

May

WEEK 20

March 2020						
M	30	2	9	16	23	
T	31	3	10	17	24	
W		4	11	18	25	
T		5	12	19	26	
F		6	13	20	27	
S	1	7	14	21	28	

April 2020						
M		6	13	20	27	
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W	1	8	15	22	29	
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May 2020						
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12 Tuesday 133/233

8.00 am

Question #02

8.30

$S \rightarrow BSBB|B|\epsilon$

$B \rightarrow 00|\epsilon$

9.00

Rule 1 \Rightarrow Add new start state

9.30

$S_0 \rightarrow S$

10.00

$S \rightarrow BSBB|B|\epsilon$

$B \rightarrow 00|\epsilon$

10.30

Rule #02 = Remove lambda Production

11.00

$S_0 \rightarrow S|\epsilon$ # (only can add with start state)

11.30

$S \rightarrow BSBB|B|BS|SB|BB$

$B \rightarrow 00$

Noon

Rule #03 \Rightarrow Remove unit Production

12.30

Remove B

$S_0 \rightarrow S|\epsilon$

1.00

$S \rightarrow BSBB|00|BS|SB|BB$

$B \rightarrow 00$

1.30

Remove S

$S_0 \rightarrow BSBB|00|BS|SB|BB|\epsilon$

2.00

$S \rightarrow BSBB|00|BS|SB|BB$

$B \rightarrow 00$

2.30

Rule #04 = V_t Replace with t

3.00

$S_0 \rightarrow BSBB|tC|BS|SB|BB|\epsilon$

3.30

$S \rightarrow BSBB|tC|BS|SB|BB$

$B \rightarrow tC$

4.00

$C \rightarrow \emptyset$

Rule #05 \rightarrow long Rub \odot

4.30

$S_0 \rightarrow XB|tC|BS|SB|BB|\epsilon$

$S \rightarrow XB|tC|BS|SB|BB$

$B \rightarrow tC$

$C \rightarrow \emptyset$

$X \rightarrow BS$

6.00 pm

June 2020						
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July 2020						
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August 2020						
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May

WEEK 21

144/222 Saturday 23

8.00 am Question #03

(a) Prove that following languages are non-CFL

8.30

$$L_1 = \{a^n b^m a^m \mid n, m \geq 0\}$$

9.00

9.30 Let L_1 is CFL and Assume that there could be CFG in CFN

10.00

10.30 Word = $a^n b^m a^m$

11.00

$$= \underbrace{aaaaaa}_{u} \underbrace{bbbbbbbbbb}_{v} \underbrace{aaaaaa}_{x} \underbrace{aaaaaa}_{y} \underbrace{aaaaaa}_{z}$$

11.30

$$\begin{array}{ccccccc} aaaa & aaaa & bbbbbbbbbb & \wedge & aaaaaaaa & & \\ u & v & x & & y & & z \end{array}$$

Noon

Now pumping the word in $u v^2 x y^2 z$

12.30

1.00 $w_1 = aaaa aaaaaa bbbbbbbbbb \wedge aaaaaaaa$

1.30 Still w_1 is the part of the language L_1

2.00 Hence prove w_1 is CFL

2.30

(b) $L_2 = \{a^n b^n a^m \mid n, m \geq 0\}$

3.00

Let L_2 is CFL and Assume that there could be CFG in CFN

3.30

4.00 $L_2 = a^n b^n a^m$

4.30

$$w_2 = \underbrace{aaaaaaaa}_{u} \underbrace{bbbbbb}_{v} \underbrace{aaaaaa}_{x} \underbrace{aaaaaa}_{y} \underbrace{aaaaaa}_{z}$$

5.00

6.00 pm

May

WEEK 21

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24 Sunday 145/221

Eid al Fitr^ Hari Raya Puasa (SG**)

8.00 am

What happen if we pump the word

8.30

9.00 $w = \underbrace{aaaaaaaaa}_u \underbrace{bbbbbbbbbb}_x \underbrace{aaaaaa}_y \underbrace{aa}_z$

9.30

$v = a$

10.00

uv^4xy^4z

10.30

$w = \underbrace{aaaaaaaaa}_u \underbrace{bbbbbbbbbb}_x \underbrace{aaaaaa}_y \underbrace{aa}_z$

11.00

$v = a$

11.30

⑥ $L = \{a^n b^n a^m \mid n, m \geq 0\}$

Noon

12.30

Let L_2 is CFL that could be CFL in CNF

1.00

$w = \underbrace{aaaaaa}_u \underbrace{bbbbbb}_x \underbrace{aaaaaa}_y$

1.30

2.00

$u = aaaaaa$

$v = a$

2.30

$x = bbbbbb$

$y = aaaa$

3.00

$z = aaaaa$

3.30

Now pump the word uv^2xy^2z

4.00

$w = aaaaaa \text{ in } bbbbbb \text{ aaaaaa aaaaaa}$

4.30

After pumping w is still part of the language Hence prove L_2 is CFL

5.00

6.00 pm

May

WEEK 22

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Eid al Fitr^ Hari Raya Puasa Holiday (SG**) Spring Bank Holiday (UK) Memorial Day Holiday (US)

