

Python Project

Due Wednesday, 6/1/2011

This is your chance to apply what we have learned this term to analyze a fairly recent language that has become quite popular: Python. (In fact, we will be teaching it in our first CS course starting next fall.) Its designers claim that it is a multi-paradigm language. You will be asked to examine that claim.

Read about Python. There are lots of tutorials and books out there; find one or more that appeal to you. (I am choosing not to recommend any particular one.) Then answer the following questions. Each can be answered in at most a few paragraphs. Please type your answers.

1. (15 points) **Overview**

Give a basic overview of the language. What interesting or unusual features does it have? Include such things as its type system, scoping rules, how its programs are structured, its parameter passing conventions, built-in data types, etc.

2. (10 points) **Python as an imperative language**

How well does Python fulfill the expectations for an imperative language? How easily could a typical C program be translated into Python?

3. (15 points) **Python as a functional language**

How easy is it to program in a functional style in Python? What support does it give for this style? Are functions first-class objects? Is there support for higher-order functions? Could you easily translate Parser68.hs into Python? Why or why not?

4. (15 points) **Python as an Object Oriented language**

How well does Python function as an object-oriented language? Does it support data abstraction well? Inheritance? Subtyping? Could the Java Collections class be translated easily into Python? Why or why not?

5. (10 points) **Purpose and Evaluation**

What was the purpose for which Python was designed? Which features does it include or leave out because of this purpose? Does it seem to fulfill its purpose well? Are there purposes for which it would be poorly suited? Why?

6. (0 points) **Bibliography**

What references did you use to learn about Python and answer these questions? Which ones did you find particularly useful? (I am giving 0 points because there are no right or wrong answers, but you do need to specify your sources!)