

Calgary **PASS**

Building a SQL Server code generator in Python



April 22nd, 2020

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1. Fundamentals
3. Use Case
3. Primary Keys, Information Schema
4. Movement of Data
5. Demos - SQL & Python



WHAT IS SQL SERVER?

SQL Server is a relational database management system (RDBMS), developed by Microsoft.

WHAT IS PYTHON?

Python is an object-oriented, high-level programming language with integrated dynamic semantics primarily for web and application development.

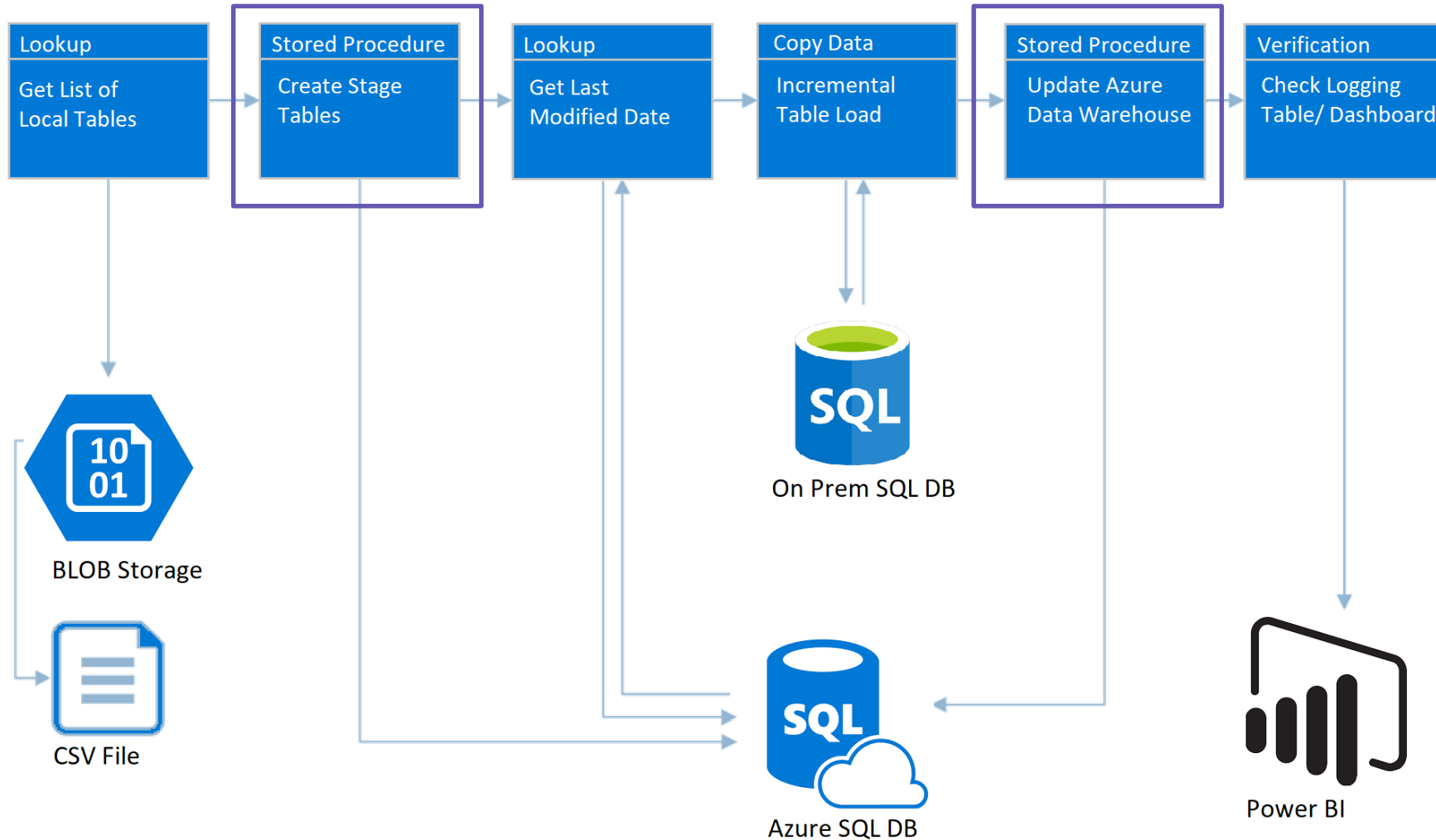
WHAT IS A CODE GENERATOR?

A code generator is a resource or tool that generates a set of code or computer programming language.



