WEEK 4 DAY – 1

12/09/2023

Nabiha Khan

INTRODUCTION TO AZURE SYNAPSE ANALYTICS

What is Azure Synapse Analytics

- All types of data

- Components

- Azure Synapse SQL – analytical services for data -> SQL Pools 1. Serverless & 2. Dedicated (Azure SQL Data Warehouse)

- Synapse Spark – requires spark pool

- Synapse Pipelines – similar to ADF, somehow limited to the services within synapse spark

- Synapse Link – makes communication with azure cosmos db (HTAP)

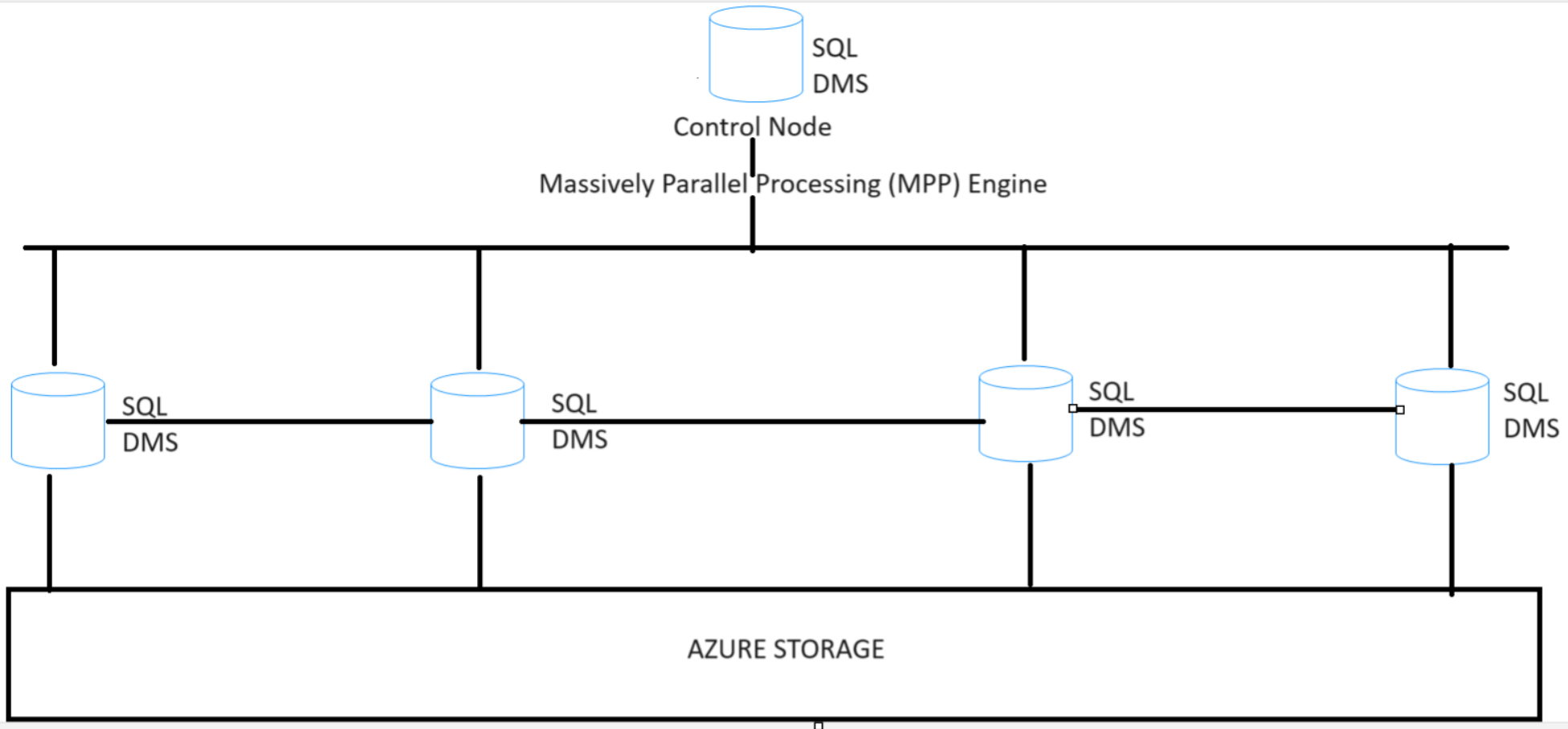- Synapse Studio – IDE where all the services are

