Kafrelsheikh University
Faculty of Engineering

Electrical Engineering Dept.

Year: 3rd Elec. (Computers & Systems)

Subject: Compilers

1.623

Date: 3 /1/2018

Time allowed: 2 hours

Full Mark: 90

Final Term Exam

Answer as much as you can:

Question [1]: (35 marks) [ILOs: a1,a3,a4,b1,b3,c1,c3]

- a) What is a compiler? State the compiler phases. Explain by diagram.
- b) What are the different kinds of errors encountered during compilation?
- c) What is the major stages in compilation?
- d) Define the following: Basic blocks and flow graphs.
- e) What is happen when applying the three address code on the following expression: Exp = (a+a*(b-c))+d*(b-c)

Question [2]: (30 marks) [ILOs: a1,a3,a4,b1,b3,c1,c3]

Write True (T) or False (F) for the following:

- 1) Parsers do not parse the whole code if some errors exist in the program.
- 2) Semantic analysis is the second phase of a compiler.
- 3) The semantic analyzer breaks these syntaxes into a series of tokens, by removing any whitespace or comments in the source code.
- 4) A lexical analyzer reads the source code line by line.
- 5) Lexemes are said to be a sequence of characters alphanumeric in a token.
- 6) There are some predefined rules for every lexeme to be identified as a valid token.
- 7) CFG is a helpful tool in describing the syntax of programming languages.
- 8) The lexical analyzer works closely with the syntax analyzer.
- 9) If the lexical analyzer finds a token invalid, it generates an error.
- 10) Semantic analyzer keeps track of identifiers, their types and expressions.
- 11) Lexical Analyzer is used for grouping up of characters into token.
- 12) Compiler can convert source code into executable file.
- 13) In Short, Syntax Analysis Generates Parse Tree.
- 14) Last phase of compiler is semantic analyzer.
- 15) Syntax analyzer checks whether the parse tree constructed follows the rules of language.

Question [3]: (25 marks) [ILOs: a1,a3,a4,b1,b3,c1,c3]

Select the suitable answer from the following

- 1) Lexemes can be referred to as:
 - a) elements of lexicography
- b) sequence of alphanumeric characters in a token

c) lexical errors

d) none of the mentioned

انظر خلف الورقة: (تابع السؤال الثالث)

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2) If the lexical analyse	ll analyser finds a lexeme with the same name as that of a reserved word, it					
	a) overwrites the wor	d b) overwrites the functionality					
	c) generates an error	d) something else					
3) The output of the lex	ical and syntax analyzer can stated as:					
	a) parse stream, parse tree b) token tree, parse tree						
	c) token stream, parse	e tree d) all of the mentioned					
4)	Which phase of compiler includes Lexical Analysis?						
-	a) 1 b) 2	c) 3	d) It	s primary function	n, not in any 1	phase	
5)	Which of the following characters are ignored while lexical analysis?						
~	a). b) =		c)#	d) White	Space		
6)	The action of parsing	the source co	de into proj	per syntactic clas	ses is known a	as:	
	a) Parsing			b) Interpretatio			
	c) Lexicography		and the second	d) Lexical Ana	lysis		
7)	Which of the following is the task of lexical analysis?						
	a) To build the uniform	n symbol tab	le	b) To initialize	the variables		
•	c) To organize the var	iables in a lex	cical order	d) None of the	mentioned		
8)	The scanner outputs:						
	a) Stream of tokens			b) Image file			
•	c) Intermediate code			d) Machine cod	le		
9)	9) The phase of compilation which involves type checking is:						
	a) Parsing			b) Scanning			
	c) Syntax directed tran			d) Semantic An	alyzer		
10	0) The process of forming tokens from an input stream of characters is called						
	a) Liberalisation			b) Characterisat			
	c) Tokenization			d) None of the r	nentioned		
11)	When expression sum	=3+2 is token	nized then v	what is the token	category of 3		
	a) Identifier			b) Assignment of	perator		
4.0	c) Integer Literal			d) Addition Ope	rator		
12)	Which grammar defin	es Lexical Sy	ntax				
	a) Regular Grammar	· ·		b) Syntactic Gra	mmar		
	c) Context free Gramm			d) Lexical Gram	mar		
13)	Two Important lexical	categories ar	e				
	a) White Space			b) Comments			
1.1	c) None of the mention			d) White Space of	& Comments		
14)) It has encoded within it information on the possible sequences of characters that can be						
•	contained within any o	t the tokens i	t handles .A	bove motioned f	unction is per	formed by	
	a) Scanner			b) Parser	•	•	
	c) Syntactic Analyser		1.	d) All of the men	ıtioned		
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	تابع السؤال الثالث					
15) What goes over the characters of the lexeme to produce	ce a value?					
a) Scanner b) Para	ser					
	cical generator					
16) The output of a lexical analyzer is						
	ermediate Code					
	se Tree					
	Which of the following is a phase of a compilation process?					
a) Lexical Analysis b) Coo	de Generation					
, 20011 01 011	ne of the mentioned					
18) A series of statements explaining how the data is to be	e processed is called					
a) Assembly b) Machine c) COBOL	d) Program					
19) Assembler is a program that						
a) Puts programs into memory and executes them						
b) Translates the assembly language into machine language						
c) Writes in high level language and produces an object program						
d) None of the mentioned						
20) Compiler can diagnose						
	b) Logical errors only					
	d) None of the mentioned					
1) A programmer by mistake writes multiplication instead of division, such error can be						
detected by a/an						
a) Compiler	b) Interpreter					
c) Compiler or interpreter test	d) None of the mentioned					
22) Select a Machine Independent phase of the compiler	ect a Machine Independent phase of the compiler					
	b) Intermediate Code generation					
c) Lexical Analysis	d) All of the mentioned					
23) By whom is the symbol table created?						
	b) programmer					
c) Assembler	d) None of the mentioned					
24) What does a Syntactic Analyser do?						
w, 1.2022200222 ~ J ====	b) Collect type of information					
c) Create parse tree	d) None of the mentioned					
25) Semantic Analyser is used for?						
a) Generating Object code	b) Maintaining symbol tabl					
c) Generating Object code & Maintaining symbol table	le d) None of the mentioned					
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