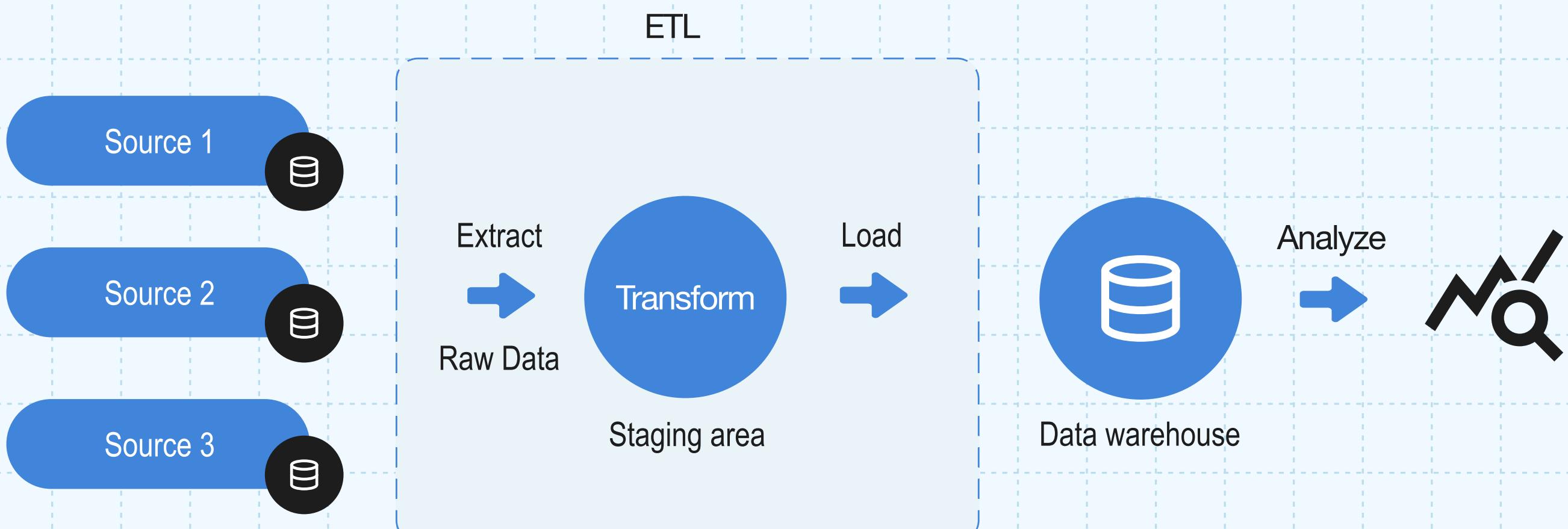


UNDERSTANDING ETL PIPELINE FOR DATA ENGINEERS





Disclaimer

EVERYONE LEARNS UNIQUELY.

This roadmap is a guide to help you navigate the journey of becoming a Data Engineer.

Treat this as direction, not a fixed rulebook. Real growth comes from consistent practice and solving real-world problems.

TABLE OF CONTENTS

01	INTRODUCTION	4-9
	What Is ETL And Why It Matters	
	Importance For Analytics, Machine Learning, And Operations.	
	ETL Vs ELT Explained Simply.	
02	ETL BASICS	10-16
	Extract → Gather Data From Sources	
	Transform → Clean, Standardize, Enrich	
	Load → Store Into Warehouse/Lake	
	Batch Vs Real-Time Pipelines + Challenges	
03	ETL ARCHITECTURE	17-21
	Layers: Sources → Staging → Transformation → Warehouse → Consumption	
	Shows The Structured Flow From Raw Data To Insights	
04	TOOLS & TECHNOLOGIES	22-31
	Ingestion: Kafka, Fivetran, Glue	
	Transformation: Spark, Dbt, Pandas	
	Storage: Snowflake, BigQuery, S3	
	Orchestration: Airflow, Prefect	
	Monitoring: Great Expectations, Monte Carlo	
05	BEST PRACTICES	32-33
	Modular Design, ELT In Modern Warehouses	
	Automated Data Quality Checks	
	Schema Evolution, Monitoring, Scalability	
	Shows Real Business Value Of ETL Pipelines	
06	USE CASES	34
	Daily Sales Reporting → Walmart	
	Customer Personalization → Amazon	
	Inventory Optimization → Target	
	Shows Real Business Value Of ETL Pipelines	