What is Azure Synapse Analytics

- Cloud platform for data analytics

- Large-scale data warehousing

- Advanced analytics

- Data exploration & discovery

- Real time analytics

- Data integration

- Integrated analytics

Azure Synapse Analytics

- Working with files

- Ingest and transform using pipelines

- Query & manipulate data with SQL – only external table creation

- Process & analyze data with Apache Spark - Scala, PySpar, notebooks – command shells to type commands and use them with the help of ASA

- Explore data with Data Explorer – kusto query language

Azure Synapse Analytics

Azure Synapse Analytics

- Lab

- Use a serverless SQL pool to query files in a data lake

1. Serverless sql pool

-On-demand

-Data lake

2. Dedicated sql pool

-Cloud-scale

-Relational tables
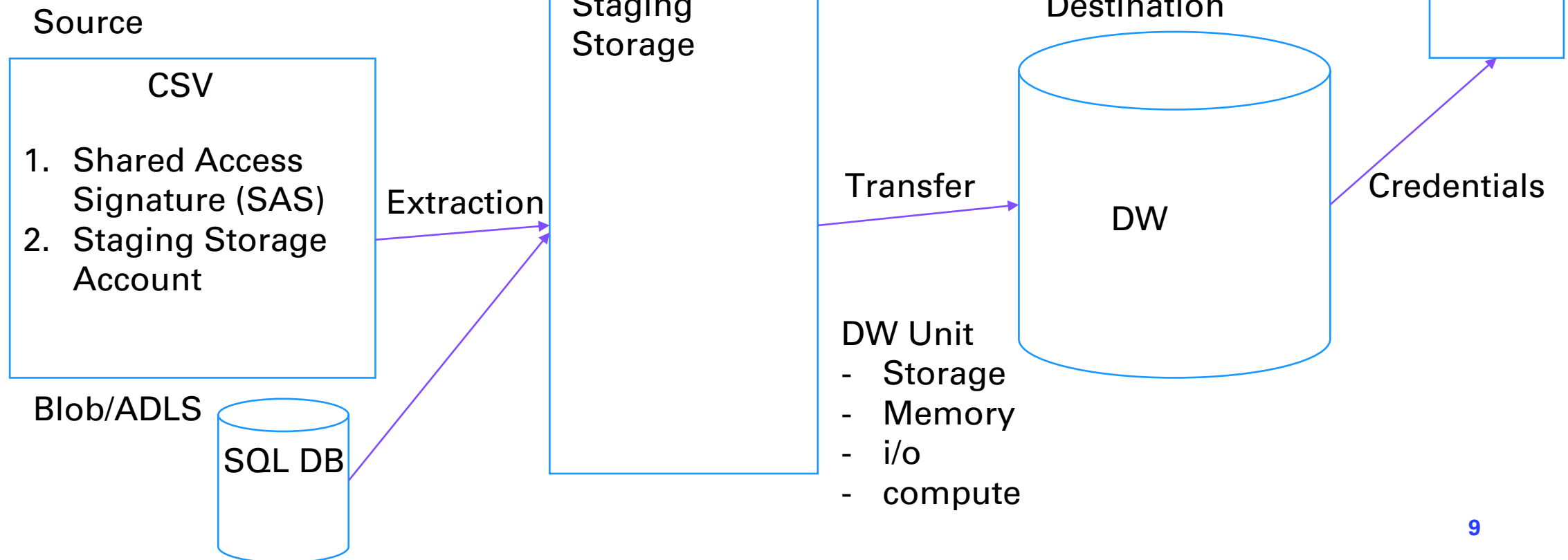
Azure Synapse Analytics

- Lab

- Create external database objects

1. Database

2. Credentials

3. External Data source

4. External file format

5. External table

Azure Synapse Analytics

- SQLDW [dedicated sql pool]

Data flow Mapping

Source

Temp Location

Load

Staging Storage

Destination

SQL Server

CSV

1. Shared Access Signature (SAS)
2. Staging Storage Account

Extraction

Transfer

DW

Credentials

Blob/ADLS

SQL DB

DW Unit
- Storage
- Memory
- i/o
- compute

DAY – 2

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POWER BI

Introduction

- BI　　　　　　　+

- SSIS -> ETL

- SSAS – sql server analysis services -> Facts - Cubes & Dimensions – DW solutions

- SSRS – sql server reporting services

- SSBI – Self service BI -> Power BI

Power BI is a complete suite which consists of many services.

