Tutorial - 7

DATA STRUCTURE

201B172

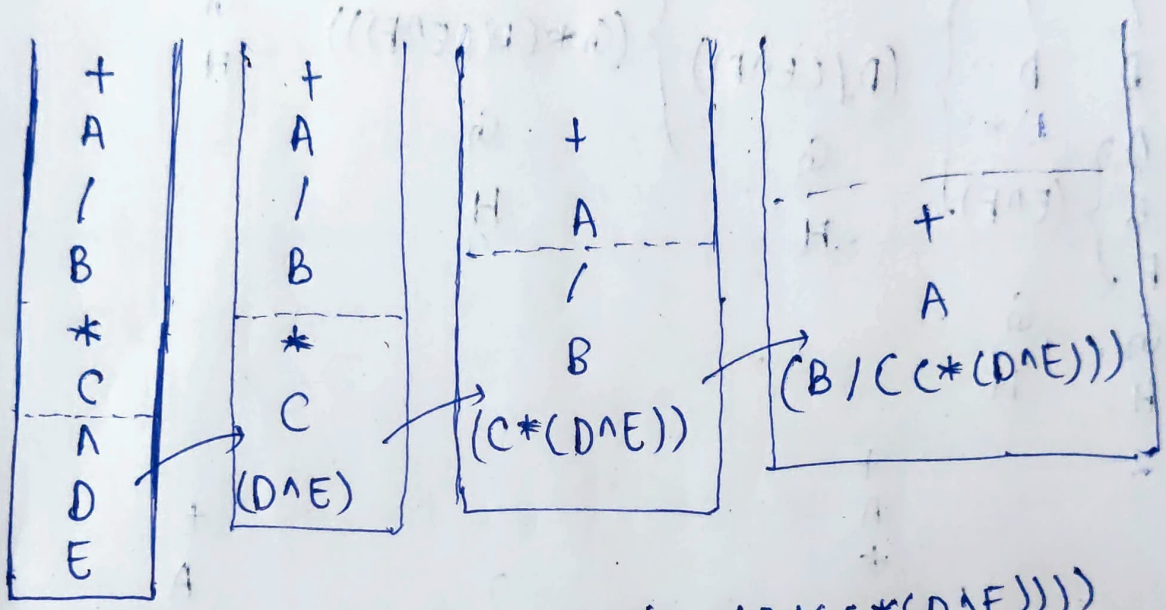
(1) 2, 2, 1, 1, 2

(2) SYEUQTSADNIE

(3)

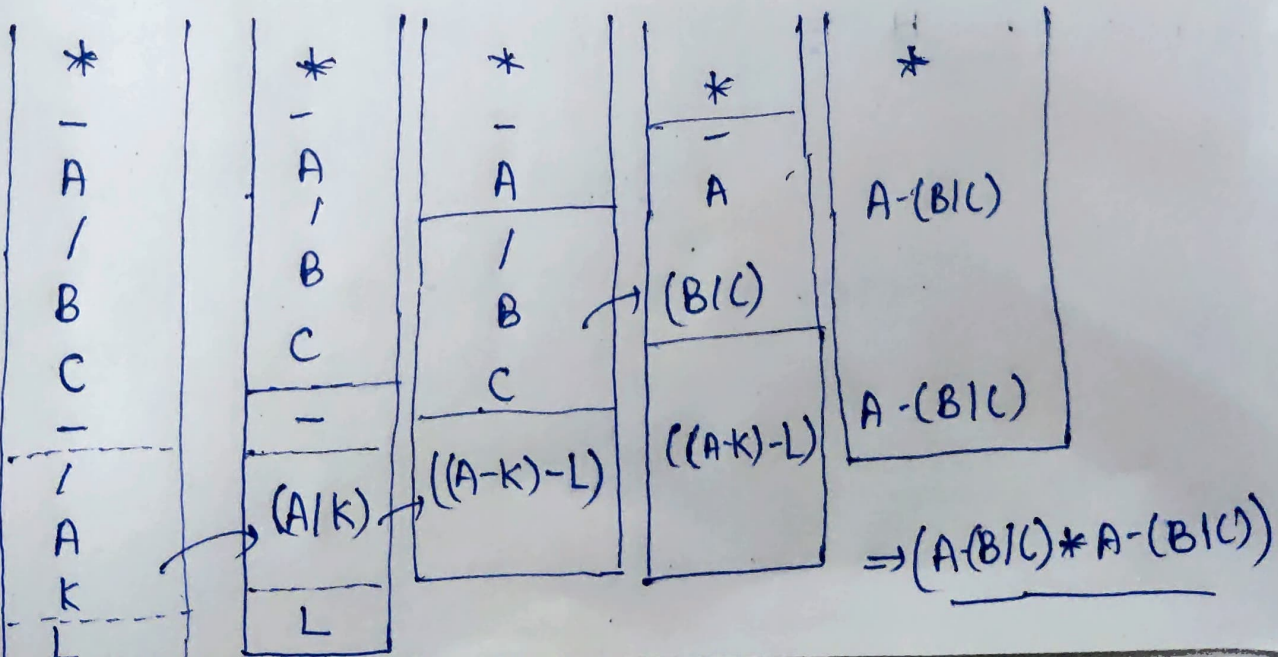
(a) +A/B*C^DE (Prefix to Infix)