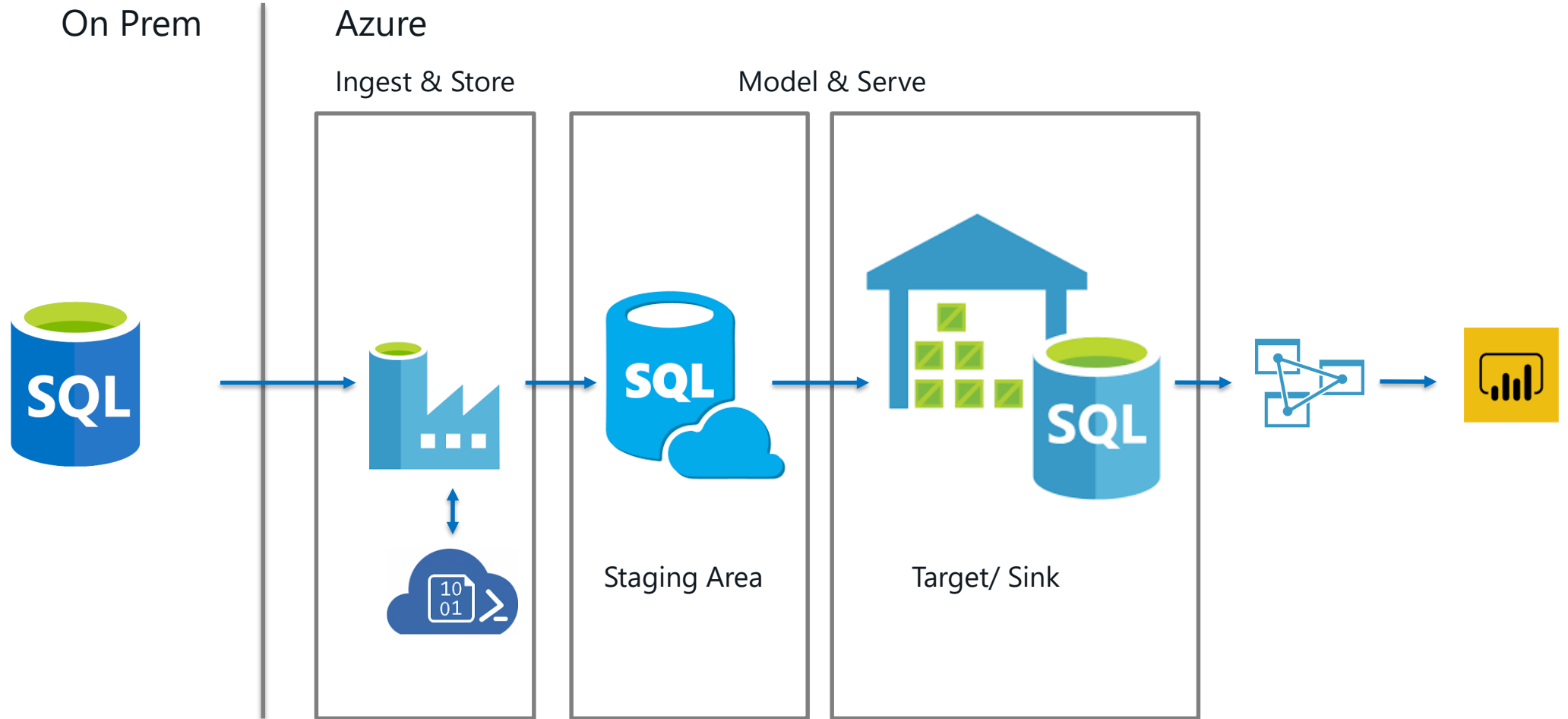
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ETL Process for a Cloud-based EDW



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Source → Stage → Sink



```
=====
--UPDATE STATEMENT
=====

SET @UPDATE_COUNT = (
SELECT
COUNT(1) UPDATE_COUNT
FROM [stage].[Address] [stage]
LEFT JOIN [Person].[Address] [target]
    ON [stage].[AddressID] = [target].[AddressID]
)
IF @UPDATE_COUNT > 0
BEGIN
    UPDATE [target]
    SET
        [target].[AddressID] = [stage].[AddressID]
        , [target].[AddressLine1] = [stage].[AddressLine1]
        , [target].[AddressLine2] = [stage].[AddressLine2]
        , [target].[City] = [stage].[City]
        , [target].[ModifiedDate] = [stage].[ModifiedDate]
        , [target].[PostalCode] = [stage].[PostalCode]
        , [target].[rowguid] = [stage].[rowguid]
        , [target].[SpatialLocation] = [stage].[SpatialLocation]
        , [target].[StateProvinceID] = [stage].[StateProvinceID]
FROM [stage].[Address] [stage]
LEFT JOIN [Person].[Address] [target]
    ON [stage].[AddressID] = [target].[AddressID]
END
ELSE
BEGIN
    SET @UPDATE_COUNT = 0
END
```



