# INFSCI 2710 - Database Management Systems

## Final Project Design Document

George Zhou ([diz21@pitt.edu](mailto:diz21@pitt.edu))

Xiaocheng Ma ([xim82@pitt.edu](mailto:xim82@pitt.edu))

* + Instructor

Dmitriy Babichenko

* + Date

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# Introduction

This project aims to develop a database management system tailored for companies operating in the industrial sector, particularly those involved in manufacturing and infrastructure development. The database encompasses various aspects crucial for efficient operation, including customer management, employee administration, project tracking, production monitoring, maintenance scheduling, and training documentation.

The target audience for this database includes industrial companies of varying scales, ranging from small enterprises to large multinational corporations. It caters to executives, managers, engineers, technicians, and analysts involved in different facets of industrial operations. Additionally, it serves as a valuable tool for after-sales teams, maintenance personnel, and training coordinators responsible for ensuring smooth functioning and optimal performance of industrial assets.

The purpose of this database is to streamline operations, enhance decision-making processes, and improve overall efficiency within industrial organizations. By centralizing data related to customers, employees, projects, production, maintenance, and training, the database facilitates easy access, analysis, and collaboration across departments. It enables timely identification of issues, proactive maintenance scheduling, informed resource allocation, and targeted training initiatives. Ultimately, the database contributes to cost reduction, risk mitigation, customer satisfaction, and sustained competitiveness in the industrial landscape.

# E-R Model

A computer screen shot of a computer

Description automatically generated

# Business rules

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Entity 1** | **Entity 2** | **Cardinality on Entity 1 side** | **Cardinality on Entity 2 side** | **Business Rule(s)** |
| customer | employee | 1..\* | 1 | A customer can have multiple employees associated with it |
| customer | after\_sales\_analysis | 1..\* | 0..\* | A customer can have multiple after-sales analyses associated with it |
| customer | project | 1..\* | 0..\* | A customer can have multiple projects |
| project | production\_info | 1 | 0..\* | A project can have multiple production information records |
| project | production\_records | 1 | 0..\* | A project can have multiple production records |
| project | device | 1 | 0..\* | A project can have multiple devices associated with it |
| production\_info | device | 1 | 0..1 | A production information record is associated with zero or one device |
| production\_records | device | 1 | 0..1 | A production record is associated with zero or one device |
| device | maintenance\_info | 0..1 | 0..\* | A device can have zero or one maintenance information records associated with it |
| device | training | 0..\* | 0..\* | A device can have multiple training records associated with it |
| device | device\_program | 0..1 | 0..1 | A device is associated with zero or one device programs |
| device | file | 0..\* | 0..\* | A device can have multiple files associated with it |