146/220 Monday 25

8.00 am

① $L_3 = \{a^i b^j c^k \mid i = j = k\}$

8.30

9.00

Let L_3 is PFL and could be generated by some CFG in CFL

9.30

10.00

$w = \underbrace{aaaa}_u \underbrace{bbbb}_v \underbrace{cccc}_x \underbrace{zz}_y$

10.30

11.00

$w = uv^2xy^2z$
Now Pumping the word

11.30

$w = aaaaa bbbbbb cccccc c$

Noon

After pumping w is not part of this language

12.30

Hence given L_3 is non-CFL

1.00

1.30

2.00

2.30

3.00

3.30

4.00

4.30

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8.00 am Assignment

Question #01

8.30 $S \rightarrow AB$
 $B \rightarrow BS/b$

9.00 $A \rightarrow a$

9.30 word = abab

10.00 $S \rightarrow AB$ Live production used 2 times
 $S \rightarrow aB$

10.30 $S \rightarrow aBS$
 $S \rightarrow aBAB$

11.00 $S \rightarrow abAB$
 $S \rightarrow abab$

11.30 ① Parse Tree

Noon

12.30

1.00

1.30

2.00

2.30

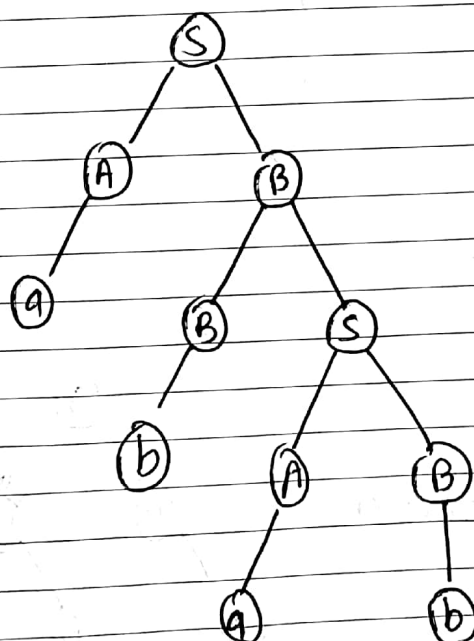
3.00

3.30

4.00

4.30

5.00



② No, A is not self-embedded because
 if find Ancestor we can't find

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20 Wednesday 141/225

U V X Y Z

8.00 am

8.30 (C) Divide the word (abab) into U, V, X, Y, Z with
and isolate its tree along
triangle (S) when

9.00

9.30 (a)

S as self embedded

10.00

10.30

11.00

11.30

Noon

12.30

1.00

1.30

2.00

U = a
V = b
X = ab
Y = a
Z = a

U = a
V = ab
X = ab
Y = a
Z = a

2.30

(d) B as SELF embedded

3.00

3.30

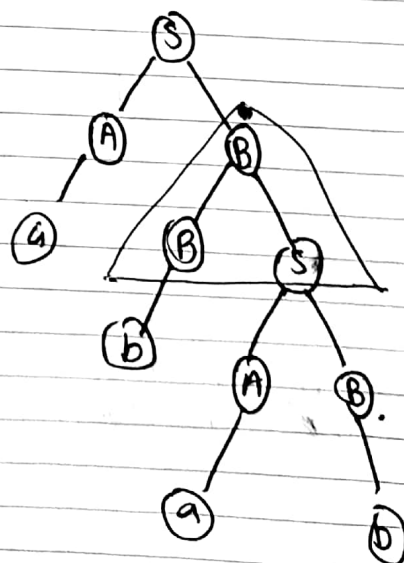
4.00

4.30

5.00

6.00 pm

U = a
V = a
X = b
Y = ab
Z = a



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S	2	9	16	23	30

142/224 Thursday 21

8.00 am

8.30

9.00

9.30

10.00

10.30

11.00

11.30

Noon

12.30

1.00

1.30

2.00

2.30

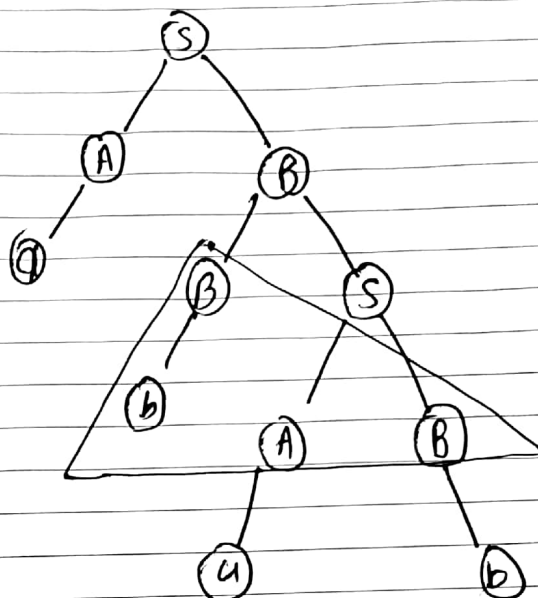
3.00

3.30

4.00

4.30

5.00



$$\begin{array}{l} u = a \\ v = b \\ x = b \\ y = n \\ z = a \end{array}$$

$$\begin{array}{l} u = a \\ v = b \\ x = ab \\ y = n \\ z = n \end{array}$$