

Programming
Winter 2023

Exercises

Number 05, Submission Deadline: November 29, 2pm, 2023

1 Functional Programming

1. Construct a `reduce` function using the `lambda` keyword that concatenates a collection of lists into a single list. Test your implementation with the following input: `[[1, 2, 3], ['string', 'one', 'two'], [0.1, 0.2]]`. Hint: `functools.reduce` provides a third parameter to pass on an initial element. (3 P)
2. Construct a `remove(collection, pos)` function using the `lambda` keyword that removes an element at position `pos` from an input collection. Use list comprehension in your implementation. Test your implementation with the following input `['apple', 'banana', 'pear', 'orange', 'watermelon']` and various `pos` values. (3 P)
3. Implement a “first-class citizen” function and a higher-order function calling it. Implement whatever you like! (5 P)
4. Use the mapping high-order function to do whatever you like! Implement 2 examples at least. (5 P)
5. What is the best choice between generator expressions and list comprehension? Argue your position and provide examples. (2 P)
6. What is an iterator object? Have we ever used them in previous exercises? Link the source that you use to answer this question. (2 P)

Important:

Please submit your solution as (adequately commented) Python file. Use the cell separator comment `“#%”` to partition your Python file analog to the exercises. Make sure your Python file contains only valid Python code.