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# SQL WITH Python TRAINING

Combine the Power of SQL with the Flexibility of Python

Learn to Extract | Analyze | Automate | Build Real-World Solutions

- SQL Fundamentals
- Python Programming
- Data Analysis with Pandas
- Database Integration (pyodbc)
- Real-Time Projects

Beginner Friendly | Hands-on Practice | Expert Trainers | Certification Guidance | Career Support

**ENROLL NOW** → | UPSKILL TODAY FOR A **BRIGHTER TOMORROW** | PRACTICE | PROJECTS | CAREER | SUCCESS

Practical Skills Brighter Careers  
Query Analyze Automate Create Real-World Impact

SQL QUERIES  
PYTHON  
PANDAS  
DATA ANALYTICS  
AUTOMATION  
REAL-TIME PROJECTS

Data Skills Create Opportunities

## SQL with Python – Data Analytics & Automation Training

### Master SQL, Python, Pandas, Data Processing & Real-Time Projects

#### What is Python?

Python is a programming language used by Data Analysts, Business Analysts, Data Scientists and Programmers for handling ANY type of operations with respect to data in real-world. From Data Storage to Security, Analytics and Forecasts.

#### What You'll Learn

- SQL Server & Advanced T-SQL Queries
- Joins, CTEs, Subqueries & Window Functions
- SQL Query Performance & Indexing
- Core Python Programming
- Python Data Structures & Functions
- Pandas & NumPy
- Data Cleaning & Transformation
- Python + SQL Server Integration
- Data Analysis & Automation
- End-to-End Real-Time Project

#### Ideal for:

Freshers | SQL Developers | Data Analysts | MIS Professionals | Support Engineers | Database Professionals | Business Analysts | ETL Developers | Professionals moving into Data Analytics

### Who can join this course?

Anyone. We start the classes from scratch, right from Basics of Python, Data, Database, Analysis. Then proceed for Scenario based activities and job orientation with Realtime Project.

### Career Opportunities:

- ✓ SQL Developer
- ✓ Python Data Analyst
- ✓ Junior Data Analyst
- ✓ Data Analyst
- ✓ Reporting Analyst
- ✓ Database Developer
- ✓ ETL Developer
- ✓ Data Automation Developer

### Course Plan:

- 👉 📅 **Module 1: MSSQL & TSQL**
- 👉 📅 **Module 2: Python Concepts, Analytics**
- 👉 📅 **Module 3: Python Programming**
- 👉 📅 **Module 4: End to End Realtime Project**
- 👉 📅 **Duration: 2 Months**

## 👉 Detailed Course Content 👉

*This detailed content with 100% Hands-On, Daily Assignments make you 100% Job ready !*

### Module 1: SQL Server TSQL (MSSQL) Queries

#### Ch 1: SQL Database Job Roles

- ✓ Introduction to Data
- ✓ Database Job Roles
- ✓ SQL Job Roles
- ✓ SQL Developer Jobs
- ✓ Data Engineer Jobs
- ✓ Data Analyst Jobs

#### Ch 2: Database Intro & Installations

- ✓ Database Intro & Types (OLTP, DWH, ..)
- ✓ DBMS Concepts
- ✓ SQL Server 2025 Installations
- ✓ SSMS Tool Installation
- ✓ Server Connections, Authentications

#### Ch 3: SQL Basics V1 (Commands)

- ✓ Creating Databases (GUI)
- ✓ Creating Tables, Columns (GUI)
- ✓ SQL Basics (DDL, DML, etc..)

