

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION SYSTEMS
Compiler Construction (CS F363)
II Semester 2018-19
Compiler Project (Stage-2 Submission)
Coding Details
(April 14, 2019)

Group No.

08

Instruction: Write the details precisely and neatly. Places where you do not have anything to mention, please write NA for Not Applicable.

1. IDs and Names of team members

ID:	2016A7PS0006P	Name:	Shubham Lather
D:	2016A7PS0066P	Name:	Devyash Parihar
ID:	2016A7PS0128P	Name:	Rahul Khandelwal
ID:	2016A7PS0042P	Name:	Aniruddha Karve

2. Mention the names of the Submitted files (Include Stage-1 and Stage-2 both)

1. lexerDef.h	9. parser.c	17. symbolTableDef.h	25. testcase1.txt
2. lexer.h	10. stack.h	18. symbolTable.h	26. testcase2.txt
3. lexer.c	11. stack.c	19. symbolTable.c	27. testcase3.txt
4. parserHashTable.h	12. utils.h	20. makefile	28. main1.txt
5. parserHashTable.c	13. utils.c	21. driver.c	29. main2.txt
6. parserDef.h	14. ast.h	22. typechecker.c	30. main3.txt
7. parser.h	15. ast.c	23. grammar.txt	31. main4.txt
8. DFA.pdf	16. semanticRules.pdf	24. semanticAnalyzer.c	

3. Total number of submitted files: _____31_____ (All files should be in ONE folder named exactly as Group_#, # is your group number)

4. Have you compressed the folder as specified in the submission guidelines? (yes/no) _____yes_____

5. Status of Code development: Mention 'Yes' if you have developed the code for the given module, else mention 'No'.

- a. Lexer (Yes/No): _____yes_____
- b. Parser (Yes/No): _____yes_____
- c. Abstract Syntax tree (Yes/No): _____yes_____
- d. Symbol Table (Yes/ No): _____yes_____
- e. Type checking Module (Yes/No): _____yes_____
- f. Semantic Analysis Module (Yes/ no): _____yes_____ (reached LEVEL __4__ as per the details uploaded)
- g. Code Generator (Yes/No): _____no_____

6. Execution Status:

- a. Code generator produces code.asm (Yes/ No): _____no_____
- b. code.asm produces correct output using NASM for testcases (Main#.txt, #:1-4): _____no_____
- c. Semantic Analyzer produces semantic errors appropriately (Yes/No): _____yes_____
- d. Type Checker reports type mismatch errors appropriately (Yes/ No): _____yes_____
- e. Symbol Table is constructed (yes/no) _____yes_____ and printed appropriately (Yes /No): _____yes_____
- f. AST is constructed (yes/ no) _____yes_____ and printed (yes/no) _____yes_____
- g. Name the test cases out of 7 as uploaded on the course website for which you get the segmentation fault (testcase#.txt ; # 1-3 and Main@.txt ; @:1-4): _____

7. Data Structures (Describe in maximum 2 lines and avoid giving C definition of it)

- a. AST node structure: It contains number of children, a pointer to symbol table entry, node's terminal or nonterminal information.
 - b. Symbol Table structure: Two layers of hashing are used. In first layer, functions and global scope are stored which further points to local hash table for that scope which contains the variables declared within that scope.
 - c. Data structure for global variables: Hashing is used to stored the global variables.
 - d. Record type expression structure: Linked list is used. Variable type and its name is stored in each node of linked list. For each record, a different linked list is maintained.
 - e. Input parameters type structure: Input parameters are stored in a linked list for each function.
 - f. Output parameters type structure: Output parameters are stored in a linked list for each function.
 - g. Structure for maintaining the three address code (if created): _____
 - h. Any other interesting data structure used _____
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8. Semantic Checks: Mention your scheme NEATLY for testing the following major checks

- a. Variable not Declared: ___ if its entry is not in symbol table then it is not declared _____
- b. Multiple declarations: ___ if entry already exists in the symbol table _____
- c. Number and type of input and output parameters: _____
- d. assignment of value to the output parameter in a function: _____ a flag is maintained for each output parameter, whether it is being assigned or not _____
- e. function call semantics: _____ compare the symbol table entry scope parameters with the current function scope parameters _____
- f. type checking: _____ type of the variable is taken from the symbol table and then compared with the type of the other variable _____
- g. return semantics: ___ symbol table is being used to match the return type and expected return type ___
- h. Recursion : ___ if the symbol table entry already exists within the scope of this function, then report an error _____
- i. function overloading: ___ if the symbol table entry already exists, then report an error _____
- j. 'while' loop semantics: _____
- k. record data type semantics and type checking of record type variables: _____ symbol table entry is being used for that record. _____
- l. register allocation: _____
- m. Scope of variables and their visibility: _____ scope is being handled in symbol table for each function _

9. Compilation Details:

- a. Makefile works (yes/No): _____ yes _____
- b. Code Compiles (Yes/ No): _____ yes _____
- c. Mention the .c files that do not compile:
- d. Any specific function that does not compile:
- e. Ensured the compatibility of your code with the specified gcc version(yes/no) _____ yes _____

10. Driver Details: Does it take care of the options specified earlier?(yes/no): _____ yes _____

11. Specify the language features your compiler is not able to handle (in maximum one line)

12. Are you availing the lifeline (Yes/No): _____ NO

13. Write exact command you expect to be used for executing the code.asm using NASM simulator

14. Strength of your code(Tick the boxes where applicable):

(a) correctness ☐ (b) completeness ☐ (c) robust ☐ (d) Well documented ☐ (e) readable ☐ (f) strong data structure ☐ (f) Good programming style (indentation, avoidance of goto stmts etc) ☐ (g) modular ☐ (h)space and time efficient☐

_____ALL OF THE ABOVE_____

15. Any other point you wish to mention: _____

16. Declaration: We, Shubham Lather, Devyash Parihar, Aniruddha Karve, and Rahul Khandelwal (your names) declare that we have put our genuine efforts in creating the compiler project code and have submitted the code developed by us. We have not copied any piece of code from any source. If our code is found plagiarized in any form or degree, we understand that a disciplinary action as per the institute rules will be taken against us and we will accept the penalty as decided by the department of Computer Science and Information Systems, BITS, Pilani.

Date: 14 April 2019

(Not to exceed beyond 3 pages)