3 Input Data and Error Handling

3.1 Prescribed Exercises

Exercise 3.1 *Make an interactive program.*

Make a program that (*i*) asks the user for a temperature in Fahrenheit and reads the number; (*ii*) computes the correspodning temperature in Celsius degrees; and (*iii*) prints out the temperature in the Celsius scale. Name of program file: `f2c_qa.py`.

Exercise 3.2 *Read from the command line in Exercise 3.1.*

Modify the program from Exercise 3.1 such that the Fahrenheit temperature is read from the command line. Name of program file: `f2c_cml.py`.

Exercise 3.3 *Use exceptions in Exercise 3.2.*

Extend the program from Exercise 3.2 with a `try-except` block to handle the potential error that the Fahrenheit temperature is missing on the command line. Name of program file: `f2c_cml.py`.

Exercise 3.5 *Read input from the command line.*

Let a program store the result of applying the `eval` function to the first command-line argument. Print out the resulting object and its type (use `type` from Chapter 1.5.2). Run the program with different input: an integer, a real number, a list, and a tuple. Then try the string `"this is a string"` as a command-line argument. Why does this string cause problems and what is the remedy? Name of program file: `objects_cml.py`.

3.2 Advanced Exercises

Exercise 3.15 *Make a simple module.*

Make six conversion functions between temperatures in Celsius, Kelvin, and Fahrenheit: `C2F`, `F2C`, `C2K`, `K2C`, `F2K`, and `K2F`. Collect these functions in a module `convert_temp`. Make some sample calls to these functions from an interactive Python shell. Name of program file: `convert_temp.py`.

Exercise 3.16 *Make a useful main program for Exercise 3.15.*

Extend the module made in Exercise 3.15 with a main program in the test block. This main program should read the first command-line argument as a numerical value of a temperature and the second argument as a temperature scale: `C`, `K`, or `F`. Write out the temperature in the other two scales. For example, if `21.3 C` is given on the command line, the output should be `70.34 F 294.45 K`. Name of program file: `convert_temp2.py`.