- ✓ Creating Databases, Tables
- ✓ Data Inserts (GUI, SQL)
- ✓ Basic SELECT Queries

#### **Ch 4: SQL Basics V2 (Commands, Operators)**

- ✓ DDL: Create, Alter, Drop, Add, modify, etc..
- ✓ DML: Insert, Update, Delete, select into, etc..
- ✓ DQL: Fetch, Insert... Select, etc..
- ✓ SQL Operations: LIKE, BETWEEN, IN, etc..
- ✓ Special Operators

#### **Ch 5: Data Types**

- ✓ Integer Data Types
- ✓ Character, MAX Data Types
- ✓ Decimal & Money Data Types
- ✓ Boolean & Binary Data Types
- ✓ Date and Time Data Types
- ✓ SQL\_Variant Type, Variables

#### **Ch 6: Excel Data Imports**

- ✓ Data Imports with Excel
- ✓ SQL Native Client
- ✓ Order By: Asc, Desc
- ✓ Order By with WHERE
- ✓ TOP & OFFSET
- ✓ UNION, UNION ALL

#### **Ch 7: Schemas & Batches**

- ✓ Schemas: Creation, Usage
- ✓ Schemas & Table Grouping
- ✓ Real-world Banking Database
- ✓ 2 Part, 3 Part & 4 Part Naming
- ✓ Batch Concept & “Go” Command

#### **Ch 8: Constraints, Keys & RDBMS – Level 1**

- ✓ Null, Not Null Constraints
- ✓ Unique Key Constraint
- ✓ Primary Key Constraint
- ✓ Foreign Key & References
- ✓ Default Constraint & Usage
- ✓ DB Diagrams & ER Models

#### **Ch 9: Normal Forms & RDBMS – Level 2**

- ✓ Normal Forms: 1 NF, 2 NF
- ✓ 3 NF, BCNF and 4 NF
- ✓ Adding PK to Tables
- ✓ Adding FK to Tables
- ✓ Cascading Keys

- ✓ Self Referencing Keys
- ✓ Database Diagrams

### **Ch 10: Joins & Queries**

- ✓ Joins: Table Comparisons
- ✓ Inner Joins & Matching Data
- ✓ Outer Joins: LEFT, RIGHT
- ✓ Full Outer Joins & Aliases
- ✓ Cross Join & Table Combination
- ✓ Joining more than 2 tables

### **Ch 11: Views & RLS**

- ✓ Views: Realtime Usage
- ✓ Storing SELECT in Views
- ✓ DML, SELECT with Views
- ✓ RLS: Row Level Security
- ✓ WITH CHECK OPTION
- ✓ Important System Views

### **Ch 12: Stored Procedures**

- ✓ Stored Procedures: Realtime Use
- ✓ Parameters Concept with SPs
- ✓ Procedures with SELECT
- ✓ System Stored Procedures
- ✓ Metadata Access with SPs
- ✓ SP Recompilations
- ✓ Stored Procedures, Tuning

### **Ch 13: User Defined Functions**

- ✓ Using Functions in MSSQL
- ✓ Scalar Functions in Real-world
- ✓ Inline & Multiline Functions
- ✓ Parameterized Queries
- ✓ Date & Time Functions
- ✓ String Functions & Queries
- ✓ Aggregated Functions & Usage

### **Ch 14: Triggers & Automations**

- ✓ Need for Triggers in Real-world
- ✓ DDL & DML Triggers
- ✓ For / After Triggers
- ✓ Instead Of Triggers
- ✓ Memory Tables with Triggers
- ✓ Disabling DMLs & Triggers

### **Ch 15: Transactions & ACID**

- ✓ Transaction Concepts in OLTP

- ✓ Auto Commit Transaction
- ✓ Explicit Transactions
- ✓ COMMIT, ROLLBACK
- ✓ Checkpoint & Logging
- ✓ Lock Hints & Query Blocking
- ✓ READPAST, LOCKHINT

#### **Ch 16: CTEs & Tuning**

- ✓ Common Table Expression
- ✓ Creating and Using CTEs
- ✓ CTEs, In-Memory Processing
- ✓ Using CTEs for DML Operations
- ✓ Using CTEs for Tuning
- ✓ CTEs: Duplicate Row Deletion

#### **Ch 17: Indexes Basics, Tuning**

- ✓ Indexes & Tuning
- ✓ Clustered Index, Primary Key
- ✓ Non Clustered Index & Unique
- ✓ Creating Indexes Manually
- ✓ Composite Keys, Query Optimizer
- ✓ Composite Indexes & Usage

