

# ISM6218: ADVANCED DATABASE MANAGEMENT

## Employee Payroll Management System using Microsoft Azure SQL

Group 6:

*Lavanya Peddireddy,*

*Shwetha Sunkara,*

*Siddartha Reddy Gundluru,*

*Yashwanth Bharadwaj Nandamuru*



UNIVERSITY of  
**SOUTH FLORIDA**

# Microsoft Azure SQL

- ▶ It's a fully managed relational database service in the cloud built on Microsoft SQL Server Engine.

## Key Features

- ▶ Fully Managed Service
- ▶ Scalability
- ▶ High Availability
- ▶ Security and Compliance
- ▶ Performance
- ▶ Backup and Disaster Recovery
- ▶ Integration with Azure Ecosystem
- ▶ Serverless and Hyperscale Tiers
- ▶ Intelligent Protection

# Benefits of Azure SQL



**Cost Effective** - It offers cost-effectiveness through a pay-as-you-go pricing model, eliminating the need for upfront hardware investments.



**Time-saving** - It minimizes the time spent on database management and enables swift deployment and configuration.



**Flexible** – It can cater to a wide range of applications, from small to large scale, and readily adapt to changing business requirements.



**Reliability** – It ensures consistent performance with SLA-backed uptime and provides peace of mind through managed disaster recovery capabilities.



# Real-World Applications

- ▶ **Web and Mobile Apps**
- ▶ **Legacy Application Modernization**
- ▶ **IoT and Telemetry**
- ▶ **DevOps and CI/CD**
- ▶ **E-commerce Websites**
- ▶ **Healthcare Systems**

# Employee Dataset Insights

- ▶ This dataset encompasses a wide range of critical information, including educational background, tenure, geographic distribution, pay structures, demographic profiles (age and gender).

## **Demographics, Experience, and Attrition**

- By analyzing employee ages and genders, the dataset offers insights into workforce diversity and experience.
- Valuable data related to "benched" employees sheds light on workforce management and project allocation.
- Correlation between years worked in the field and its impact on salary and status is considered.
- Predictive data helps gauge the likelihood of employee attrition, aiding in understanding the frequency and causes of departures.

## **Strategic Planning and Insight**

- As a powerful tool for organizational planning, Dataset1 enhances staff management practices and fosters a deeper understanding of the workforce.

# Payroll Dataset Insights

## Comprehensive Employment Data and Diverse Professions

- ▶ Dataset2 offers an array of employment-related information, including department qualifications, job titles, work hours, salary ranges, and benefits.
- ▶ It spans multiple years and showcases diverse professions, primarily full-time positions, across departments affiliated with municipal government.

## Detailed Pay Information and Benefits Overview

- ▶ The dataset provides comprehensive pay data, including hourly wages, annual income possibilities, and quarterly salary expectations, along with agreements affecting worker terms and wages.
- ▶ In-depth information on employee benefits like life insurance, dental care, and health insurance highlights a holistic compensation structure beyond wages.

## Transparency and Financial Insights

- ▶ The dataset emphasizes the company's transparency and organizational approach to wage and category practices, providing links to additional job type information.
- ▶ This financial data is a valuable resource for budgeting, analyzing employee expenses, and making strategic financial decisions, particularly in large organizations and government settings.

# Transactional vs Analytical

## Transactional

Transactional processing supports daily business operations, such as sales, inventory tracking, and customer interactions.

It excels at frequent data updates, inserts, and modifications.

Provides up-to-the-minute data accuracy and ensures data consistency.

## Analytical

Analytical processing is geared toward complex data analysis, reporting, and decision-making.

It efficiently handles large-scale data reads and complex queries.

Utilizes historical and aggregated data for in-depth insights and trend analysis.





# Product Flexibility for Transactional and Analytical Use

- ▶ **Product Functionality and Adaptability**
- ▶ **Transactional Application:** In a transactional context, the tool supports daily business operations, encompassing tasks such as calculating paychecks, maintaining employee records, and optimizing work assignments to ensure smooth day-to-day activities.
- ▶ **Analytical Usage:** When employed for analytical purposes, the tool serves as a valuable asset for data analysis and decision-making. It assists in evaluating employee qualifications and tenure, as well as analyzing compensation structures to inform strategic choices.
- ▶ **Versatile Utility:** It can be effectively utilized for both daily business operations and making strategic decisions. Its adaptability aligns with the specific requirements of the business.



# CRUD OPERATIONS



CREATE (C): ADD NEW  
DATA OR RECORDS TO  
THE DATABASE.



READ (R): RETRIEVE  
DATA FROM THE  
DATABASE FOR  
ANALYSIS OR DISPLAY.

