Language paper

Write a paper on a programming language; the language is chosen from a list given. The topics to discuss about the language are found below. You must use the language reference manual as your main reference. Do not choose a language which does not have one. Choose a language you are not familiar with already.

Language list to choose from: C++, C#, Python, Scheme, Common Lisp.

0. Language
   - Name of language chosen.
   - Language version.
   - Type of implementations found.

1. Type system
   - Identify whether the language is statically typed (weak or strong) or dynamically typed.
   - Discuss casting and coercion in the language.

2. Data types
   - Do a complete survey of
     - built-in types,
     - user defined data types.
   - Describe mechanisms for data abstraction.

3. Parameter passing mechanisms
   - What type of parameter passing mechanisms your language provide. Name each and give an example of its use.
     - Can you specify functions as parameters?
     - Can you return functions as values?
     - Can you specify function types and declare variables of such types?

4. Generics
   - Discuss all forms of generics that the language provides to specify data structures and functions.

5. Exceptions
   - Can exceptions be declared in the language? If so provide an example, and provide an example where exceptions are raised and handled. If they cannot be declared, discuss how to handle system failures.

6. Modules
   - Discuss method(s) used by the language to gather definitions to be used by other programs.

7. Internet features
   - Discuss language features language provides for internet programming.

8. Interesting language features
   - List other language facilities provided by the language that in your view are a plus for the language.

9. (For Graduate students) Concurrency mechanisms
   - Discuss mechanisms provided by the language for concurrent programming.

10. For both graduate and undergraduate: Language chosen v.s. Java 1.5
    - Finish paper with a comparison of language chose vs. Java 1.5 by comparing them on the features listed above.