CSE/ISE 337: Scripting Languages

Stony Brook University

Programming Assignment #3

Spring 2024

Assignment Due: Tuesday, April 23rd, 2024, by 11:59 PM (EST)

Learning Outcomes

- After completion of this programming project, you should be able to:
  - develop a database system with Python using sqlite3
  - GUI application with Python using Tkinter
- The code given with the assignment is not working code. It's a template that needs to be extended to develop Apps for each problem.

Problem 1 [20 points] (Anusha)

In this exercise, you will enhance the Movie List program by improving its delete command and by adding a min command that lets the user view movies with run times that are less than a specific number of minutes.

Open and test the program:

1. Review the starter code for the problem, problem1.tar

2. Review the code and note how the **ui module** uses the **db module** and the **Movie class** from the **objects module.** Then, run the program.

Improve the del command:

3. In the db module, add a get_movie() function that gets a Movie object for the specified movie ID.

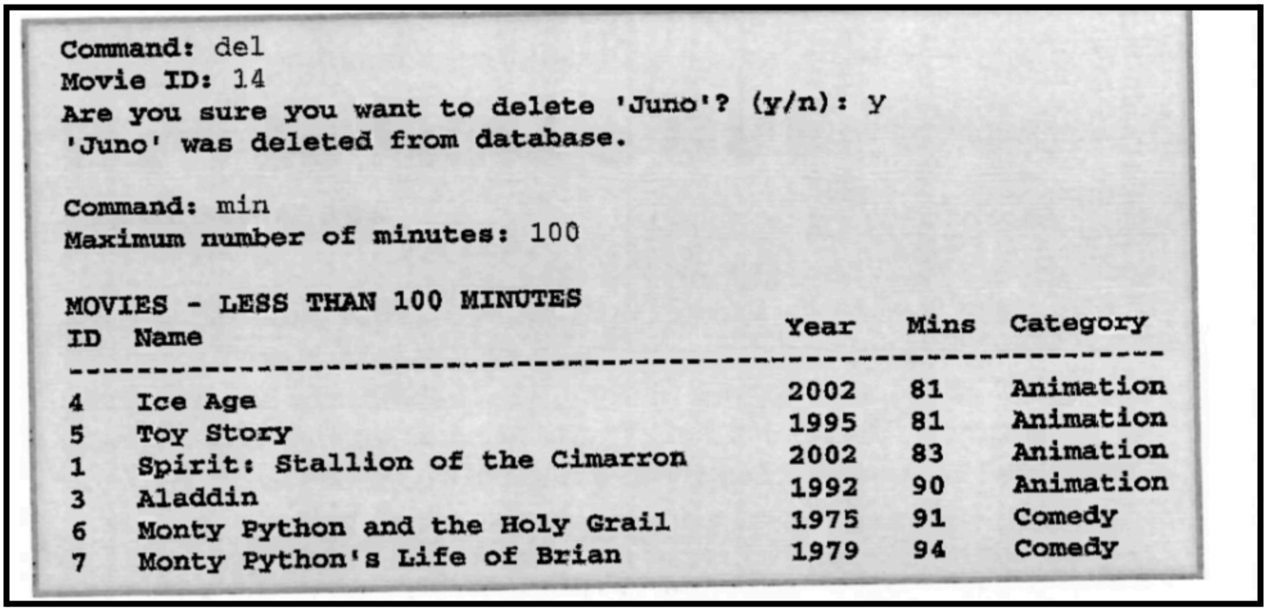
4. In the ui module, modify the delete_movie() function so it gets a Movie object for the specified ID and asks whether you are sure you want to delete the movie as shown above. This code should only delete the movie if the user enters "y" to confirm the operation.

Add the min command

5. In the db module, add a get_movies_by_minutes() function that gets a list of Movie objects that have a running time that's less than the number of minutes passed to it as an argument.

6. In the ui module, add a display_movies_by_minutes() function that calls the get_int() function to get the maximum number of minutes from the user and displays all selected movies. This should sort the movies by minutes in ascending order.

7. Modify the main() function and the display_menu() function so they provide for the min command. You need to submit that code as Problem1.zip

