

Atlas Technical Primer & Naming Reference

Keep this nearby while you work. It teaches the core database and security concepts used in the projects, then gives you a quick naming reference.

How to use it. Read the relevant section when a concept first appears, then use the naming reference as a lookup. You do not need to memorize abbreviations before starting.

Atlas user vs. MySQL account

Atlas Operations is the business application. MySQL is the database server underneath it. **An Atlas application user and a direct MySQL account are different identities.** An Atlas user represents a person working inside the application. A MySQL account controls direct database-server access and database privileges.

Atlas application user AUSR-008 / tibarra Represents Tomas using Atlas Operations.	Direct MySQL account tibarra_ext Represents a database login whose privileges are controlled by MySQL.
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Identifier prefix quick reference

Prefix	Meaning / example	Prefix	Meaning / example
EMP	Employee - EMP-003	MIS	Mission - MIS-310
CTR	Contractor - CTR-001	DATA	Dataset - DATA-407
CUST	Customer - CUST-004	FND	Finding - FND-513
CONT	Customer contact - CONT-102	DEL	Deliverable - DEL-504
PRJ	Project - PRJ-1071	INV	Invoice - INV-607
SITE	Site - SITE-208	PAY	Payment - PAY-703
AUSR	Atlas user - AUSR-008	vw_	Database view prefix

PRIMER | PART 2

Relational Database Fundamentals

Start here if tables, keys, or relationships are new to you.

Database / schema

What it is. A named collection of database objects such as tables, views, and relationships.

Why it matters. It gives related business data a defined structure rather than treating everything as unrelated files.

In Atlas. The main training database is atlas_ops.

Table, row, and column

What it is. A table stores one category of information. A row is one record. A column defines one attribute stored for each row.

Why it matters. This helps you locate the right record and the right field before changing anything.

In Atlas. One row in customers can represent CUST-004; customer_name is one column.

Source: Oracle, MySQL 8.4 Reference Manual, MySQL Glossary.

Primary key (PK)

What it is. A primary key uniquely identifies a row in its table.

Why it matters. Other tables need a stable identifier when they refer back to that row.

In Atlas. projects.project_id uniquely identifies PRJ-1071.

Source: Oracle, MySQL 8.4 Reference Manual, MySQL Glossary / CREATE TABLE.

PRIMER | PART 3

Relationships & Referential Integrity

This is what makes the Atlas database relational.

Foreign key (FK)

What it is. A foreign key links a value in one table to a related row in another table. MySQL can enforce the relationship so references do not silently point to missing data.

Why it matters. It helps preserve referential integrity as records are inserted, updated, or deleted.

In Atlas. projects.customer_id links each project to the customer that owns it.

Source: Oracle, MySQL 8.4 Reference Manual, MySQL Glossary: Foreign Key.

Relationship chain

What it is. Related identifiers let you trace a business workflow across several tables.

Why it matters. The database does not need to repeat every customer field inside every project, site, and mission record.

In Atlas. CUST-004 -> PRJ-1071 -> SITE-208 -> a collection mission.

Pattern to notice. When you investigate a record, ask which identifier connects it to the next table. That habit becomes more important than memorizing individual table names.

PRIMER | PART 4

Working With Related Data

These SQL ideas support the first project and appear throughout the series.

SELECT and filtering

What it is. SELECT retrieves data. Conditions such as WHERE narrow the result to records that match what you are looking for.

Why it matters. Most support and investigation work begins by reducing a large dataset to the smallest relevant set of records.

In Atlas. You might select PRJ-1071 instead of reading every project in Atlas.

Source: Oracle, MySQL 8.4 Reference Manual, SELECT Statement.

JOIN

What it is. A JOIN combines related rows from multiple tables in one query result.

Why it matters. Business questions often cross table boundaries. A project name may live in projects while the customer name lives in customers.

In Atlas. A JOIN can show a project and its customer in the same result.

Source: Oracle, MySQL 8.4 Reference Manual, JOIN Clause.

View

What it is. A view is a database object defined by a SELECT query. It presents selected data like a table.

Why it matters. Views can simplify repeated queries and can support narrower access when privileges are granted to the view instead of broadly to base tables.

In Atlas. vw_aster_project_qa gives the contractor read-only QA information for the Aster assignment.

Source: Oracle, MySQL 8.4 Reference Manual, CREATE VIEW Statement.

