

# CPSC 1301, Computer Science I Homework 10

Chapters 14 and 15, *Learning Python*

## Readings

Read chapters 14 and 15 in the *Learning Python* book. Pages 467 through 481 are optional — no homework questions from those pages.

## Discussion Questions

Answer the discussion questions in writing.

1. In Python, when is an object considered *iterable*.
2. What, exactly, does the `__next__()` method do?
3. What, exactly, happens when `__next__()` cannot read the next item in the object? For files, this would be the EOF token.
4. What, exactly, does the built-in function `next()` do?
5. What is the difference between the *iterator* object and the *iterable* object?
6. In Python, are dictionaries iterable? If so, what does the dictionary iterator object return?
7. What is the most significant difference between the *list comprehension* and a `for` loop that iterates through a list? Hint: this concerns the return values of each.
8. The book states that, “[i]n Python, most people find that a list comprehension simply looks like a backward `for` loop.” Explain this statement.
9. What does the *filter* clause do in a list comprehension?
10. Explain what this line of code produces:  
`what = [crs + num for crs in "CPSC" for num in "1301"]`
11. (Fill in the blank) In Python, every build-in tool that scans across objects from left to right uses the \_\_\_\_\_ protocol.
12. How are `range`, `map`, `zip`, and `filter` alike? How does `range` differ from `map`, `zip`, and `filter`?
13. What is the difference between a *single pass iterator* and a *multiple pass iterator*?
14. What does the `__dir__` function do?
15. For Python objects, what does the `__doc__` attribute contain?
16. Review the Test Your Knowledge quizzes at the end of each chapter.