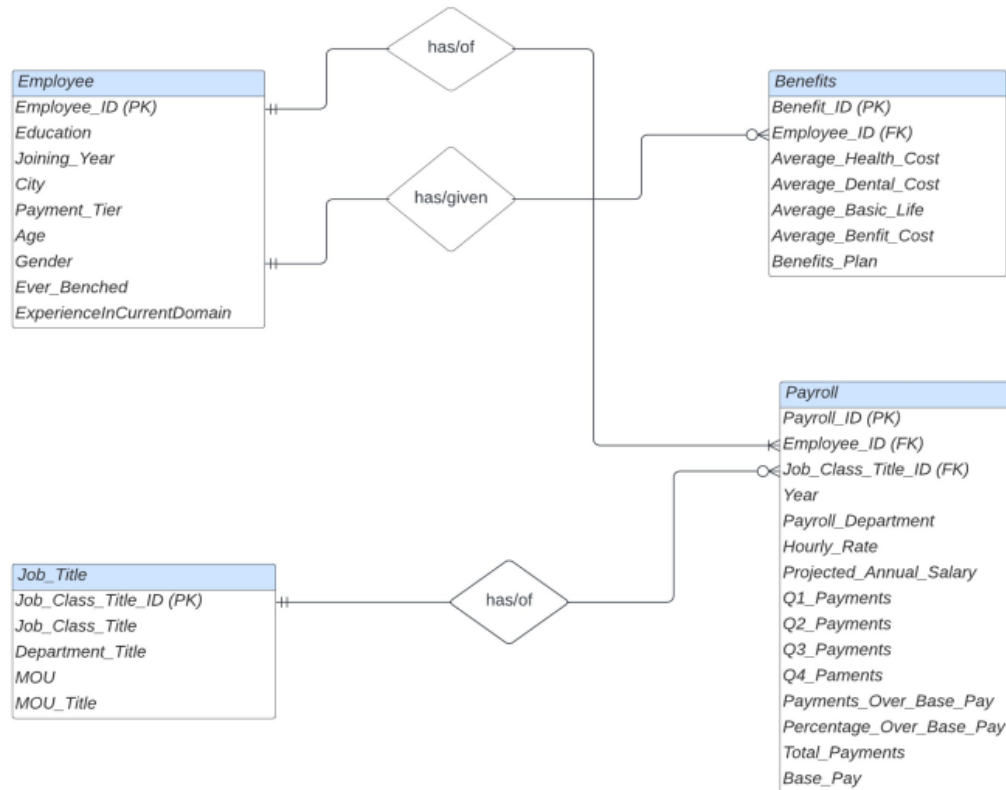


UPDATE (U): MODIFY  
EXISTING DATA TO  
KEEP IT ACCURATE  
AND UP-TO-DATE.



DELETE (D): REMOVE  
DATA OR RECORDS  
THAT ARE NO LONGER  
NEEDED.

Database ER Diagram  
(Employee Payroll)  
Group -6 5th November



# Entity Relationship Diagram

# Conclusion

- ▶ The database system not only provides a structured repository for employee information but also streamlines payroll management, allowing for precise calculation and distribution of earnings and benefits.
- ▶ In conclusion, Azure SQL empowered our project with performance, security, and scalability, allowing us to focus on our core objectives while ensuring data integrity and accessibility.



## Link for the Video Presentation

- ▶ [https://usfedu-my.sharepoint.com/:v:/g/personal/sgundluru\\_usf\\_edu/EXPR\\_QxtvwVEtJlkyNOb0MUBQIKFPICsJZDEsmJSfcUdQA?nav=eyJyZWZlcnJhbEluZm8iOnsicmVmZXJyYWxBcHAiOiJPbmVEcmI2ZUZvckJ1c2luZXNzliwicmVmZXJyYWxBcHBQbGF0Zm9ybSI6IldlYilsluZmVycmFsTW9kZSI6InZpZXciLCJyZWZlcnJhbFZpZXciOiJNeUZpbGVzTGlua0RpcmVjdCJ9fQ&e=Gb4YyR](https://usfedu-my.sharepoint.com/:v:/g/personal/sgundluru_usf_edu/EXPR_QxtvwVEtJlkyNOb0MUBQIKFPICsJZDEsmJSfcUdQA?nav=eyJyZWZlcnJhbEluZm8iOnsicmVmZXJyYWxBcHAiOiJPbmVEcmI2ZUZvckJ1c2luZXNzliwicmVmZXJyYWxBcHBQbGF0Zm9ybSI6IldlYilsluZmVycmFsTW9kZSI6InZpZXciLCJyZWZlcnJhbFZpZXciOiJNeUZpbGVzTGlua0RpcmVjdCJ9fQ&e=Gb4YyR)



**THANK YOU**

ANY QUESTIONS?



UNIVERSITY of  
**SOUTH FLORIDA**