Assignment 9

Python Sequence Types

Instructions

For all exercises, create Python scripts as described in the exercise instructions. Save these scripts in separate files named `A9En.py`, where `n` is the exercise number. Submit all script files to Gradescope Assignment 9.

Each script should follow best practices, including:

- Module structure
- Descriptive variable names
- Consistent naming convention (snake_case, mixedCase, or CamelCase)
- Module docstring for functionality and command line usage
- Block and/or inline comments for complex code sections

Scripts will be graded for functional correctness by Gradescope.

Deadline

All exercises are due by 11:59pm two days before the next class. You can resubmit scripts multiple times before the due date.

Exercise 1

Required Script Function

Write a Python script that prints a description based on the
number of command line parameters:

- Two parameters: Print a song description (song title and artist name).
- Three or more parameters: Print a movie description (movie title, director, lead actor). Treat titles with digits as sequels.
- Less than two parameters: Print an error message.

Example Script Output

```
PS C:\> python A9E1.py '   great    lakes  ' ' CleoPAtrick  '
The song is GREAT LAKES by Cleopatrick

PS C:\> python A9E1.py ' star  WARS ' ' george    lucas  ' '    MARK HamiLL '
The movie is "Star Wars", directed by George Lucas, starring Mark Hamill

PS C:\> python A9E1.py '  SPIDER-man  2  ' ' sam    raimi ' '  TOBEY   maguire '
The movie sequel is "Spider-Man 2", directed by Sam Raimi, starring Tobey Maguire
```

```
PS C:\> python A9E1.py 'Empire Strikes Back'
Error: Missing parameters
```

Hints

- Use `len()` to count command line parameters.
- Utilize `str` class methods like `title()`, `upper()`, `isdigit()`, `join()`, `split()`.
- See Stack Overflow for removing multiple spaces and checking if a string contains a number.

Required Script Structure

- `main()`: Determines parameter count, cleans parameters, calls relevant function, prints description or error.
- `clean_string(string)`: Removes extra spaces and returns the cleaned string.
- `get_song_desc(title, artist)`: Builds and returns the song description.
- `get_movie_desc(title, director, actor)`: Determines if a movie is a sequel and builds the description.

Gradescope Submission

A Python script named `A9E1.py`.

Exercise 2

Required Script Function

Write a script to process numeric grades from command line parameters.
The script should:

- Remove zero grades (assume max one zero grade).
- Print a sorted list of grades, highest and lowest grades, and the average grade (rounded to one decimal place).

Example Script Output

```
PS C:\> python A9E2.py 59.3 77.5 43.2 0.0 96.9 85.1 61.8 34.2
The grades listed top-to-bottom are: 96.9, 85.1, 77.5, 61.8, 59.3, 43.2, 34.2
There are 7 grades in the list.
The top grade is 96.9
The bottom grade is 34.2
The average grade is 65.4

PS C:\> python A9E2.py 23 66.2 84.79 70.123
The grades listed top-to-bottom are: 84.79, 70.123, 66.2, 23.0
There are 4 grades in the list.
The top grade is 84.79
The bottom grade is 23.0
The average grade is 61.0
```

Hints

- Use built-in functions and list methods for sorting and removing zero grades.

Required Script Structure

- `main()`: Calls other functions, assigns return values to variables, prints output.
- `calculate_grade_stats(grades)`: Processes grades and returns a tuple with grade statistics.
- `get_grade_list()`: Retrieves grade list from command line.

Gradescope Submission

A Python script named `A9E2.py`.