# CS 340 README

## About the Project/Project Title

The CRUD Python Module is designed to create an easy-to-use interface for performing CRUD (Create, Read, Update, Delete) operations on a MongoDB database. The goal of this module is to simplify database interaction through convenient methods.

## Motivation

The reason for developing this project is to streamline database management tasks for Python developers by providing a simple but powerful interface for CRUD operations. This will hopefully boost the productivity of developers with regard to complex database interactions.

## Getting Started

To get started using the CRUD Python Module, follow these steps:

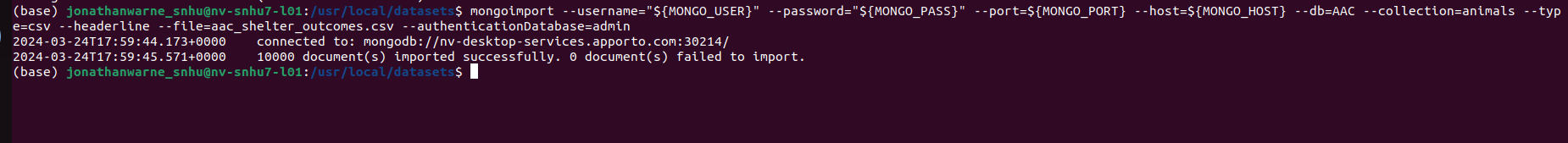
1. Install MongoDB onto your system
2. Install Python onto your system
3. Install the “pymongo” library using pip: “pip install pymongo”
4. Download the CRUD Python Module from the repository
5. Import the “CRUD” class into your Python or Jupyter Notebook script
6. Initialize the “CRUD” object with your MongoDB connection parameters
7. Begin performing CRUD operations on your database

## Installation

The following tools and libraries are required to use the CRUD Python Module:

* **Python** – Coding language the module is written in
* **MongoDB –** Database management system this module is designed for
* **PyMongo** – Python library that enables MongoDB interaction

An example of how to import a .csv file by executing mongoimport can be seen in the following screenshot:



## Usage

### Code Example

### The following code is an example of how a CRUD object can be initialized using the user’s desired MongoDB connection parameters: A screenshot of a computer Description automatically generated

### The screenshot that follows is an example of what it should look like if properly using the above connection parameters and then using db.runCommand({connectionStatus:1}) to ensure the correct account with its associated password is connected as an admin to the proper database. A computer screen with white text Description automatically generated

### The following is the code behind the core functionality of the CRUD module. How to use these methods is demonstrated in the tests section.

A screen shot of a computer code

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### Tests

The following code tests the functionality of the CRUD module and is also an example of how to utilize each method. Explanations on each method follow the code.

A screenshot of a computer code

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**Create**  
When inserting new data into a database, the create method can be used to make a new entry with any number of attributes specified in the “new\_data” variable. The inserted document is then printed.  
**Read**  
The read method allows a user to search through documents within a database based on specified attributes that can be defined in the “query” variable. Any number of attributes can be specified, and documents that contain all of the matching attributes are returned as an array and printed in a for loop.   
**Update**  
The update method can update documents in a database that match specified attributes contained within the “update\_query” variable. The new data can then be stored in the “update\_data” variable. Following this, matching documents will be searched for and updated by calling the update method with the “update\_count” variable. The number of documents updated is stored in the “update\_count” variable and then printed. A read method is then called on the updated documents to ensure the correct updates were made.   
**Delete**The delete method can delete documents in a database that match specified attributes contained within the ”delete\_query” variable. The delete method is called through the “delete\_count” variable, which also stores the number of documents deleted from the database. The number of documents deleted is then printed.

### Code Execution

The following is an example of the create and read test methods being executed:

A screenshot of a computer code

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The following is an example of the update and delete test methods being executed:

A screenshot of a computer

Description automatically generated

## Contact

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