Although InnoDB uses the term **row format** for consistency with MySQL syntax, the row format is a property of each table and applies to all rows in that table.
See Also column, data files, page, row format, table.

row format
The disk storage format for **rows** of an InnoDB **table**. As InnoDB gains new capabilities such as **compression**, new row formats are introduced to support the resulting improvements in storage efficiency and performance.

The row format of an InnoDB table is specified by the ROW_FORMAT option or by the innodb_default_row_format configuration option (introduced in MySQL 5.7.9). Row formats include REDUNDANT, COMPACT, COMPRESSED, and DYNAMIC. To view the row format of an InnoDB table, issue the SHOW TABLE STATUS statement or query InnoDB table metadata in the INFORMATION_SCHEMA.
See Also compact row format, compressed row format, compression, dynamic row format, redundant row format, row, table.

row lock
A **lock** that prevents a row from being accessed in an incompatible way by another **transaction**. Other rows in the same table can be freely written to by other transactions. This is the type of **locking** done by **DML** operations on **InnoDB** tables.

Contrast with **table locks** used by MyISAM, or during **DDL** operations on InnoDB tables that cannot be done with **online DDL**; those locks block concurrent access to the table.
See Also DDL, DML, InnoDB, lock, locking, online DDL, table lock, transaction.

row-based replication
A form of **replication** where events are propagated from the **source** specifying how to change individual rows on the **replica**. It is safe to use for all settings of the innodb_autoinc_lock_mode option.
See Also auto-increment locking, innodb_autoinc_lock_mode, replica, replication, source, statement-based replication.

row-level locking
The **locking** mechanism used for **InnoDB** tables, relying on **row locks** rather than **table locks**. Multiple **transactions** can modify the same table concurrently. Only if two transactions try to modify the same row does one of the transactions wait for the other to complete (and release its row locks).
See Also InnoDB, locking, row lock, table lock, transaction.

Ruby
A programming language that emphasizes dynamic typing and object-oriented programming. Some syntax is familiar to **Perl** developers. There are two popular **Ruby APIs** for developing MySQL applications. (This manual does not cover higher-level Ruby frameworks.)
See Also API, Perl, Ruby API.

Ruby API
Two APIs are available for Ruby programmers developing MySQL applications. The MySQL/Ruby API is based on the **libmysqlclient** API library. The Ruby/MySQL API is written to use the native MySQL network protocol (a native driver). For full details, see Section 29.11, “MySQL Ruby APIs”.
See Also libmysql, Ruby.

rw-lock
The low-level object that InnoDB uses to represent and enforce shared-access **locks** to internal in-memory data structures following certain rules. Contrast with **mutexes**, which InnoDB uses to represent and enforce exclusive access to internal in-memory data structures. Mutexes and rw-locks are known collectively as **latches**.

rw-lock types include s-locks (shared locks), x-locks (exclusive locks), and sx-locks (shared-exclusive locks).