# System Components

## Database Operations

These files define the database connection and cursor for executing SQL statements against the DiabeticLogger database which is a Microsoft SQL Server Express edition database server. Fields and tables are named using the Microsoft SQL Server naming conventions in the event a programming language other than Python is used to program against it.

|  |  |
| --- | --- |
| **File Name** | **Responsibility** |
| db.py | Handles database connection |
| db\_setup.py | Creates database and populates tables |

## Records and CRUD Operations

These files define:

1. Class for exchanging data
2. Methods for CRUD operations

In the Python code, naming conventions are in accordance with the PEP8 naming guidelines.

|  |  |
| --- | --- |
| **File Name** | **Responsibility** |
| blood\_glucose\_crud.py | Defines class and handles CRUD operations for blood\_glucose records |
| meal\_crud.py | Defines class and handles CRUD operations for meal records |
| meal\_item\_crud.py | Defines class and handles CRUD operations for meal item records |
| recommendation\_crud.py | Defines class and handles CRUD operations for recommendation records |
| sleep\_crud.py | Defines class and handles CRUD operations for sleep records |
| steps\_crud.py | Defines class and handles CRUD operations for steps records |

# db.py Details

# db\_setup.py Details

# blood\_glucose\_crud.py Details

## Class: BloodGlucoseRecord

|  |  |  |  |
| --- | --- | --- | --- |
| **Properties** | **Type** | **Size** | **Description** |
| blood\_glucose\_id | int |  | System identification code to uniquely identify each record and serves as the primary key. It is automatically incremented by 1 when a new record is created. |
| meal | nvarchar | 20 | Description of when the blood glucose reading is taken. For example, “Before Breakfast”, “After Lunch”, etc. |
| reading | int |  | Blood glucose reading |
| record\_date | datetime |  | Date and time the reading was taken. |
| notes | nvarchar | 255 | Any notes regarding the reading. |

## Operations/Methods

### Table: BloodGlucose

|  |  |  |
| --- | --- | --- |
| **Method Name** | **Parameter(s)** | **Action** |
| blood\_glucose\_insert | BloodGlucoseRecord | Inserts a record into the table. |
| blood\_glucose\_select\_by\_id | blood\_glucose\_id | Retrieves a record from the table based on the given parameter. |
| blood\_glucose\_select\_by\_days | days | Retrieves a list of records based on the number of days in the past passed as a parameter. A date is calculated from today for the number of days in the past. All records with a record\_date greater than or equal to the calculated date are included in the list. |
| blood\_glucose\_delete | blood\_glucose\_id | Deletes a record from the table based on the given parameter. |

# Usage

## Insert Example 1

blood\_glucose\_crud.blood\_glucose\_insert(

blood\_glucose\_crud.BloodGlucoseRecord(

meal="Before Breakfast",

reading=195,

record\_date=2017-11-25 12:00:00,

notes="Note regarding this reading"

)

## Insert Example 2

blood\_glucose\_record = blood\_glucose\_crud.BloodGlucoseRecord()

blood\_glucose\_record.meal ="Before Breakfast"

blood\_glucose\_record.reading=195

blood\_glucose\_record.record\_date=2017-11-25 12:00:00

blood\_glucose\_record.notes="Note regarding this reading"

blood\_glucose\_crud.blood\_glucose\_insert(blood\_glucose\_record)

# meal.py Details

## Class: MealRecord

|  |  |  |  |
| --- | --- | --- | --- |
| **Properties** | **Type** | **Size** | **Description** |
| meal\_id | int |  | System identification code to uniquely identify each record and serves as the primary key. It is automatically incremented by 1 when a new record is created. |
| meal | nvarchar | 20 | Description of when the meal time. For example, “Breakfast”, “Lunch”, etc. |
| reading | int |  | Carbohydrate intake reading |
| record\_date | datetime |  | Date and time the reading was taken. |
| notes | nvarchar | 255 | Any notes regarding the reading. |

## Operations/Methods

### Table: Meal

|  |  |  |
| --- | --- | --- |
| **Method Name** | **Parameter(s)** | **Action** |
| meal\_insert | MealRecord | Inserts a record into the table. |
| meal\_select\_by\_id | meal\_id | Retrieves a record from the table based on the given parameter. |
| meal\_select\_by\_days | Days | Retrieves a list of records based on the number of days in the past passed as a parameter. A date is calculated from today for the number of days in the past. All records with a record\_date greater than or equal to the calculated date are included in the list. |
| meal\_delete | meal\_id | Deletes a record from the table based on the given parameter. |

# meal\_item.py Details

## Class: MealItemRecord

|  |  |  |  |
| --- | --- | --- | --- |
| **Properties** | **Type** | **Size** | **Description** |
| meal\_item\_id | int |  | System identification code to uniquely identify each record and serves as the primary key. It is automatically incremented by 1 when a new record is created. |
| meal\_id | int |  | System identification code to associate the record with the meal. |
| description | nvarchar | 255 | Description of meal item. For example, “Bagel”, “Steak”, etc. |
| portions | float |  | Number of portions consumed. |
| carbs\_per\_portions | int |  | Carbohydrates per portion. |
| total\_carbs | int |  | Total carbohydrate intake for this meal item. |

