

Programming Assignment 6

Assignment Goals: understanding problem requirements; effective program design; logical thinking; basic list functions; parallel lists

You will submit the program on Blackboard. Name it *yourname_PA6.py* (replacing *yourname* with your own name).

Problem:

The file `USPopulation.txt` is provided with this assignment. The file contains the midyear population of the United States, in thousands, during the years 1950 through 1990. The first line in the file contains the population for 1950, the second line contains the population for 1951, and so forth.

Write a program that will

- a. Read the file contents into a list named `population` and create two additional lists:
 - i. A list named `year` with a list of the years from 1950 to 1990
 - ii. A list named `pop_changes` which stores the population changes from one year to the next. The change is the difference from one year to the next. The first change is for the year 1950 and is 2114 (153982 in 1951 minus 151868 in 1950). Note that there won't be one for 1990 because we don't have data for the following year.
- b. Display:
 - i. The average population during the time period 1950 to 1990
 - ii. The overall population change from 1950 to 1990
 - iii. The average annual change in population during the time period
 - iv. The year with greatest change in population during the time period
 - v. The year with smallest change in population during the time period
- c. Prompt the user to input a year. Report:
 - i. The population for that year
 - ii. The change from the previous year (there won't be one for 1950)
 - iii. The change for the following year (there won't be one for 1989)

Use appropriate error prevention techniques, including input validation and exception handling.