BTS-VI(S.S)-11-22-1109 Reg. No. | | | | | | | | | |

B

B.Tech. Degree VI Semester Special Supplementary Examination November 2022

CS 19-202-0602 COMPILER CONSTRUCTION

(2019 *Scheme*)

Time: 3 Hours Maximum Marks: 60

Course Outcomes

On successful completion of the course, the students will be able to:

CO1: Summarize the functionality of each phase involved in compilation process.
CO2: Develop scanner and parser using lex and yacc tools.
CO3: Design top down parsers including recursive descent parser and non-recursive predictive parser for CFGs.
CO4: Design bottom up parsers including shift reduce, operator precedence and LR parsers (SLR, CLR and LALR).
CO5: Explain Syntax directed translation using S-attributed definition and L-attributed definition.
CO6: Familiarize specification for a type checker and run time environment.
CO7: Comprehend different representations of intermediate code.
CO8: Describe various code optimization techniques to improve the performance of a program and learn code generation techniques.

Bloom's Taxonomy Levels (BL): L1 – Remember, L2 – Understand, L3 – Apply, L4 –Analyze, L5 – Evaluate, L6 – Create

PO – Programme Outcome

PART A

(Answer *ALL* questions)

			(8 × 3 = 24) Marks	BL	CO	PO
I.	(a)	Explain with a suitable example, how token can be specified in compiler.	3	L3	1	1
	(b)	Briefly write about lex tool used in lexical analyzer design.	3	L1	2	1,3,5
	(c)	Discuss the process of handle pruning with an example.	3	L3	4	1,2,3
	(d)	What are the drawbacks of top-down parsing? How are they solved?	3	L2	3	1,2,3
	(e)	Differentiate between synthesized and inherited attributes with suitable examples.	3	L3	5	1
	(f)	What is dependency graph? Draw and explain the dependency graph for the string int id1,id2,id3.	3	L2	5	1
	(g)	What are the different criteria for code improving transformations?	3	L1	8	1
	(h)	What are the different issues in the design of code generator?	3	L1	8	1

PART B

(4 × 12 = 48)

II.	Explain the different phases of compiler with a neat diagram. Illustrate the internal representation of the following statement after each phase a = b*c+60.	12	L3	1	1
	OR				
III.	What is the roll of transition diagram in the construction of lexical analyzer? Draw and explain the transition diagram for an identifier.	12	L2	1	1
IV.	Construct the predictive parsing table for the following grammar $S \rightarrow A$ $A \rightarrow Ab \mid aD$ $b \rightarrow bBC \mid f$ $C \rightarrow g$	12	L6	3	1,2,3
	OR				

(P.T.O.)

		Marks	BL	CO	PO
V.	Explain how validity of the string id+id*id+id is verified using operator precedence parsing algorithm. Given grammar is E --> E+E/ E*E / id.	12	L3	4	1,2,3
VI.	Describe different storage allocation strategies.	12	L1	6	1
	OR				
VII.	What is type checking? Explain type checking of expressions, statements and functions.	12	L2	6	1
VIII.	Explain the principal sources of optimization in a code. Illustrate with an example.	12	L3	8	1
	OR				
IX.	What is three address code? Explain different three address code statements with suitable examples.	12	L2	7	1

Bloom's Taxonomy Levels
L1= 17.5%, L2=35%, L3=37.5%, L6=10%

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