BIMS - CS 490 Capstone Fall 2021

BIMS Database Documentation

This guide is meant to serve as a reference for information related to the BIMS database as implemented by the Fall 2021 Capstone Team.

NOTE: The BIMS database is part of an ongoing project still in development.

Contribution of the Fall 2021 Capstone Team

The Fall 2021 Capstone team integrated the BIMS database, in part, with the BIMS web application and mobile photography application. Because not all tables were required for the Fall 2021 Capstone project, most tables in the database are not accessed and currently contain no test data. The tables that are relevant to the Fall 2021 Capstone contribution are outlined in the following section.

Database Tables of Interest

The following tables contain test data and are accessed by either the web application, the mobile application, or both:

- Bridges
- County
- DroneImages
- DroneImageSet
- Inspections
- InspectionTypeCode
- UserRole
- Users

Important Notes About Tables

Inspections Table

- Primary Key **InspectionID** is auto-increment.
- Every inspection record requires (cannot be null) **AssignedDate** and **DueDate** at the time of insertion.
- The **Status** column in the **Inspections** table should contain one of three possible values for any given inspection record: "not started", "in progress", or "complete".
- For records with **Status** "not started" or "in progress", **FinishedDate**, **Report**, and **OverallRating** should be null.
- For records with **Status** "complete", **FinishedDate**, **Report**, and **OverallRating** should NOT be null.
- The **Report** column currently contains "filler" notes about the inspection, but in the future this column may contain the filepath for the inspection report PDF file corresponding to the inspection record. The filepath may then be used to generate dynamic links to report PDFs from data tables within the web application.

County Table

The integer value in the **CountyNo** column for each country is assigned based on the alphabetical ordering of the counties.

Naming Conventions

Foreign Keys (Column Name)

Foreign Keys in any given table follow the naming convention *PrimaryKeyTable_PrimaryKeyTableColumn*.

Example: The Inspections table has a foreign key *County_CountyNo* that references the primary key, *CountyNo*, of the County table.

Foreign Key Constraints

Foreign Key Constraints follow the naming convention *fk_ForeignKeyTable_PrimaryKeyTable*.

Example: The Bridges table has a foreign key constraint *fk_Bridges_County* because the Bridges table contains the foreign key, *County_CountyNo*, that references the primary key, *CountyNo*, in the County table.

Entity Relationship Diagram (ERD)

The ERD for the BIMS Database is also available in the `SQL_localhost` folder of this project in PNG, SVG, and MWB (MySQL Workbench Document) formats.

Comments
- CommentID INT
- Inspections_InspectionID INT
- AdminComments VARCHAR(300)
- InspectorComments VARCHAR(300)
- EvaluatorComments VARCHAR(300)
- Date TIMESTAMP
- Indexes

DroneImageSet
- ImageSetID INT
- Inspections_InspectionID INT
- DateTime TIMESTAMP
- Indexes

DroneImages
- DroneImageID INT
- DroneImageSet_ImageSetID INT
- Picture LONGTEXT
- Name VARCHAR(100)
- Comments LONGTEXT
- ElementX DOUBLE
- ElementY DOUBLE
- ElementZ DOUBLE
- AddedImage TINYINT
- BEInspections_BEInspectionID INT
- Indexes

BridgeElementInspectionPhotos
- PhotoID INT
- BEInspections_BEInspectionID INT
- Photo LONGTEXT
- Name VARCHAR(100)
- Comments LONGTEXT
- Indexes

BridgeElementInspections
- BEInspectionID INT
- BridgeElements_ElementID INT
- Inspections_InspectionID INT
- Rating DOUBLE
- Description LONGTEXT
- UpdatedDate TIMESTAMP
- Indexes

