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 :** **2020 / 2021**
Faculty / Dept.	: School of Computer Science	Deadline	Day/Date : Kamis / 18 Feb 2021 Time : 13.00
Code - Course	: COMP6062 – Compilation Technics	Class	: All Classes
Lecturer	: Team	Exam Type	: Online
*) *Strikethrough the unnecessary items*			
The penalty for CHEATING is DROP OUT!!!			

Pilih Salah Satu Kombinasi Soal!

Kombinasi A :

Esai (100%)

1. Diketahui *Statement* sbb :

   A = - A + B * (B-C) – C / D + D

   Buatlah :
   a. DAG (10 poin)
   b. *Three Address Code* (5 poin)
   c. *Quadruples* (5 poin)
   d. *Triples* (5 poin)

2. Diketahui produksi sbb :

   E → T | E A T

   T → F | T M F

   F → (E) | int

   A → + |-

   M → * | /

   a. Buatlah diagram transisi *Go To* (10 Poin)
   b. Buatlah SLR *table*-nya (10 poin)
   c. Lakukan *stack implementation* untuk *string* : **3 + 16 / (4 – 2)** (10 poin)

3. (20 Poin) Buatlah *annotated parse tree* untuk *string* : **0101000**
   Dan berapa hasil dari S.*value* ?
   Gunakan *Syntax Directed Translation* berikut :

Production	*Semantic Rules*

Verified by,

Alvina Aulia, S.Kom., M.T.I. (D4554) and sent to Program on Jan 18, 2021

S → List 100 R	List.pos = 3 S.value = (List.value + 4) * $2^{R.Bits}$
R → R_1 0	R.Bits = R_1.Bits + 1
R→Ɛ	R.Bits = 0
List → $List_1$ Bit	$List_1$.pos = List.pos + 1 Bit.pos = List.pos List.value = $List_1$.value + Bit.value
List → Bit	Bit.pos = List.pos List.value = Bit.value
Bit → 0	Bit.value = 0
Bit → 1	Bit.value = $2^{Bit.pos}$

Note: pos = *position*

4. (25 Poin) Diketahui penggalan program sbb :

```
a = 10;
b = 5;
c = 6;
while (b <= 10) {
     if (a <= 10)
          c = b + 4;
     else {
          b = b + 2;
          a = a – 1;
     }

     do{
          a= a + 1 ;
          b = b - 2;
     } while (a%2 == 1);
};
```

Buatlah *code generator* untuk penggalan program di atas.

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Kombinasi B :
Esai (100%)

1. *Intermediate code* (Bobot 25 Poin)
   Diketahui *Statement* sbb :
   A = A - B / C + (B - C) + C * D
   Buatlah :
   a. DAG (10 poin)
   b. *Three Address Code* (5 poin)
   c. *Quadruples* (5 poin)
   d. *Triples* (5 poin)

2. Diketahui produksi sbb :
   A → B | A - C
   B → C | bDe
   C → f | A + C
   D → (A)

   a. Buatlah diagram transisi *Go To* (10 Poin)
   b. Buatlah SLR *table*-nya (10 poin)
   c. Lakukan *stack implementation* untuk *string* : **b (f) e - f** (10 poin)

3. (20 Poin) Buatlah *annotated parse tree* untuk *string* : **4, 2, 6, 3, 8 +**
   Dan berapa hasil dari S.*value* ?
   Gunakan *Syntax Directed Translation* berikut :

Production	*Semantic Rules*
S → A Sign	S.val = A.val; A.sign = Sign.sign; print(A.val);
Sign → +	Sign.sign=1
Sign → -	Sign.sign=0
A → n	A.val = value(n)

A →A_1,n	A_1.sign=A.sign;
	if(A.sign = 1) then
	A.val = max (A_1.val,value(n));
	else
	A.val = min (A_1.val,value(n));

Verified by,

Alvina Aulia, S.Kom., M.T.I. (D4554) and sent to Program on Jan 18, 2021

4. (25 Poin) Diketahui penggalan program sbb :

```
a = 10;
b = 4;
c = 6;
do {
     do{
          a= a - 1 ;
          b = b - 2;
     } while (a%2 == 0)

     if (a >= 10)
          c = b + 4;
     else {
          b = b + 2;
          a = a – 1;
     }
} while (b < 10);
```

Buatlah *code generator* untuk penggalan program di atas.

-- Selamat Mengerjakan --

Verified by,

Alvina Aulia, S.Kom., M.T.I. (D4554) and sent to Program on Jan 18, 2021