

CS 315

Homework Assignment 1

Assigned: April 4, 2022

Due: April 11, 2022, 23:59

Scoping in Dart, Javascript, Perl, PHP and Python

Scoping rules determine how a particular occurrence of a variable matches to the appropriate binding. There are two types of scoping rules: static scoping and dynamic scoping. These two approaches differ in accessing nonlocal variables. In static scoping, a variable always refers to its nearest enclosing binding. On the other hand, dynamic scoping is based on the calling sequence but not on the spatial relationships. In this homework, you will compare the scoping rules in five different programming languages: Dart, Javascript, Perl, PHP and Python.

Write programs for the *same* test example in those five different languages to *clearly* illustrate the different scoping rules used by these languages.

You are encouraged to come up with an example that emphasizes the advantages and limitations of both scoping rules.

For Python, you should use Python 3. On the dijkstra terminal, Python 3 is available by typing `python3`.

For Perl, you should investigate the effects of both static (lexical) and dynamic scoping, using `my` keyword for lexical scope and `local` keyword for dynamic scope.

You should prepare HTML files for Javascript and PHP programs.

Make sure your programs execute in the `dijkstra.cs.bilkent.edu.tr` machine, since the TA will test your programs on this machine. To help the TA give you good grades, appropriately comment your source code.

Prepare a report discussing the scoping rules in these languages by referring to your test programs and their results. Include code snippets from the languages to explain your points. Use an academic referencing style, do not copy paste links for your resources. Make sure your report is readable.

Write a separate section about your learning strategy in doing this homework assignment. A learning strategy is an individual's approach to complete a task. In this section, discuss, in detail, the material and tools you used, experiments you performed. Also talk about personal communication, if you had (approx. 500 words).

Submission:

A single **zip** or **rar** file should be submitted containing the following files with given names:

1. A single file for **report**: `lastname_name_report.pdf`
2. A single file for **Dart** code: `lastname_name_dart.dart`
3. A single file for **Javascript** code: `lastname_name_javascript.html`
4. A single file for **Perl** code: `lastname_name_perl.pl`
5. A single file for **PHP** code: `lastname_name_php.php`
6. A single file for **Python** code: `lastname_name_python.py`

Please upload the **zip** or **rar** file you created to Moodle before the due date.

Important Notes:

- Maximum page limit for report is 20.
- Late submissions will be accepted, with 10 points (out of 100) deduction for each extra day.
- You may use the tutorials available in the Internet as a reference, but do not derive your example from the contents of the tutorials. If you do so, your programs may be similar to others in the class, that causes a disciplinary investigation.
- Collaboration on the homework is not allowed.

Suggestion:

- Do not postpone the execution of your programs to the last minute! The dijkstra machine might be overloaded.