## Operations/Methods

### Table: MealItem

|  |  |  |
| --- | --- | --- |
| **Method Name** | **Parameter(s)** | **Action** |
| meal\_item\_insert | MealItemRecord | Inserts a record into the table. |
| meal\_item\_select\_by\_meal\_id | meal\_id | Retrieves all records associated with a particular meal. |
| meal\_item\_select\_by\_id | meal\_item\_id | Retrieves a record from the table based on the given parameter. |
| meal\_item\_delete | meal\_item\_id | Deletes a record from the table based on the given parameter. |
| meal\_item\_delete\_by\_meal\_id | meal\_id | Deletes all records associated with a particular meal. |

# recommendation.py Details

## Class: RecommendationRecord

|  |  |  |  |
| --- | --- | --- | --- |
| **Properties** | **Type** | **Size** | **Description** |
| recommendation\_id | int |  | System identification code to uniquely identify each record and serves as the primary key. It is automatically incremented by 1 when a new record is created. |
| recommendation\_type | nvarchar | 20 | Type of recommendation. For example, “blood\_glucose”, “steps”, etc. |
| lower\_bound | int |  | Recommendations will be retrieved based on a particular reading. This is the lower bound or minimum reading value that this recommendation applies to. |
| upper\_bound | int |  | Recommendations will be retrieved based on a particular reading. This is the upper bound or maximum reading value that this recommendation applies to. |
| recommendation | nvarchar | 255 | Recommendation associated with a reading. |
| use\_count | Int |  | Number of times that this recommendation has been utilized. |

## Operations/Methods

### Table: Recommendation

|  |  |  |
| --- | --- | --- |
| **Method Name** | **Parameter(s)** | **Action** |
| recommendation\_insert | RecommendationRecord | Inserts a record into the table. |
| recommendation\_select\_by\_id | recommendation\_id | Retrieves a record from the table based on the given parameter. |
| recommendation\_select\_by\_days | days | Retrieves a list of records based on the number of days in the past passed as a parameter. A date is calculated from today for the number of days in the past. All records with a record\_date greater than or equal to the calculated date are included in the list. |
| recommendation\_select\_by\_bounds | reading, recommendation\_type | Retrieves a record based on a reading. The reading must fall between the upper bound and lower bound AND be of the reading type specified. |
| recommendation\_delete | recommendation\_id | Deletes a record from the table based on the given parameter. |

# sleep.py Details

## Class: SleepRecord

|  |  |  |  |
| --- | --- | --- | --- |
| **Properties** | **Type** | **Size** | **Description** |
| sleep\_id | int |  | System identification code to uniquely identify each record and serves as the primary key. It is automatically incremented by 1 when a new record is created. |
| reading | int |  | Sleep reading in hours. |
| record\_date | datetime |  | Date and time the reading was taken. |
| notes | nvarchar | 255 | Any notes regarding the reading. |

## Operations/Methods

### Table: Sleep

|  |  |  |
| --- | --- | --- |
| **Method Name** | **Parameter(s)** | **Action** |
| sleep\_insert | SleepRecord | Inserts a record into the table. |
| sleep\_select\_by\_id | sleep\_id | Retrieves a record from the table based on the given parameter. |
| sleep\_select\_by\_days | days | Retrieves a list of records based on the number of days in the past passed as a parameter. A date is calculated from today for the number of days in the past. All records with a record\_date greater than or equal to the calculated date are included in the list. |
| sleep\_delete | sleep\_id | Deletes a record from the table based on the given parameter. |

# steps.py Details

## Class: StepsRecord

|  |  |  |  |
| --- | --- | --- | --- |
| **Properties** | **Type** | **Size** | **Description** |
| steps\_id | int |  | System identification code to uniquely identify each record and serves as the primary key. It is automatically incremented by 1 when a new record is created. |
| reading | int |  | Steps reading. |
| record\_date | datetime |  | Date and time the reading was taken. |
| notes | nvarchar | 255 | Any notes regarding the reading. |

## Operations/Methods

### Table: Steps

|  |  |  |
| --- | --- | --- |
| **Method Name** | **Parameter(s)** | **Action** |
| steps\_insert | StepsRecord | Inserts a record into the table. |
| steps\_select\_by\_id | steps\_id | Retrieves a record from the table based on the given parameter. |
| steps\_select\_by\_days | days | Retrieves a list of records based on the number of days in the past passed as a parameter. A date is calculated from today for the number of days in the past. All records with a record\_date greater than or equal to the calculated date are included in the list. |
| steps\_delete | steps\_id | Deletes a record from the table based on the given parameter. |

# Database Diagram

