Replication in MySql:

Mainly used to create duplicate copies of data from one MySQL database server to one or more database servers which increases performance and also improves reliability and availability of data

Advantages:

* With help of Replication, load is spread among multiple servers which improves performance
* All writes and updates will take place on Source server whereas all reads can be done in one or more replicas/servers
* Since Read and writes happens in different servers, there will be no lag in the performance
* Replication improves security of data by running backup services on replicas instead of Source server.With help of this data corruption will not take place
* Also performing data analytics will reduce the performance which can be eliminated with help of replication by performing analytics on replicas
* Replication also helps to create local copy of data for remote access preventing permanent access to Source server

Replication Methods:

* Binary Log Method - It is a traditional method for replicating events from source database server’s binary log to the replicas but it requires log files and position between source and replicas to be synchronized. In this method, source writes, updates and changes as events to binary logs. Replicas read information from binary logs and execute events from it. The replicas have binary log coordinates such as source hist name, log file name and position so that individual replicas can be connected and disconnected from the server without affecting the source’s operation
* Global Transaction identifier - It is a basically a transactional replication. Transactional replication is the periodic automated replication happens when data is distributed from a Source database to a database in a replica. As data on a source database is updated/changed frequently, these changes should be replicated as soon as possible after they happen. A Global transaction identifier(GTID) is a unique identifier which is created and associated with each transaction committed on the server

Synchronization Types:

* Replication in MySQL supports different types of Synchronisation
* Asynchronous - Here updates occur on Source and changes are replicated to replicas. Updates are placed in binary logs of source and replicas will retrieve the updates from here
* Synchronous- Typically used in Clusters.If updates want to be placed in all replicas then we can go with this type
* Semi-Synchronous- Source server will block before returning to the session and it will ensure that transaction is replicated on at least one replica server
* Delayed - An event received from Source server is not executed until at least specified time of time later than its execution on the source

Replication Formats:

* Statement Based Replication - Entire SQL statements is replicated. For Eg: If I update Employee records in Source database, the Source will store entire information in binary log and replicas will download and reissue in their databases
* Row Based Replication - Only changes Rows will get replicated.For Eg: If any rows updated in source database, the replicas will take changed rows and update in their database
* Mixed Based Replication - It allows for combination of SQL statement based replication and Row based replication