Kafrelsheikh University

Faculty of Engineering

Electrical Engineering Dept.

Year: 3rd Elec. (Computers & Systems)   Subject: Compilers

Date: 9 /1/2019

Time allowed: 2 hours

Full Mark: 90

Final Term Exam: 3 pages

Answer as much as you can:

Question [1]: (30 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) Compare between compilers and interpreters.

e) Write a Transition table and draw a transition graph of DFA :
$M=(\{0,1,2,3\},\{a,b\},move,0,\{3\})$,   Move: $m(0,a)=1$, $m(0,b)=2$, $m(1,a)=3$, $m(1,b)=2$, $m(2,a)=1$, $m(2,b)=3$, $m(3,a)=3$, $m(3,b)=3$

Question [2]: (60 marks) [ILOs: a1,a3,a4,b1,b3,c1,c3]

أجب عن هذا السؤال بالورقة المخصصة لذلك والموجودة فى نهاية كراسة الإجابة

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

1) A lexical analyzer reads the source code line by line.

2) Lexemes are said to be a sequence of characters alphanumeric in a token.

3) There are some predefined rules for every lexeme to be identified as a valid token.

4) CFG is a helpful tool in describing the syntax of programming languages.

5) The lexical analyzer works closely with the syntax analyzer.

6) If the lexical analyzer finds a token invalid, it generates an error.

7) Semantic analyzer keeps track of identifiers, their types and expressions.

8) Lexical Analyzer is used for grouping up of characters into token.

9) Compiler can convert source code into executable file.

10) In Short, Syntax Analysis Generates Parse Tree.

11) Last phase of compiler is semantic analyzer.

12) Syntax analyzer checks whether the parse tree constructed follows the rules of language.

13) Parsers do not parse the whole code if some errors exist in the program.

14) Semantic analysis is the second phase of a compiler.

15) The semantic analyzer breaks these syntaxes into a series of tokens, by removing any whitespace or comments in the source code.

- ### Select the suitable answer from the following

16) 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

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17) Which grammar defines Lexical Syntax
   a) Regular Grammar   b) Syntactic Grammar
   c) Context free Grammar   d) Lexical Grammar

18) Two Important lexical categories are
   a) White Space   b) Comments
   c) None of the mentioned   d) White Space & Comments

19) It has encoded within it information on the possible sequences of characters that can be contained within any of the tokens it handles .Above motioned function is performed by?
   a) Scanner   b) Parser
   c) Syntactic Analyser   d) All of the mentioned

20) If the lexical analyser finds a lexeme with the same name as that of a reserved word, it
   a) overwrites the word   b) overwrites the functionality
   c) generates an error   d) something else

21) The output of the lexical and syntax analyzer can stated as:
   a) parse stream, parse tree   b) token tree, parse tree
   c) token stream, parse tree   d) all of the mentioned

22) Which phase of compiler includes Lexical Analysis?
   a) 1   b) 2   c) 3   d) Its primary function, not in any phase

23) Which of the following characters are ignored while lexical analysis?
   a) .   b) =   c) #   d) WhiteSpace

24) The action of parsing the source code into proper syntactic classes is known as:
   a) Parsing   b) Interpretation analysis
   c) Lexicography   d) Lexical Analysis

25) Which of the following is the task of lexical analysis?
   a) To build the uniform symbol table   b) To initialize the variables
   c) To organize the variables in a lexical order   d) None of the mentioned

26) The scanner outputs:
   a) Stream of tokens   b) Image file
   c) Intermediate code   d) Machine code

27) The phase of compilation which involves type checking is:
   a) Parsing   b) Scanning
   c) Syntax directed translation   d) Semantic Analyzer

28) The process of forming tokens from an input stream of characters is called
   a) Liberalisation   b) Characterisation
   c) Tokenization   d) None of the mentioned

29) When expression **sum=3+2** is tokenized then what is the token category of **3**
   a) Identifier   b) Assignment operator
   c) Integer Literal   d) Addition Operator

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30) A series of statements explaining how the data is to be processed is called
   a) Assembly   b) Machine   c) COBOL   d) Program
31) 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
32) Compiler can diagnose
   a) Grammatical errors only   b) Logical errors only
   c) Grammatical and logical errors   d) None of the mentioned
33) 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
34) Select a Machine Independent phase of the compiler
   a) Syntax Analysis   b) Intermediate Code generation
   c) Lexical Analysis   d) All of the mentioned
35) Who create the symbol table?
   a) Compiler   b) programmer
   c) Assembler   d) None of the mentioned
36) What does a Syntactic Analyzer do?
   a) Maintain Symbol Table   b) Collect type of information
   c) Create parse tree   d) None of the mentioned
37) Semantic Analyzer is used for.
   a) Generating Object code   b) Maintaining symbol table
   c) Generating Object code & Maintaining symbol table   d) None of the mentioned
38) What goes over the characters of the lexeme to produce a value?
   a) Scanner   b) Parser
   c) Evaluator   d) Lexical generator
39) The output of a lexical analyzer is
   a) Machine Code   b) Intermediate Code
   c) Stream of Token   d) Parse Tree
40) Which of the following is a phase of a compilation process?
   a) Lexical Analysis   b) Code Generation
   c) Both of the mentioned   d) None of the mentioned

With my best wishes <<<<<<<<<<<< & & & >>>>>>>>>>>>> **Dr.Eng.: Tamer Medhat**

==== انتهت الأسئلة ====

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