#### **Ch 18: Group By Queries**

- ✓ Group By, Distinct Keywords
- ✓ GROUP BY, HAVING
- ✓ Cube( ) and Rollup( )
- ✓ Sub Totals & Grand Totals
- ✓ Grouping( ) & Usage
- ✓ Group By with UNION
- ✓ Group By with UNION ALL

#### **Ch 19: Joins with Group By**

- ✓ Joins with Group By
- ✓ 3 Table, 4 Table Joins
- ✓ Join Queries with Aliases
- ✓ Join Queries & WHERE
- ✓ Join Queries & Group By
- ✓ Joins with Sub Queries
- ✓ Query Execution Order

#### **Ch 20: Sub Queries**

- ✓ Sub Queries Concept
- ✓ Sub Queries & Aggregations
- ✓ Joins with Sub Queries
- ✓ Sub Queries with Aliases
- ✓ Sub Queries, Joins, Where

- ✓ Correlated Queries

### Ch 21: Cursors & Fetch

- ✓ Cursors: Realtime Usage
- ✓ Local & Global Cursors
- ✓ Scroll & Forward Only Cursors
- ✓ Static & Dynamic Cursors
- ✓ Fetch, Absolute Cursors

### Ch 22: Window Functions, CASE

- ✓ IIF Function and Usage
- ✓ CASE Statement Usage
- ✓ Window Functions (Rank)
- ✓ Row\_Number( )
- ✓ Rank( ), DenseRank( )
- ✓ Partition By & Order By

### Ch 23: Merge(Upsert) & CASE, IIF

- ✓ Merge Statement
- ✓ Upsert Operations with Merge
- ✓ Matched and Not Matched
- ✓ IIF & CASE Statements
- ✓ Merge Statement inside SPs
- ✓ Merge with OLTP & DWH

## Module 2: Python Concepts & Analytics

### Ch 1: Python Introduction

- ✓ Python Introduction
- ✓ Python Versions
- ✓ Python Job Roles

### Ch 2: Python Architecture

- ✓ Python Architecture
- ✓ PVM: Python Virtual Machine
- ✓ Compiler
- ✓ Byte Code
- ✓ Execution Process
- ✓ Resource Allocations
- ✓ Python Implementations

### Ch 3: Python Installations

- ✓ Python Introduction
- ✓ Python Installations
- ✓ Anaconda Installation

- ✓ Python IDE & Usage
- ✓ Jupyter Notebooks

#### **Ch 4: Python Print Statement**

- ✓ Python Print Statement
- ✓ print(), print()
- ✓ Testing Case Sensitivity
- ✓ Single Line print()
- ✓ Multi Line print()
- ✓ print() with single quotations
- ✓ Debug with AI (AI Assistants)

#### **Ch 5: Python Variables**

- ✓ Python Variables
- ✓ Assigning values
- ✓ Purpose & Rules
- ✓ Variable Value Reads
- ✓ Multiple Variables & Print()

#### **Ch 6: Python Operators**

- ✓ Arithmetic \*& Multiplier Operators
- ✓ Python String Literals
- ✓ Single, Double Quotes
- ✓ Format Strings (f string)
- ✓ Comparison, Indexing Operators

#### **Ch 7: Python Data Types**

- ✓ Python Data Types
- ✓ Integer, Float, String Data Types
- ✓ Type Casting
- ✓ Type Identification
- ✓ Multi Value Assignments
- ✓ Python Built-In Classes (data types)

#### **Ch 7: Python Lists**

- ✓ Creating Python Lists
- ✓ Printing List Items
- ✓ Print List Slices
- ✓ Length & Type
- ✓ list() method
- ✓ Empty Lists, Append
- ✓ Loops, List Updates

### Ch 8: Python Dictionaries

- ✓ Python Dictionary
- ✓ Creating, Indexing Dictionaries
- ✓ Edit / Overwrite Key Values
- ✓ Lists inside Dictionaries
- ✓ Delete & Clear

### Ch 9: Python Tuples

- ✓ Python Tuples
- ✓ Defining, Indexing
- ✓ Length(), Type()
- ✓ Mixed Values in Tuples
- ✓ Overwriting Tuples
- ✓ Tuple Class, (( ))

