

```

1  """Program to manage a database of students using MySql"""
2
3
4  import time
5  import mysql.connector as mcon
6
7  con = mcon.connect(host="localhost", user="root", passwd="root")
8  cursor = con.cursor(dictionary=True)
9
10 # Initialize the database and tables
11 cursor.execute(
12     """CREATE DATABASE IF NOT EXISTS students"""
13 )
14 cursor.execute("USE students")
15
16 cursor.execute(
17     """CREATE TABLE IF NOT EXISTS students(
18         id INTEGER PRIMARY KEY AUTO_INCREMENT,
19         name TEXT,
20         class INTEGER,
21         section TEXT
22     )"""
23 )
24
25 con.commit()
26
27
28 BORDER = "-" * 30
29
30
31 def format_dict(dictionary, *, indent="  "):
32     """Function to nicely format the keys and values of a dictionary"""
33
34     # This list comprehension is used to format each key and value of the dictionary
35     return "\n".join(
36         [
37             f"{indent}{key.title() if isinstance(key, str) else key}: {value}"
38             for key, value in dictionary.items()
39         ]
40     )
41
42 def execute(query, params=None):
43     """Function to execute SQL queries on the database and automatically commit.
44
45     Returns cursor.rowcount"""
46
47     cursor.execute(query, params)
48     if cursor.rowcount:
49         con.commit()
50     return cursor.rowcount
51
52 def add_student(name, _class, section):
53     """Adds a student's details to the database and returns the inserted ID"""
54
55     execute(
56         """INSERT INTO students (name, class, section)
57         VALUES (%(name)s, %(class)s, %(section)s)""",
58         {"name": name, "class": _class, "section": section}
59     )
60     return cursor.lastrowid
61
62 def get_students(_id=None, *, n=None):
63     """Returns details of student with given ID or all students"""
64
65     params = []
66     if _id is None:
67         query = "SELECT * FROM students"
68     else:
69         query = "SELECT * FROM students WHERE id = %s"
70         params.append(_id)
71
72     execute(query, params)
73     return cursor.fetchall() if n is None else cursor.fetchmany(n)
74
75 def remove_student(_id):
76     """Removes an entry from the students table"""
77
78     rowcount = execute(
79         """DELETE FROM students WHERE id = %s""",
80         (_id,)
81     )
82     return rowcount
83
84
85 data = {}
86 while True:

```

```

87     time.sleep(1)
88     option = input(
89         f"""
90 {BORDER}
91 1. Add Student Data
92 2. View Student Data
93 3. Remove Student Data
94 {BORDER}
95 Please choose an option: """
96     )
97
98     try:
99         option = int(option)
100     except ValueError:
101         con.close()
102         break
103
104     if option == 1:
105         name = input("Name: ")
106
107         while True:
108             try:
109                 _class = int(input("Class: "))
110             except ValueError:
111                 print("Class must be an integer")
112                 continue
113             else:
114                 break
115
116         section = input("Section: ")
117
118         _id = add_student(name, _class, section)
119         print(f"Added student #{_id} to database.")
120
121     elif option == 2:
122         _id = input("Please input ID of student to view. Leave empty to view all: ")
123
124         if len(_id) == 0:
125             students = get_students()
126             for std in students:
127                 print(format_dict(std))
128                 print()
129         else:
130             _id = int(_id)
131             student_data = get_students(_id)
132             if not student_data:
133                 print("Student does not exist in database.")
134                 continue
135             print(format_dict(student_data))
136
137     elif option == 3:
138         _id = int(input("Please input ID of student to remove: "))
139
140         success = remove_student(_id)
141         if success:
142             print(f"Deleted student #{_id} from database.")
143         else:
144             print("Student does not exist in database.")

```