PRIMER | PART 5

Access Control & Least Privilege

These concepts become central in Project 3.

Access control

What it is. Access control is the process of permitting or denying access to information or system resources according to defined rules.

Why it matters. A database can contain several kinds of business data, and not every identity should be able to read or change all of it.

In Atlas. MySQL privileges determine what a direct database account can do.

Source: NIST CSRC Glossary: Access Control; NIST SP 800-53 Rev. 5.

Privilege

What it is. A privilege is a specific authorization granted to a MySQL account or role.

Why it matters. Separating capabilities lets access match an actual job requirement.

In Atlas. SELECT permits reading; UPDATE permits changes to existing rows; SHOW GRANTS lets you inspect current privileges.

Source: Oracle, MySQL 8.4 Reference Manual, Access Control and Account Management / SHOW GRANTS.

Least privilege

What it is. Least privilege means granting only the minimum system resources and authorizations needed to perform an assigned function.

Why it matters. It limits the impact of misconfiguration, misuse, or account compromise.

In Atlas. If a contractor only needs read-only QA access, broad UPDATE or DELETE privileges across atlas_ops are unnecessary.

Source: NIST CSRC Glossary: Least Privilege; NIST SP 800-53 Rev. 5.

PRIMER | PART 6

Backups, Audit Evidence & Recovery

These concepts support the Project 4 investigation.

Backup

What it is. A backup is a separate copy of database structure and/or data that can be used for recovery or comparison.

Why it matters. Known-good backups help restore data after unwanted changes and show what records looked like before an incident.

In Atlas. Project 4 includes a pre-incident logical backup for comparison.

Source: Oracle, MySQL 8.4 Reference Manual, Chapter 9: Backup and Recovery.

Logical backup / mysqldump

What it is. A logical backup represents structure and data as SQL statements or other portable text. mysqldump is a MySQL utility that creates logical backups.

Why it matters. Logical backups are easy to inspect and reload in a small training environment.

In Atlas. The pre-incident database can be loaded into a separate schema without overwriting the incident state.

Source: Oracle, MySQL 8.4 Reference Manual, mysqldump - A Database Backup Program.

Audit record and audit trail

What it is. An audit record is one logged event. An audit trail is the chronological record used to reconstruct the sequence around an event.

Why it matters. Investigations depend on sequence and scope, not just a single suspicious row.

In Atlas. db_change_audit can be filtered into a timeline of relevant database changes.

Source: NIST CSRC Glossary: Audit Record and Audit Trail; NIST SP 800-53 Rev. 5.

Geospatial Data & Direct Account Names

A final reference for the GEOINT setting and the account names used in later projects.

The project stores latitude and longitude as ordinary decimal values because the goal here is learning relational data, access control, troubleshooting, and security. MySQL also supports spatial data types such as POINT and spatial functions designed for geographic data. Those are more appropriate when you need operations such as distance calculations, containment, intersection, or spatial indexing. We are deliberately not using them here so the geospatial layer does not overshadow the database fundamentals.

Intentional simplification. Production geospatial workloads may use MySQL spatial types. Decimal coordinates are used here so beginners can work with meaningful location data without turning the project into a GIS course.

Identifier	Plain-English meaning	Used for
av_it_admin	Avenloch IT Administrator	Administrative lab work
av_reporting	Avenloch Reporting	Read-only reporting
atlas_app	Atlas Operations Application	Application service identity
tibarra_ext	Tomas Ibarra - External	Contractor database account
vw_aster_project_qa	View: Aster Project QA	Read-only QA view used in Project 3

References

Industry and vendor sources used for the primer definitions.

References

Source titles are listed so you can locate the underlying standards and documentation without relying on embedded links.

Oracle. MySQL 8.4 Reference Manual. MySQL Glossary; SELECT Statement; JOIN Clause; CREATE VIEW Statement; Access Control and Account Management; SHOW GRANTS; Chapter 9: Backup and Recovery; mysqldump - A Database Backup Program; Spatial Data Types.

National Institute of Standards and Technology. NIST SP 800-53 Rev. 5, Security and Privacy Controls for Information Systems and Organizations.

NIST Computer Security Resource Center Glossary. Terms: Access Control, Least Privilege, Audit Record, Audit Log, and Audit Trail.

Reference scope. The definitions in this primer are paraphrased for a beginner training environment. When you need implementation details or normative security-control language, use the underlying vendor or NIST source.