### Ch 10: Python IF..ELSE Condition

- ✓ If..Else conditions
- ✓ if..elif..else & Shorthand if
- ✓ composite conditions
- ✓ Indent, pass statement
- ✓ in & negation operators
- ✓ range conditions

### Ch 11: Python Loops (For)

- ✓ Python For Loop
- ✓ For Loop @ Range
- ✓ For Loop @ Sequence Values
- ✓ Nested Loops
- ✓ Loop Control Statements
- ✓ Break, Continue, Pass

### Ch 12: Python Loops (While)

- ✓ While Loop
- ✓ Termination Checks (Expressions)
- ✓ Variables, Logical Conditions
- ✓ Loop Conditions, Operators
- ✓ Exit Conditions
- ✓ iter() and Looping Options

### Ch 13: Python Dataframes

- ✓ Dataframes: Creation
- ✓ Pandas Dataframes
- ✓ Dataframes From Single List
- ✓ Dataframes from Dictionary

- ✓ Display Dataframes, List Items
- ✓ Identify, Replace Nulls, NumPy

#### **Ch 14: Python SQL DB Access**

- ✓ SQL DB Access with Python
- ✓ import pandas.DataFrame
- ✓ pyodbc module, sql functions
- ✓ SQL DB Cursor Connections
- ✓ SQL Query Executions: DDL, DML
- ✓ Filters, Aggregations with SQL
- ✓ Dataframe Usage with SQL

#### **Ch 15: Dataframe Transformations - 1**

- ✓ Dataframe Transformations
- ✓ Concat & Append
- ✓ Merge Function
- ✓ Join with Multiple Dataframes
- ✓ Indexing Operations
- ✓ Data Type Checks, Conversions
- ✓ Loops with Dataframes

#### **Ch 16: Dataframe Transformations - 2**

- ✓ Pandas - Cleaning Data
- ✓ Replace, Transform Columns
- ✓ Data Discovery & Column Fill
- ✓ Identify & Remove Duplicates
- ✓ dropna(), fillna() Functions
- ✓ Data Plotting & matplotlib Lib

#### **Ch 17: Python Functions & Lambda**

- ✓ Python Functions & Usage
- ✓ Function Parameters
- ✓ Default & List Parameters
- ✓ Python Lambda Functions
- ✓ Recursive Functions, Usage
- ✓ Return & Print @ Lambda

#### **Ch 18: Python File Handling**

- ✓ File Handling, Activities
- ✓ Loop, Write, Close Files
- ✓ Appending, Overwriting
- ✓ import os, path.exists
- ✓ f.open, f.write
- ✓ f.read, f.close

## Realtime Case Study (Banking / Finance) For Data Analysis

### Module 2: Python Programming

#### Ch 19: Python Modules

- ✓ Import Python Modules
- ✓ Built In Modules & dir
- ✓ datetime module in Python
- ✓ Date Objections Creation
- ✓ strftime Method & Usage
- ✓ imports & datetime.now()

#### Ch 20: Python User Inputs & TRY

- ✓ Try Except, Exception Handling
- ✓ Raise an exception method
- ✓ TypeError, Scripting in Python
- ✓ Python User Inputs
- ✓ Python Index Numbers
- ✓ input() & raw\_input()

#### Ch 21: Python Dictionary

- ✓ Dictionary Creation, Use
- ✓ Hashing, Copy, Update
- ✓ Deletion, Sorting
- ✓ Len(), Inbuilt Functions
- ✓ Variable Types - python List
- ✓ Cmp() List Method
- ✓ Python Dictionary Str(dict)
- ✓ Programming Concepts
- ✓ Loops and Sets
- ✓ Realtime Usage

#### Ch 22: Python Packages

- ✓ Package in Python
- ✓ Creating a package
- ✓ Package Imports, Modules
- ✓ Sub Packages Creation
- ✓ Sub Package Imports
- ✓ Popular Packages in Python
- ✓ NumPy & SciPy
- ✓ Libraries in Python
- ✓ Python Seaborn
- ✓ Python framework

