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Ministry of Public Works
Innovation Project

Short description (Short description about the project \ task)

The ministry of Public Works is beginning its innovation project. One of the main elements of this project is the technologic transformation, where they want to build a database that can allow the ministry to manage more efficiently its projects and their workforce.

Business requirements (business requirements as detailed as possible)

The ministry wants to store the following information:

- Projects: The ministry carries out multiple building projects for the people, such as bridges, highways, roads or any other building needed for the development of the country. There are different types of projects, and also employees of the ministry that are assigned as cooperators or as supervisors. Location of the project is also needed.
- Tenders: The different projects have a company that takes care of the job that needs to be done. The companies need to make an offer in order to win the tender and be the chosen one to make the job.
- Companies: A registry of the companies that work with the ministry
- The departments of the ministry and the employees, with their names, phone numbers and department where they belong.

Entities (detailed description of all entities)

Entity name: **tblProject**
Entity description: Stores the data of the building projects that the ministry carries out together with a selected company via tender.
Entity PK: projectID
Entity relations with other entities:

- tblTender - 1 to 1
- tblCompany - 1 to many
- tblProjectType - 1 to many
- tblAddress - 1 to many
- ministryEmployee_project - 1 to many

Entity schema by the following table

Column name	Data type	PK (Y/N)	FK (Y/N)	Referenced FK field (Table.Column)	Nullable(Y/N)
projectID	INT	Y	N		N
addressID	INT	N	Y	tblAddress.addressID	N
projectTypeID	INT	N	Y	tblProjectType.projectTypeID	N
projectName	VARCHAR(30)	N	N		N

Entity name: **tblTender**
Entity description: Stores the data about the tenders that are made in order to select the company that will carry out the public work project.
Entity PK: tenderID
Entity relations with other entities:

- tblProject - 1 to 1
- Tender_company - 1 to many

Entity schema by the following table

Column name	Data type	PK (Y/N)	FK (Y/N)	Referenced FK field (Table.Column)	Nullable(Y/N)
tenderID	INT	Y	N		N
projectID	INT	N	Y	tblProject.projectID	N
tenderDate	Date	N	N		N

Entity name: **tender_company**
Entity description: Intersection table between tender and company, since many companies participate in a tender, and a companies can participate in different tenders
Entity PK: tenderID, companyID
Entity relations with other entities:

- tblTender - 1 to many
- tblCompany - 1 to many

Entity schema by the following table

Column name	Data type	PK (Y/N)	FK (Y/N)	Referenced FK field (Table.Column)	Nullable(Y/N)
tenderID	INT	Y	Y	tblTender.tenderID	N
companyID	INT	Y	Y	tblCompany.companyID	N
isWinnerYN	BOOLEAN	N	N		N

Entity name: **tblCompany**
Entity description: Stores the data of the companies that work with the ministry.
Entity PK: companyID
Entity relations with other entities:

- Tender_company - 1 to many
- tblProject- 1 to many

Entity schema by the following table

Column name	Data type	PK (Y/N)	FK (Y/N)	Referenced FK field (Table.Column)	Nullable(Y/N)
companyID	INT	Y	N		N
companyName	VARCHAR(30)	N	N		N

Entity name: **tblAddress**
Entity description: Stores the addresses where the projects are made
Entity PK: addressID
Entity relations with other entities:

- tblProjects - 1 to many

Entity schema by the following table

Column name	Data type	PK (Y/N)	FK (Y/N)	Referenced FK field (Table.Column)	Nullable(Y/N)
addressID	INT	Y	N		N
city	VARCHAR(30 (	N	N		N
street	VARCHAR(30)	N	N		N

Entity name: **tblProjectType**
Entity description: Stores the type of project, eg: bridges, roads, railways, solar panels
Entity PK: projectTypeID
Entity relations with other entities:

- tblProjects - 1 to many

Entity schema by the following table

Column name	Data type	PK (Y/N)	FK (Y/N)	Referenced FK field (Table.Column)	Nullable(Y/N)
projectTypeID	INT	Y	N		N
projectName	varchar(30)	N	N		N

Entity name: **ministryEmployee_project**
Entity description: Intersection table between tblMinistryEmployee and tblProject, since a project can have multiple employees linked to it in different roles and a ministry employee can be part of different projects.
Entity PK: ministryEmployeeID, projectID
Entity relations with other entities:

- tblProjects - 1 to many
- tblMinistryEmployee - 1 to many

Entity schema by the following table

Column name	Data type	PK (Y/N)	FK (Y/N)	Referenced FK field (Table.Column)	Nullable(Y/N)
ministryEmployeeID	INT	Y	Y	tblMinistryEmployee.ministryEmployeeID	N
projectID	INT	Y	Y	tblProject.projectID	N
employeeProjectRole	VARCHAR(30)	N	N		N

Entity name: **tblMinistryEmployee**
Entity description: Stores the data about the employees of the ministry
Entity PK: ministryEmployeeID
Entity relations with other entities:

- ministryEmployee_project - 1 to many
- tblMinistryDepartment - 1 to many
- tblPhone - 1 to many

Entity schema by the following table

Column name	Data type	PK (Y/N)	FK (Y/N)	Referenced FK field (Table.Column)	Nullable(Y/N)

ministryEmployeeID	INT	Y	N		N
ministryDepartmentID	INT	N	Y	tblMinistryDeparrment.ministryDepartmentID	N
ministryEmployeeName	VARCHAR(30)	N	N		N

Entity name: **tblMinistryDepartment**
Entity description: Stores the different departments of the ministry, eg: development team, management, HR, etc
Entity PK: ministryDepartmentID
Entity relations with other entities:

- tblMinistryEmployee- 1 to many

Entity schema by the following table

Column name	Data type	PK (Y/N)	FK (Y/N)	Referenced FK field (Table.Column)	Nullable(Y/N)
ministryDepartmentID	INT	Y	N		N
departmentName	VARCHAR(30)	N	N		N

Entity name: **tblPhone**
Entity description: Stores the phone numbers of the employees.
Entity PK: phoneNumber
Entity relations with other entities:

- tblMinistryEmployee- 1 to many

Entity schema by the following table

Column name	Data type	PK (Y/N)	FK (Y/N)	Referenced FK field (Table.Column)	Nullable(Y/N)
phoneNumber	INT	Y	N		N
ministryEmployeeID	INT	N	Y	tblMinistryEmployee.minitryEmployeeID	N

ERD - Entities Relationship Diagram

The ERD of the project \ Task should appear here