CSE / IT 324 Project #1

Individual Project: Compare & Contrast Programming Languages

Introduction & Goal:

The goal of this project is to learn about the characteristics that programming languages possess from a language designer's point of view. While multiple programming languages may have common characteristics, each language has unique features that separate it from others within the same paradigm. A language designer must be aware of the ***pros*** and ***cons*** of the inclusion of each of these features in the language. The most distinguishing ***characteristics*** of a language include, but are not limited to:

1. Simplicity & Orthogonality
2. Control Structures
3. Data Types & Structures
4. Syntax Design
5. Support for Abstraction (system & user levels)
6. Typing System
7. Exception Handling
8. Concurrent Facilities
9. Memory Garbage Collection
10. Compiled, Interpreted, or Hybrid

Utilize the aforementioned list of ***characteristics*** to support your argument of the existence of any of the following *evaluation criteria* *in the subject HLL in hand*:

1. Power (Expressiveness, Syntax to Semantics "one-to-many mapping", and providing a rich set of tools and facilities).
2. Readability & Maintenance
3. Security (Language & Typing System)
4. Robustness (Facilities to help in runtime exceptions)
5. Efficiency (in both the design and implementation of software solutions including, compilation speed, program execution speed, memory space utilization, portability over different platforms, and parallelization.)
6. Platform Independency

Requirements:

In your report, you will compare and contrast the high-level programming languages listed below according to the above criteria. Based on your findings, you will critique the language. Additionally, your evaluation of the languages must make references to other languages within the same domain to support your critiques. You **MUST** provide a citation to references from the literature for every claim that you make, and you **MUST** also provide code segments from the subject language to support your critiques. Your

report will be written as a compare and contrast of characteristics of each language from a designer's point of view (e.g., what features were included, the reasons behind the choice, what features were not included, and why they were not). You **MUST** have sections for each of the evaluation criteria with subsections stating the language feature(s) you will be evaluating, proceeding from the first language to the last. An example of this will be posted on the course website.

Languages:

C++, C#, Perl

Formatting:

All reports must be submitted in the PDF format, and written in the most recent standard ACM format. A template of this will be posted to the course website and can also be found at: www.acm.org/sigs/publications/pubform.doc. There is no length restriction; however, there is an absolute submission date.

Grading:

Each report will be graded as follows:

20% Non-Analysis
- 10% Formatting & Proper Submission
- 10% Correct Citations

65% Analysis from Designer's Perspective based on above requirements

15% Proper use of Code Segments & Comments

Caution: Spelling & Grammar will influence your grade.

Project Submission:

Your assignment must be submitted before class on the due date to the moodle website as a single **PDF** file. The assignment's PDF file MUST conform to the following naming convention "lastname_project1.pdf"

Example: John Ashcroft would use the file name: "ashcroft_project1.pdf"

Note: All sources must be both scientific and credible (not Wikipedia). All work must be your own and you must cite any contributions that you receive from classmates or external sources; failure to do so will result in a zero for the report. All rules in the Academic Honesty Policy strictly apply.