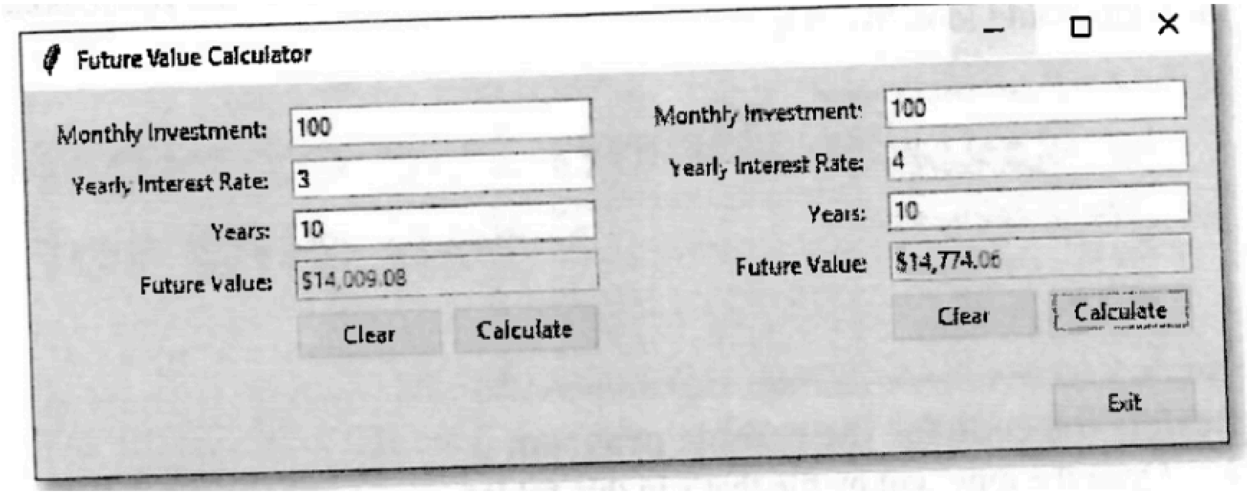


```
Command: del
Movie ID: 14
Are you sure you want to delete 'Juno'? (y/n): y
'Juno' was deleted from database.

Command: min
Maximum number of minutes: 100

MOVIES - LESS THAN 100 MINUTES
ID  Name                                  Year   Mins  Category
-------------------------------------------------------------------
4   Ice Age                               2002   81    Animation
5   Toy Story                             1995   81    Animation
1   Spirit: Stallion of the Cimarron      2002   83    Animation
3   Aladdin                               1992   90    Animation
6   Monty Python and the Holy Grail       1975   91    Comedy
7   Monty Python's Life of Brian          1979   94    Comedy
```

Figure 1: Screenshot of the terminal after the menu has been modified

Problem 2 [30] (Maneesh and Preethika)

In this exercise, you'll create a **Future Value program** that allows you to make two side-by-side calculations in the same window. When you're done, the GUI should look like this:



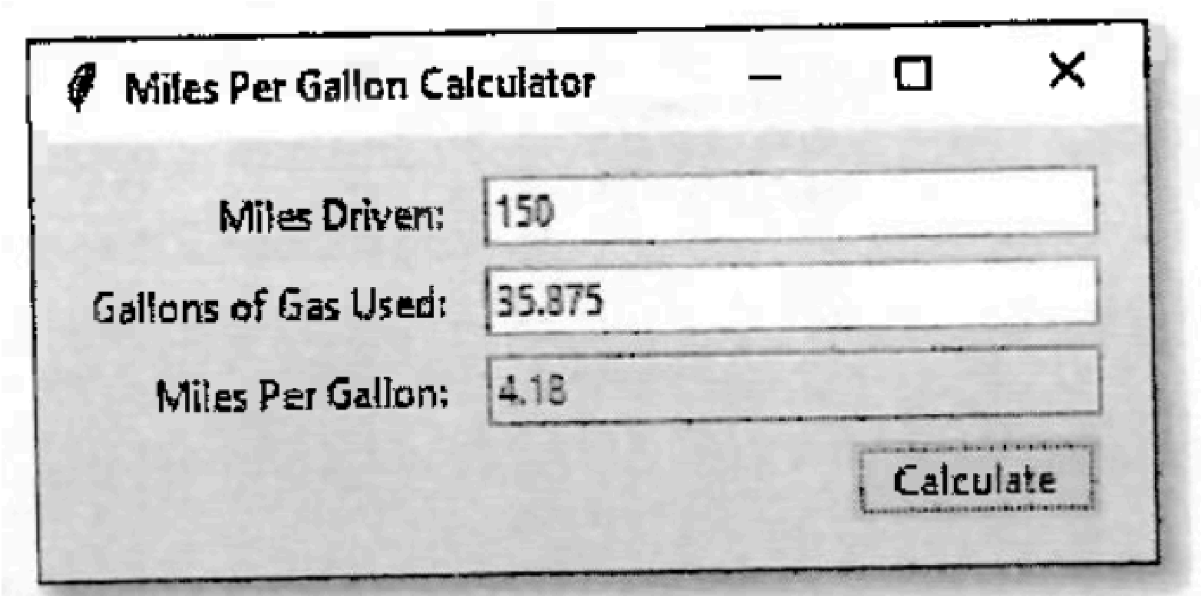
Monthly Investment: 100
Yearly Interest Rate: 3
Years: 10
Future Value: $14,009.08

Monthly Investment: 100
Yearly Interest Rate: 4
Years: 10
Future Value: $14,774.06

- **Review the starter code (Problem2.tar) for the application. You will submit your final code as Problem2.zip**

Problem 3 [50] (Dheeraj and Pritish)

Develop a GUI version of the MPG program. When you're done, the GUI should look like this:



Miles Per Gallon Calculator

Miles Driven: 150

Gallons of Gas Used: 35.875

Miles Per Gallon: 4.18

Review the starter code for the problem, Problem3.tar. You will submit the final code as Problem3.zip.