#### Ch 23: Exception Handling

- ✓ Shell Script Commands
- ✓ OS operations in Python
- ✓ File System Shell Methods
- ✓ os - math - cmd - csv - random
- ✓ Numpy (numerical python)
- ✓ Pandas - sys - Matplotlib
- ✓ Common RunTime Errors
- ✓ Python Custom Exception
- ✓ Exception Handling
- ✓ Try...Except...else, Try...finally

#### **Ch 24: Python Class & Objects**

- ✓ Class variables, Instances
- ✓ Built in Class Attributes
- ✓ Objects - Constructors
- ✓ Modifiers - Self Variable
- ✓ Python Garbage Collections
- ✓ Hierarchical Inheritance
- ✓ Multilevel, Multiple, Hybrid
- ✓ Overloading & OverRiding
- ✓ Polymorphism– Abstraction

#### **Ch 25: Regular Expressions**

- ✓ Regular Expression
- ✓ Regular Expression Patterns
- ✓ Literals - Repetition Cases
- ✓ Groups and Grouping
- ✓ w+ and ^ , \s Expressions
- ✓ re.split function
- ✓ Regular expression methods
- ✓ re.match() in Regular Expr
- ✓ re.search(), re.findall for Text
- ✓ read\_csv(), read\_excel(), read\_sql()

#### **Ch 26: Multi-Threading**

- ✓ Python Multi-Threading
- ✓ Thread Synchronization
- ✓ Python Gil & Programming
- ✓ Thread Control Block (TCB)
- ✓ Stack Pointers & App Usage
- ✓ Program Counters in Realtime
- ✓ Thread State Concept
- ✓ Python Exception Handling

## Ch 27: Python TKinter

- ✓ Tkinter GUI Program
- ✓ Components & Events
- ✓ Adding Controls in Tkinter
- ✓ Radio & Check Buttons
- ✓ Tkinter Forms in Realtime
- ✓ List Boxes, Menu, ComboBox
- ✓ Mainloop () & Functions

## Ch 28: Python Web & IoT Intro

- ✓ Python Web Frameworks
- ✓ Django: Advantages
- ✓ Web Framework
- ✓ MVC and MVT - Django
- ✓ Web Pages using python
- ✓ HTML5, CSS3 usage
- ✓ PYTHON Bottle & Pyramid
- ✓ Falcon; smart\_open in python
- ✓ filtering and sorting
- ✓ groupby()
- ✓ merge() / join()  
pivot tables
- ✓ missing-value treatment
- ✓ duplicate handling
- ✓ datetime transformations

## Module 4: Real-Time Project: Banking Data Processing & Analytics using SQL + Python

### Project Overview

Build an end-to-end Banking Data Processing & Analytics solution by combining SQL Server and Python. Participants work with realistic banking datasets such as customers, accounts, transactions, loans and branches, using SQL for database operations and Python for data ingestion, transformation, automation and analytics.

### Project Objective

The project demonstrates how SQL and Python work together in a real-world data environment—from storing transactional data in SQL Server to extracting, cleaning, analysing and automating data workflows using Python.

### Business Scenario

A banking organization wants to consolidate and analyse customer and transaction data to better understand account activity, transaction patterns, customer behaviour, loan portfolios and branch performance.

## End-to-End Project Flow

Banking Source Data → Python Data Ingestion → Data Validation & Cleaning → SQL Server Database → SQL Queries → Python/Pandas Analysis → Business Rules → Reports & Insights

## Practical Skills Covered

**SQL Server + T-SQL | Python | Pandas | NumPy | pyodbc | Data Cleaning | Data Transformation | SQL-Python Integration | Data Validation | Exception Handling | Automation | Banking Analytics**

## Project Outcome

By completing this project, participants gain practical experience in building a **SQL + Python data solution from source to business-ready output**. The project is designed to strengthen hands-on implementation skills and provide a practical project scenario that can be discussed during **SQL/Python technical interviews**.

**Project Deliverable:** A working Banking Analytics solution integrating **SQL Server, T-SQL, Python and Pandas**, along with reusable scripts, analytical queries and processed datasets.



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