- Power Pivot – data model design

- Power Query – Querying the resources

- Power View – visualizations

- Power Map – Spatial data types

Data Analytics

- Data analysis is telling a story with data

- 5 categories of analytics

- Descriptive – what

- Diagnostic – why

- Predictive – what may/can be

- Prescriptive – suggestion

- Cognitive – after effect

Data Analytics

- Tasks
- Prepare
- Model
- Visualize
- Analyze
- Manage

Getting Started with Power BI

- Introduction to Power BI

A collection of software, services, apps, and connectors

- Building Blocks of Power BI

- Power Bi Desktop

- Build data sets

- Tiles

- Reports

- Visualizations

- Flow

-> Bring Data -> Create Datasets -> Create reports -> Share it to power BI service

Prepare Data in Power BI Desktop

1. Get data

- Get data from flat files -> csv, json, txt

- Get data from relational data sources -> sql

- Get data from NoSql

- Get data from applications

- Get data from analysis services - > web version of SSAS

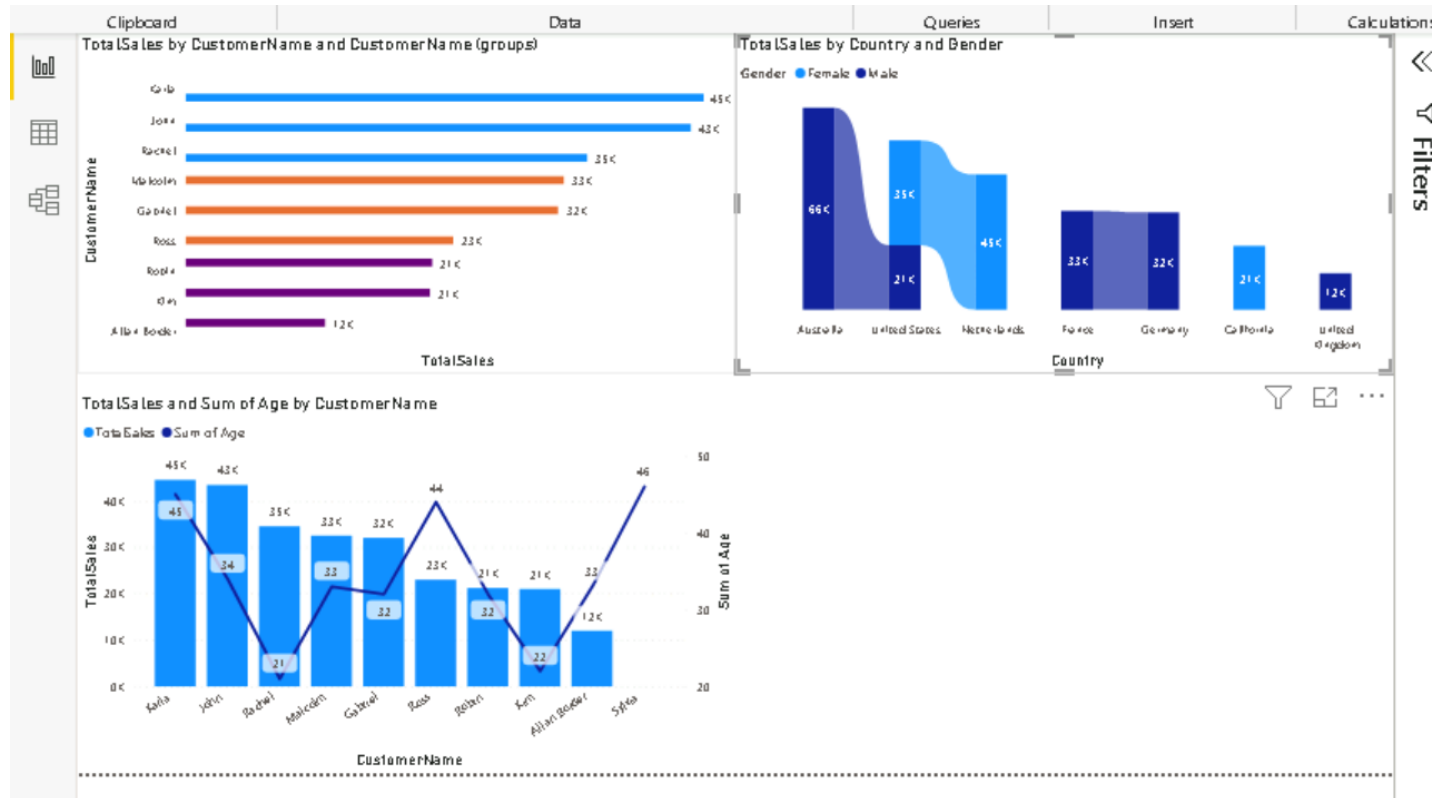- Get data from a data flow

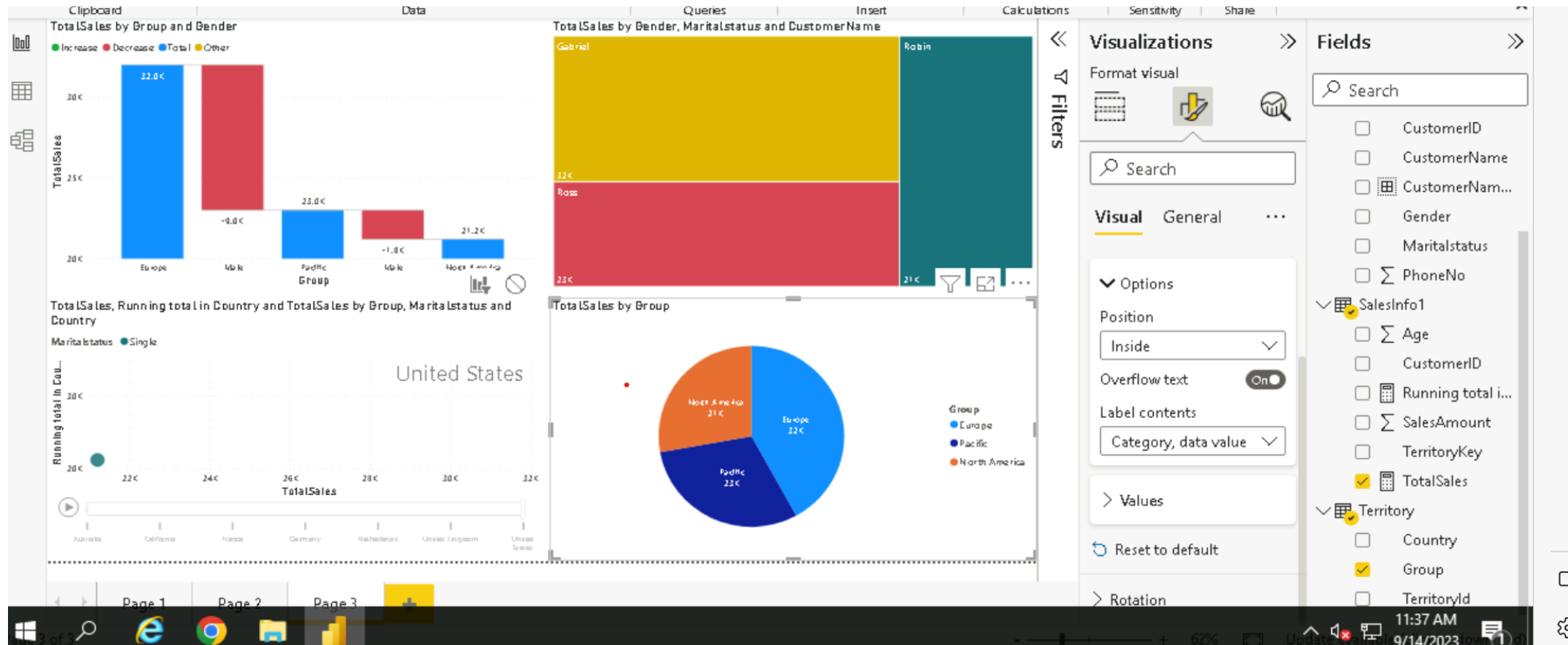• Lab - word documentation

DAY – 3

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Reports

- Design a Report

- Choosing Effective Visualizations

Reports

- Design a Report

- Word documentation

DAY – 4

15/09/2023

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PYTHON

Usage of Python

- Web dev (Server-Side)

- Software dev

- Mathematical implementations

- System Scripting

What can Python do?

- Create web applications

- Create workflows – automation

- Connect to database to read & modify files

- Handle big data and perform complex mathematics

- Rapid prototyping

Why Python?

- Platform independent

- Simple syntax

- Fewer lines of codes

- Interpreter system; executed as soon as written

- Procedural; OOPS

Execute Python Syntax

- Word documentation – lab