BridgeElements
- ElementID INT
- Bridges_BridgeNo VARCHAR(50)
- BridgeModels_BridgeModelNo INT
- InspectionTypeCode_InspectionTypeNo INT
- Class_ClassNo INT
- Category_CategoryNo INT
- Material_MaterialNo INT
- DetailElements_DetailElementNo INT
- ElementX DOUBLE
- ElementY DOUBLE
- ElementZ DOUBLE
- AddedDate TIMESTAMP
- DeletedDate TIMESTAMP
- ModifiedBy VARCHAR(45)
- Indexes

DetailElements
- DetailElementNo INT
- DetailElementName VARCHAR(45)
- DetailElementNum INT
- Material_MaterialNo INT
- Indexes

Material
- MaterialNo INT
- MaterialName VARCHAR(45)
- Category_CategoryNo INT
- Indexes

Inspections
- InspectionID INT
- Bridges_BridgeNo VARCHAR(50)
- InspectionTypeNo INT
- AssignedDate DATE
- DueDate DATE
- FinishedDate DATE
- Status VARCHAR(45)
- Report LONGTEXT
- OverallRating DOUBLE
- AdminID INT
- InspectorID INT
- EvaluatorID INT
- Indexes

BridgeInspectionInfo
- Bridges_BridgeNo VARCHAR(50)
- LatestInspectionDate DATE
- Inspections_InspectionID INT
- Rating DOUBLE
- Indexes

InspectionTypeCode
- InspectionTypeNo INT
- InspectionTypeName VARCHAR(45)
- Indexes

Bridges
- BridgeNo VARCHAR(50)
- BARNo VARCHAR(12)
- BridgeName VARCHAR(45)
- FeatureIntersected VARCHAR(45)
- FacilityCarried VARCHAR(45)
- Location VARCHAR(100)
- District INT
- County_CountyNo INT
- BridgePicture LONGTEXT
- BridgeModels_BridgeModelNo INT
- Indexes

BridgeModels
- BridgeModelNo INT
- BridgeModelPath LONGTEXT
- CreatedDate TIMESTAMP
- Indexes

Category
- CategoryNo INT
- CategoryName VARCHAR(45)
- Class_ClassNo INT
- Indexes

NarrativeReports
- NarrativeElementID INT
- NarrativeElements_NarrativeElementNo INT
- NarrativeElementDescription LONGTEXT
- Inspections_InspectionID INT
- Indexes

Users
- UserNo INT
- UserID VARCHAR(45)
- UserPassword VARCHAR(45)
- UserRole INT
- UserPicture LONGTEXT
- FirstName VARCHAR(45)
- MiddleName VARCHAR(45)
- LastName VARCHAR(45)
- Phone VARCHAR(45)
- Address VARCHAR(45)
- Email VARCHAR(45)
- DateOfBirth DATE
- UserCreated TIMESTAMP
- UserModified TIMESTAMP
- EmailVerification TINYINT
- ActiveStatus TINYINT
- Indexes

UserRole
- UserRole INT
- UserRoleName VARCHAR(45)
- Indexes

AdditionalElements
- AdditionalElementID INT
- AdditionalElement LONGTEXT
- AdditionalElementName VARCHAR(100)
- AdditionalElementDescription LONGTEXT
- Inspections_InspectionID INT
- Indexes

NarrativeElements
- NarrativeElementNo INT
- NarrativeElementName VARCHAR(45)
- Indexes

NarrativeReportPhotos
- PhotoID INT
- NarrativeReport_NarrativeElementID INT
- Photo LONGTEXT
- PhotoName VARCHAR(100)
- Description LONGTEXT
- Indexes

Classification
- Bridges_BridgeNo VARCHAR(50)
- NBISBridgeLength TINYINT
- NHS TINYINT
- Indexes

County
- CountyNo INT
- CountyName VARCHAR(45)
- Indexes

AgeAndService
- Bridges_BridgeNo VARCHAR(50)
- YearBuilt YEAR
- ADTyear YEAR
- InventoryRouteADT DOUBLE
- Indexes

Class
- ClassNo INT
- ClassName VARCHAR(45)
- Indexes