. The garbage collector marks all live objects in the old generation.
* Sweeping: This phase is performed when the concurrent marking phase is complete. The garbage collector sweeps the old generation, freeing up space for new objects.

The CMS collector is a good choice for applications that require short garbage collection pauses. However, it is not as efficient as other garbage collectors, such as the Garbage-First (G1) collector.

Here are some of the advantages of using the CMS collector:

* Short garbage collection pauses
* Can be used with applications that have a large old generation
* Can be used on machines with multiple processors

Here are some of the disadvantages of using the CMS collector:

* Not as efficient as other garbage collectors
* Can cause fragmentation of the old generation
* Can be more difficult to tune than other garbage collectors

The CMS collector is deprecated in Java 9 and was removed in Java 14. However, it is still available in older versions of Java.

Here are some of the command-line options that can be used to control the CMS collector:

* -XX:+UseConcMarkSweepGC: This option enables the CMS collector.
* -XX:CMSInitiatingOccupancyFraction=N: This option specifies the percentage of the old generation that must be occupied before a concurrent collection is triggered.
* -XX:+CMSParallelRemarkEnabled: This option enables parallel remarking, which can improve the performance of the CMS collector.
* -XX:+CMSScavengeBeforeRemark: This option specifies that the CMS collector should perform a minor collection before the remark phase. This can help to reduce the amount of time that the CMS collector spends in the remark phase.