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Question Paper Code : 52385

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017
Sixth Semester
Computer Science and Engineering
CS2352 – PRINCIPLES OF COMPILER DESIGN
(Regulations 2008)
(Common to PTCS2352 — Principles of Compiler Design for B.E. (Part -Time) Fifth Semester – CSE – Regulations 2009)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. List the cousins of compiler.
2. Write regular expressions for identifier and number.
3. Eliminate left recursion in the following grammar S->Aa | b, A->Ac | Sd | ε .
4. What is called Dangling References ?
5. Translate the arithmetic expression a* – (a + c) into a syntax tree.
6. Define synthesized attribute and inherited attribute.
7. What are the uses of register and address descriptors in code generation ?
8. What is the importance of Next use information ?
9. Define global data flow analysis.
10. What is called Loop unrolling ?

PART – B **(5×16=80 Marks)**

11. a) i) Explain in detail about the various phases of compiler. **(12)**
    ii) Describe about compiler construction tools. **(4)**

    (OR)

    b) Convert the given regular expression (a | b)* abb (a | b)* into minimized DFA. **(16)**

12. a) In the following context-free grammar, the symbols (, a,) and, are terminals and S is the initial symbol.

$S \rightarrow (L)$

$S \rightarrow a$

$L \rightarrow L, S$

$L \rightarrow S$

i) Calculate the closure of the LR (1) item $\{S \rightarrow (.L) \mid \$\}$. (4)

ii) Construct the LR(1) parsing table and parse (a, a). (12)

(OR)

b) i) Find first and follow for the following grammar. (8)

$E \rightarrow E + T \mid T$

$T \rightarrow TF \mid F$

$F \rightarrow F^* \mid a \mid b$

ii) Write short notes on stack and heap storage allocation strategies. (8)

13. a) i) Discuss in detail about the various ways to implement three address code. (8)

ii) Explain about the various parameter passing methods in procedure calls. (8)

(OR)

b) i) Generate three address code for the following statement. (4)

a [i] = b [i] + c [j]

ii) Write the Syntax directed definition for flow of control statements. (12)

14. a) i) With neat diagram discuss about the various fields of activation records. (8)

ii) Define Basic block and write the algorithm to partition three address code to basic blocks. (8)

(OR)

b) i) Explain in detail about the code generator algorithm. (8)

ii) Construct the DAG for the basic block. (8)

d : = b * c

e : = a + b

b : = b * c

a : = a + b

15. a) Discuss in detail about loop optimization and peephole optimization. (16)

(OR)

b) Explain in detail about the global data flow analysis. (16)