Birla Institute of Technology & Science, Pilani
Principles of Programming Languages (CS F301 / IS F301)
Assignment 1

Problem – Design a new Programming Language

Explanation –

1. Identify an application domain where a programming language can –
   - either do something which is not possible otherwise
   - or, simplify the procedure
2. Analyze the domain for specific requirements. Choose one or two problems/tasks that can be solved/simplified by designing a programming language
3. Write few codes in the language-to-be-designed, solving/simplifying above problems/tasks
4. Define all possible token types (keyword, identifier, operator, etc.) for your language-to-be-designed
5. Code lexical analyzer for your language in python

Deliverables & Deadlines –

Sr.	Task	Marks	Deadline
1	Description of application domain	2	1/10/2014
2	Description of problems/tasks identified in the domain that can be solved by a language	3	1/10/2014
3	At least 4 codes in your language, solving problems identified in above step	2	1/10/2014
4	List of token types with complete list of keywords	3	1/10/2014
5	Python code, which takes code written in your language as input and - a) Separates out different lexemes found in each line b) Classifies each lexeme into different tokens c) Outputs category wise list of tokens found in the code d) Detects any lexical error	5	20/10/2014

Note –

- Your language shouldn't be a known or variant of a known language
- One document in PDF format needs to be submitted for Tasks 1, 2, 3 & 4 with each task starting from a new page
- Code to be submitted for Task 5 should be compatible with Python 3.3 and well documented
- All deadlines will be till mid-night unless otherwise stated
- You may refer to papers mentioned earlier to understand vastness of domains for programming language, but do not copy any language mentioned in them

Plagiarism –

- Inter-group plagiarism: All involved groups will be awarded Zero marks in this assignment
- Internet plagiarism: Along with above more actions can be taken on case by case basis

References –

- M. Mernik, J. Heering, and A. M. Sloane, "*When and how to develop domain-specific languages,*" ACM Comput. Surv., vol. 37, no. 4, pp. 316–344, 2005.
- Arie van Deursen, Paul Klint, and Joost Visser. 2000. *Domain-specific languages: an annotated bibliography.* SIGPLAN Not. 35, 6 (June 2000), 26-36.