Table

- Columns
- Keys **Primary Key**
 - PK_BillOfMaterials_BillOfMaterialsID
 - FK_BillOfMaterials_Product_ComponentID
 - FK_BillOfMaterials_Product_ProductAssemblyID
 - FK_BillOfMaterials_UnitMeasure_UnitMeasureCode
- Constraints
- Triggers
- Indexes
- Statistics

Production.Culture

```
4 /***** Object: Index [PK_BillOfMaterials_BillOfMaterialsID]    Script Date: 4
5 ALTER TABLE [Production].[BillOfMaterials]
6 ADD CONSTRAINT [PK_BillOfMaterials_BillOfMaterialsID] PRIMARY KEY NONCLUSTERED
7 (
8     [BillOfMaterialsID] ASC Field(s) that Define a Unique Record
9 )WITH ( PAD_INDEX = OFF,
10         STATISTICS_NORECOMPUTE = OFF,
11         SORT_IN_TEMPDB = OFF, IGNORE_DUP_KEY = OFF,
12         ONLINE = OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON,
13         OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF
14 ) ON [PRIMARY]
15 GO
```



```
3 SELECT * FROM INFORMATION_SCHEMA.KEY_COLUMN_USAGE
```

100 %

Results Messages

	CONSTRAINT_CATALOG	CONSTRAINT_SCHEMA	CONSTRAINT_NAME	TABLE_CATALOG	TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION
1	AdventureWorks2017_Source	dbo	PK_AWBuildVersion_SystemInformationID	AdventureWorks2017_Source	dbo	AWBuildVersion	SystemInformationID	1
2	AdventureWorks2017_Source	dbo	PK_DatabaseLog_DatabaseLogID	AdventureWorks2017_Source	dbo	DatabaseLog	DatabaseLogID	1
3	AdventureWorks2017_Source	dbo	PK_ErrorLog_ErrorLogID	AdventureWorks2017_Source	dbo	ErrorLog	ErrorLogID	1
4	AdventureWorks2017_Source	HumanResources	PK_Department_DepartmentID	AdventureWorks2017_Source	HumanResources	Department	DepartmentID	1
5	AdventureWorks2017_Source	HumanResources	FK_Employee_Person_BusinessEntityID	AdventureWorks2017_Source	HumanResources	Employee	BusinessEntityID	1
6	AdventureWorks2017_Source	HumanResources	PK_Employee_BusinessEntityID	AdventureWorks2017_Source	HumanResources	Employee	BusinessEntityID	1
7	AdventureWorks2017_Source	HumanResources	FK_EmployeeDepartmentHistory_Department_Departme...	AdventureWorks2017_Source	HumanResources	EmployeeDepartmentHistory	DepartmentID	1
8	AdventureWorks2017_Source	HumanResources	FK_EmployeeDepartmentHistory_Employee_BusinessEn...	AdventureWorks2017_Source	HumanResources	EmployeeDepartmentHistory	BusinessEntityID	1

```
3 SELECT * FROM INFORMATION_SCHEMA.COLUMNS
```

100 %

Results Messages

	TABLE_CATALOG	TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH	CHARACTER_OCTET_LENGTH	NUMERIC_PRECISION
1	AdventureWorks2017_Source	HumanResources	EmployeePayHistory	BusinessEntityID	1	NULL	NO	int	NULL	NULL	10
2	AdventureWorks2017_Source	HumanResources	EmployeePayHistory	RateChangeDate	2	NULL	NO	datetime	NULL	NULL	NULL
3	AdventureWorks2017_Source	HumanResources	EmployeePayHistory	Rate	3	NULL	NO	money	NULL	NULL	19
4	AdventureWorks2017_Source	HumanResources	EmployeePayHistory	PayFrequency	4	NULL	NO	tinyint	NULL	NULL	3
5	AdventureWorks2017_Source	HumanResources	EmployeePayHistory	ModifiedDate	5	(getdate())	NO	datetime	NULL	NULL	NULL
6	AdventureWorks2017_Source	Sales	SalesOrderHeaderSalesReason	SalesOrderID	1	NULL	NO	int	NULL	NULL	10



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