**Locking Hierarchy**

* Database level is the highest
* Locks are always acquired from top to bottom of the hierarchy to prevent a race condition
* Applied when reading or modification of data is performed
* Not all locks can be applied at all levels
* Row level (X, S and U only)
* Table level (X, S, IX, IS, SIX only)
* Schema locks are table level but are not data related so have different compatibility

For SELECT statements

|  |  |  |
| --- | --- | --- |
| Level | Lock | Note |
| Database | Shared (S) Lock | Prevents drop/restore backup of database over the database in use |
| Table | Intention shared lock (IS) | For example when a SELECT statement is issued |
| Page | Intention shared lock (IS) |  |
| Row | Shared lock (S) |  |

For DML (INSERT, UPDATE, DELETE)

|  |  |  |
| --- | --- | --- |
| Level | Lock | Note |
| Database | Shared (S) Lock |  |
| Table | Intent exclusive (IX) or Intent update (IU) lock |  |
| Page | Intent exclusive (IX) or Intent update (IU) lock |  |
| Row | Exclusive (X) or Update (U) lock |  |