↳ reverse → ED^C*B/A+



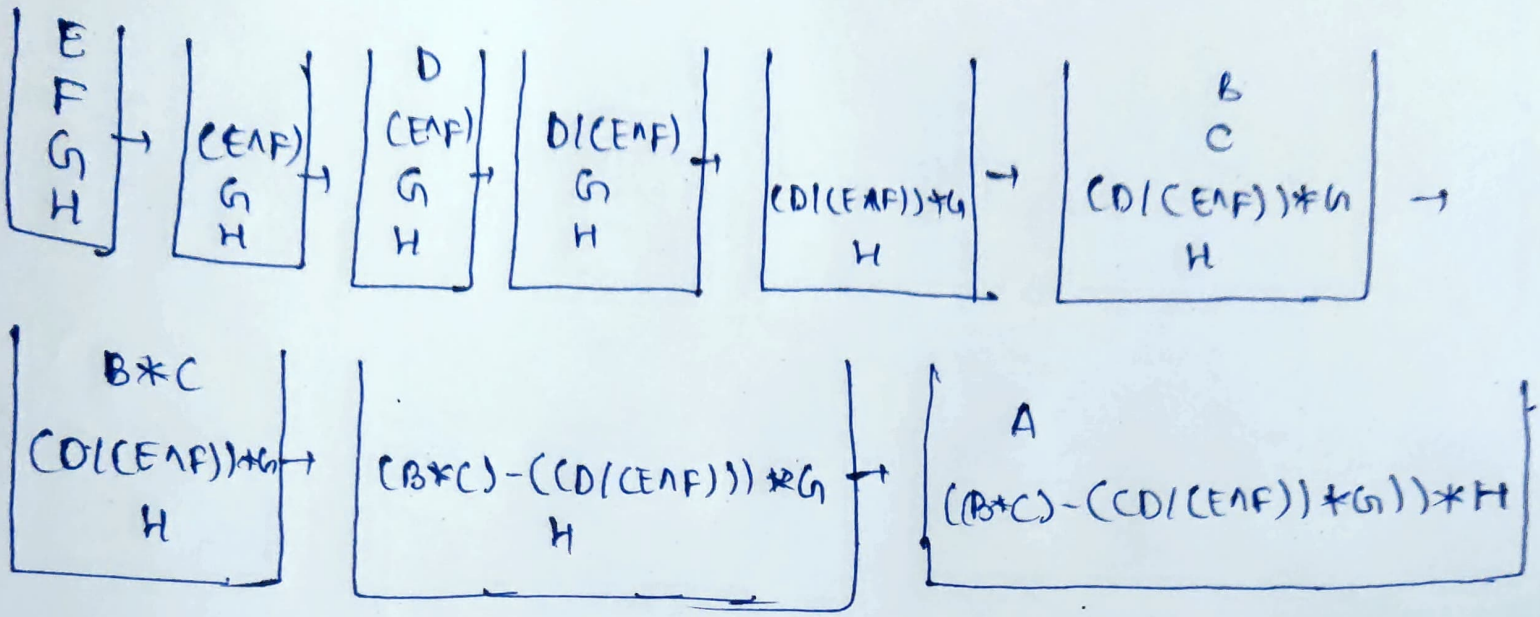
⇒ (A+(B/(C*(D^E))))

