BINUS University

Academic Career: ***Undergraduate / ~~Master~~ / ~~Doctoral~~ *)***			**Class Program:** ***~~International~~/Regular/~~Smart Program~~/~~Global Class~~*)***		
☑ **Mid Exam** ☐ **Final Exam** ☐ **Short Term Exam** ☐ **Others Exam : _____**			**Term : Odd/~~Even~~/~~Short~~ *)**		
☑ **Kemanggisan** ☑ **Alam Sutera** ☐ **Bekasi** ☐ **Senayan** ☐ **Bandung** ☐ **Malang**			**Academic Year :** **2021 / 2022**		
Faculty / Dept.	:	School of Computer Science	Deadline	Day / Date :	Rabu / 24 Nov 2021
				Time :	13:00 - 16:20 (200 Menit)
Code - Course	:	COMP6062001 - Compilation Techniques	Class	:	All Classes
Lecturer	:	Team	Exam Type	:	Online
*) *Strikethrough the unnecessary items*					
The penalty for CHEATING is DROP OUT!!!					

Learning Outcomes:

LO 1 : Describe the basic concepts of compilation techniques that include the functions, stages of compilation, the components of the compilation and compiler tool-making , the theory of automata and grammar in a formal language.
LO 2 : Apply the theory of automata, formal language, and the grammar, the concept of compilation techniques to translate a programming language into grammar that recognize input strings.
LO 3 : Apply the theoretical of regular expression, and grammar to construct simple compiler types of compiler in the market.

I. Esai (100 %)

1. **[LO 1 & LO 2, 20 poin]**
   Diketahui RE sebagai berikut: (ab|b*) a*b

   Ditanyakan:
   a. Buatlah *syntax tree* lengkap dengan *firstPos* dan *lastPos*
   b. Buatlah DFA-nya dan gambarkan hasilnya

2. **[LO 1 & LO 2, 20 poin]**
   a. Buatlah ε-NFA untuk RE berikut:
      (a | ba) ? a (b | ab)*
   b. Buatlah CFG untuk RE berikut:
      $(01 \mid 0)^* 1 (10 \mid 0)^+$

Verified by,

[Kenny Jingga] (D6426) and sent to Program on Oct 26, 2021

3. **[LO 1 & LO 2, 20 poin]**
   a. Lakukan *Left Recursion Elimination* untuk *grammar* berikut :
      E à E + T | E – T | T
      T à TF | F
      F à F * | C
      C à a | b

   b. Lakukan *Left Factoring Elimination* untuk *grammar* berikut :
      S à aa | bSeSbS | bSaSb | AbB |ABA
      A à bAA | bBa | a | bAc
      B à b | ε

4. **[LO 1 & LO 2, 10 poin]**
   Lakukan DFA *minimize* untuk DFA berikut :

	0	**1**
àA	F	B
B	G	D
*C	G	E
D	C	B
E	G	B
F	A	B
*G	C	D

5. **[LO 1, LO 2 & LO 3, 30 poin]**
   Diketahui *Grammar* sebagai berikut :
   S à AX
   X à or AX | ε
   A à CY
   Y à and CY | ε
   C à not C | (S) | 0 | 1

   Ditanyakan :
   a. Tentukan *FirstSet* dan *FollowSet*
   b. Buatlah *predictive parsing table*
   c. Lakukan *stack implementation* untuk *string*: **(0 or 1) and 1**

-- Selamat Mengerjakan --

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