Assignment: Technical Report

Assignment Description

In this assignment, you are required to write a technical report about the Ruby programming language.

Technical Report

Reports must be technical in nature, detailing the Ruby programming language. It should identify the notable features of the language, and the class of languages to which it belongs. Do not try to sell the language as the "best one ever" or simply list technical details about it. Rather, discuss the significant technical features of the language and compare it other languages or language paradigms as relevant. Ideal topics of discussion include the context of the language in the evolution of programming languages, its relationship to other languages and how its features relate to the design goals of the language. You may use the modules as a guide to what should be covered or included in your report, however this does not mean that you must include a report section for each chapter.

Sample Code and Code Testbed

The report should, wherever possible, contain source code and/or screenshots of programs written in the language which illustrate the content of the report.

To demonstrate some of the interesting aspects of the language, you can develop and implement a small code testbed. The aim of this is to show your understanding of the language and the features which have made it an important language. By developing a small code testbed as you examine the distinctive features of the language, should provide you with a practical understanding of your chosen language. To demonstrate the code testbed, you can provide screenshots of the implementation with explanations as a section in the report and code provided in an Appendix.

The final content of the report should 3000 words in length. This does not include screenshots or large blocks of sample code.

Sample structure for Technical Report Some points:

- Provide code examples and comparisons with other languages
- Discuss in terms of the good and bad points of the language
- Discuss in terms of readability, writability, performance, cost

Report Submission

This should contain

1) 200-word statement of why you have chosen this language.
2) Suggested sections of the report are:
   1. Introduction
      a. History
      b. Influences
      c. Compilation vs Interpretation (Implementation)
   2. Uses of the Language
   3. Syntax and semantics
   4. Lexical Analysis
   5. Naming Conventions
   6. Data Types
   7. Expressions and Assignment Statements
   8. Statement Level Control Structures
   9. Sub Programs
   10. Abstract data types and encapsulation
   11. Support for Object oriented programming, functional, structured etc
   12. Concurrency – Parallel processing
   13. Exception Handling and Event Handling
   14. Comparison with similar languages
   15. Readability, Writeability, Performance
   16. Demonstration Code Testbed
   17. Conclusions
   18. References
   19. Appendices (including sample test bed code)

General Advice

Each chapter of the recommended reading (Concepts of Programming Languages by Sebesta, 2016) covers concepts of programming languages and paradigms, which your readings and course content throughout the semester will familiarise you with. Depending on the language you are writing about, some chapters may be more applicable than others - it is up to you to determine what is relevant and important to include in your report and presentation.

For example, Chapter 2 deals with evolution of computer languages. Some areas of discussion are: Who created your allocated language? When was the language created? What were the rationale and design goals for creating the language? What older languages influenced this language, and how? What younger languages have been influenced by this language, and how? How many major versions of the language have been created, and when?

If the content of a chapter or section do NOT apply, then the reason for this should be briefly discussed. If there are other significant concepts or elements of your language not discussed in the text, then these should be discussed.

Further Advice

- If the language has had many versions or dialects, decide which ones to focus on based on impact and significance. You are not required to discuss every version and dialect.
- In addition to the language, it may be appropriate to discuss the programming development environment if it is an important feature of the language.
- While marks are not awarded for excess "filler" which adds little to the content of your assignment, be sure to address all areas in suitable depth.
- Search for both academic research and technical documentation about your assigned language and be aware of similar or parent languages if information is scarce.
- If your language is extremely large, select important or significant features you wish to focus on, rather than trying to cover them all.

Marking Key

Criteria	Marks Allocated	
	Report	Comments
Structure, Layout & Formatting Suitable flow of introduction, discussion and conclusion and appropriate layout and formatting of report and presentation	/5	
Content & Depth of Coverage Appropriate areas discussed in suitable depth in report and summarised well in presentation. Presentation discusses content concisely and informatively	/30	
Points of Discussion & Comparisons Meaningful discussion of the language and its features is present, and comparisons to other languages made. Context of language is examined.	/15	
Illustrative Program Examples Source code, screenshots and/or programs used to illustrate areas of discussion as appropriate. Note: This also includes the code testbed demonstration	/20	
Clarity, Spelling, Grammar& Delivery Content of report expressed clearly and is well written. Presentation is concise, informative, and well delivered.	/10	
Evidence of Research & Referencing Evidence of substantial research is apparent, and all sources are correctly referenced in APA 7	/20	