

Code No: RR411201

RR

Set No. 2

IV B.Tech I Semester Examinations, November 2010
LANGUAGE PROCESSORS
Information Technology

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
 All Questions carry equal marks

1. (a) Explain any two machine dependent code optimization techniques. [8]
 (b) What is a DAG. Explain its application. [8]
2. (a) Write regular expressions and NFA for the following patterns. Use auxiliary definitions where convenient.
 i. The set of words having a,e,i,o,u appearing in that order , although not necessarily consecutively. [5]
 ii. Comments as in C. [5]
 (b) What is the difference between pass and a phase. [6]
3. (a) The grammar $S \rightarrow aSa|aa$ generates all even length strings of a's except for the empty string-show that the brute force method of top down parsing succeeds of 2,4 and 8a's but fails on 6a's. Also find out what are the even strings that are passed by the technique. [8]
 (b) What is an LL(1) grammar. Can you convert every context free grammar into LL(1). [8]
4. (a) Explain all the data structures used for designing the macro preprocessor. [8]
 (b) Formulate an algorithm for processing Macro Definition. [8]
5. (a) What are self-organizing lists. How this can be used to organize a symbol table. Explain with an example. [8]
 (b) Explain the process of organizing a symbol table for a block structured language. [8]
6. (a) What is a flow graph. Explain how flow graph can be constructed for a given program. [10]
 (b) Compare the various forms of three address code. [6]
7. (a) Construct SLR parse table for the following grammar
 $S \rightarrow Aa|bAc|dc|bda$
 $A \rightarrow d$.
 (b) Distinguish SLR, LALR grammar. [10+6]
8. (a) What is type checker? The grammar for expression is given below. Write translation schemes for type checking of expression.
 $E \rightarrow \text{literal}$

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 $E \rightarrow \text{num}$ $E \rightarrow \text{id}$ $E \rightarrow E_1 \text{ mod } E_2$ $E \rightarrow E_1[E_2]$ $E \rightarrow E_1$

[8]

- (b) The grammar for statements is given below. Write translation schemes for checking the type of statements. $S \rightarrow \text{id}:=E$

 $S \rightarrow \text{if } E \text{ then } S_1$ $S \rightarrow \text{While } E \text{ do } S_1$ $S \rightarrow S_1; S_2$

[8]

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Set No. 4

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Information Technology

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
 All Questions carry equal marks

1. (a) What are self-organizing lists. How this can be used to organize a symbol table. Explain with an example. [8]
 (b) Explain the process of organizing a symbol table for a block structured language. [8]
2. (a) Construct SLR parse table for the following grammar
 $S \rightarrow Aa|bAc|dc|bda$
 $A \rightarrow d$.
 (b) Distinguish SLR, LALR grammar. [10+6]
3. (a) Explain all the data structures used for designing the macro preprocessor. [8]
 (b) Formulate an algorithm for processing Macro Definition. [8]
4. (a) What is type checker? The grammar for expression is given below. Write translation schemes for type checking of expression.
 $E \rightarrow \text{literal}$
 $E \rightarrow \text{num}$
 $E \rightarrow \text{id}$
 $E \rightarrow E_1 \text{ mod } E_2$
 $E \rightarrow E_1[E_2]$
 $E \rightarrow E_1$ [8]
 (b) The grammar for statements is given below. Write translation schemes for checking the type of statements. $S \rightarrow \text{id}:=E$
 $S \rightarrow \text{if } E \text{ then } S_1$
 $S \rightarrow \text{While } E \text{ do } S_1$
 $S \rightarrow S_1; S_2$ [8]
5. (a) Write regular expressions and NFA for the following patterns. Use auxiliary definitions where convenient.
 i. The set of words having a,e,i,o,u appearing in that order, although not necessarily consecutively. [5]
 ii. Comments as in C. [5]
 (b) What is the difference between pass and a phase. [6]
6. (a) Explain any two machine dependent code optimization techniques. [8]
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7. (a) The grammar $S \rightarrow aSa|aa$ generates all even length strings of a's except for the empty string-show that the brute force method of top down parsing succeeds of 2,4 and 8a's but fails on 6a's. Also find out what are the even strings that are passed by the technique. [8]
- (b) What is an LL(1) grammar. Can you convert every context free grammar into LL(1). [8]
8. (a) What is a flow graph. Explain how flow graph can be constructed for a given program. [10]
- (b) Compare the various forms of three address code. [6]

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 $S \rightarrow Aa|bAc|dc|bda$
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 (b) Distinguish SLR, LALR grammar. [10+6]
2. (a) What is a flow graph. Explain how flow graph can be constructed for a given program. [10]
 (b) Compare the various forms of three address code. [6]
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 ii. Comments as in C. [5]
 (b) What is the difference between pass and a phase. [6]
7. (a) What is type checker? The grammar for expression is given below. Write translation schemes for type checking of expression.
 $E \rightarrow \text{literal}$
 $E \rightarrow \text{num}$
 $E \rightarrow \text{id}$
 $E \rightarrow E_1 \text{ mod } E_2$

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$$E \rightarrow E_1[E_2]$$

$$E \rightarrow E_1$$

[8]

- (b) The grammar for statements is given below. Write translation schemes for checking the type of statements. $S \rightarrow \text{id}:=E$

$$S \rightarrow \text{if } E \text{ then } S_1$$

$$S \rightarrow \text{While } E \text{ do } S_1$$

$$S \rightarrow S_1; S_2$$

[8]

8. (a) Explain all the data structures used for designing the macro preprocessor. [8]
(b) Formulate an algorithm for processing Macro Definition. [8]

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Set No. 3

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 $S \rightarrow Aa|bAc|dc|bda$
 $A \rightarrow d$.
 (b) Distinguish SLR, LALR grammar. [10+6]
2. (a) What is a flow graph. Explain how flow graph can be constructed for a given program. [10]
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4. (a) What is type checker? The grammar for expression is given below. Write translation schemes for type checking of expression.
 $E \rightarrow \text{literal}$
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 $E \rightarrow E_1[E_2]$
 $E \rightarrow E_1$ [8]
 (b) The grammar for statements is given below. Write translation schemes for checking the type of statements. $S \rightarrow \text{id}:=E$
 $S \rightarrow \text{if } E \text{ then } S_1$
 $S \rightarrow \text{While } E \text{ do } S_1$
 $S \rightarrow S_1; S_2$ [8]
5. (a) The grammar $S \rightarrow aSa|aa$ generates all even length strings of a's except for the empty string-show that the brute force method of top down parsing succeeds of 2,4 and 8a's but fails on 6a's. Also find out what are the even strings that are passed by the technique. [8]
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6. (a) Explain all the data structures used for designing the macro preprocessor. [8]

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- (b) Formulate an algorithm for processing Macro Definition. [8]
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