(b) *-A/BC-/AKL



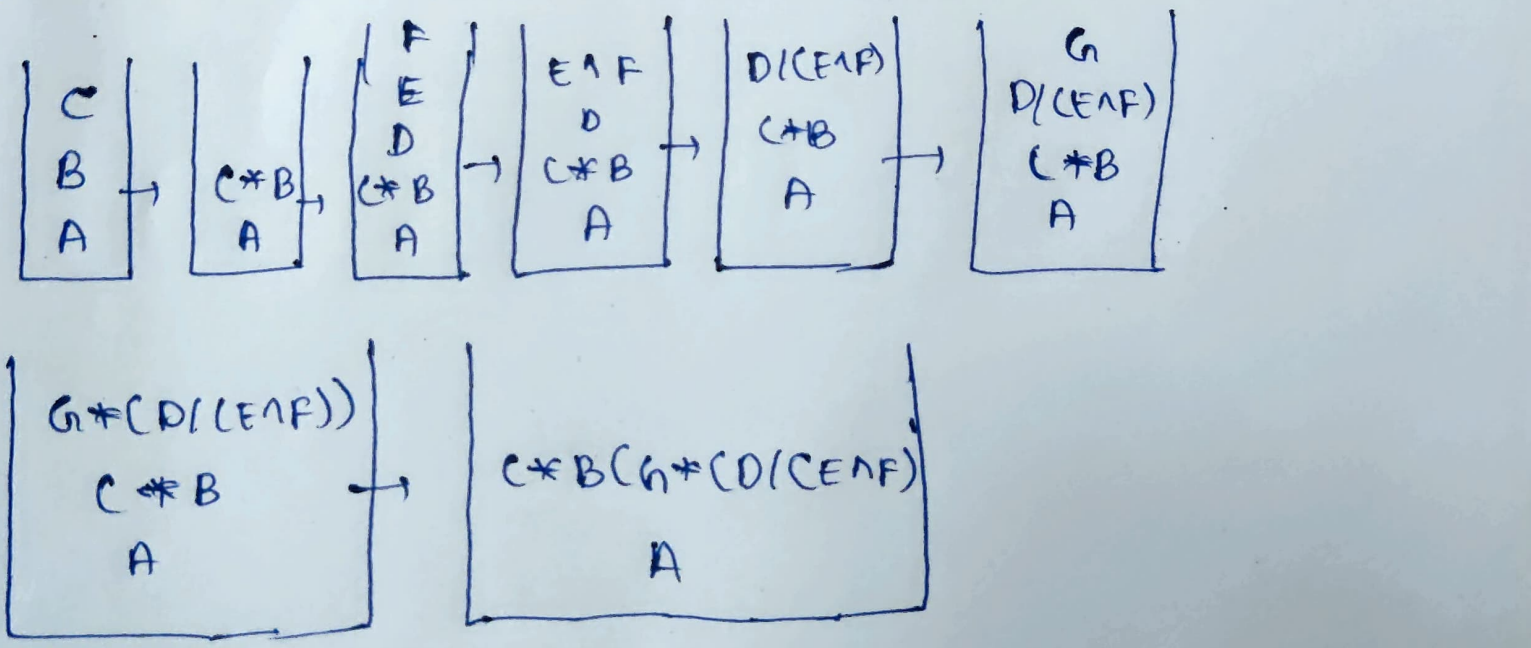
⇒ (A-(B/C)*A-(B/C))

(c) Reverse: HGFE^D/*CB+-*A+



⇒ A+((B*C)-((D/(E^F))*G))*H

(d) ABC*DEF^/G*-H*+



⇒ A+((B*C)-((D/(F^F)*G)*H

(4.)

(a) A*B+C/D/E

expression	stack	Postfix
A		A
*	*	A
B	*	AB
+	+	AB*
C	+	AB*C
/	+/	AB*C
D	+/	AB*CD
/	+/	AB*CD/
E	+/	AB*CD/E
EOE		AB*CD/E/+

expression	Prefix	stack
E	E	
/	E	/
D	ED	/
/	ED/	/
C	ED/C	/
+	ED/C/	+
B	ED/C/B	+
*	ED/C/B	+*
A	ED/C/BA	+*
EOE	ED/C/BA*+	

+*ABC/DE

(b) (A+B^D)/(E-F)+G

Expression	Postfix	Stack
(		(
A	A	(
+	A	(+
B	AB	(+
^	AB	(+^
D	ABD	(+^
)	ABD^+	empty.
/	ABD^+	/
(	ABD^+	/(
E	ABD^+E	/(
-	ABD^+E	/(-
F	ABD^+E-F	/(-
)	ABD^+E-F	/
+	ABD^+E-F/	+
G	ABD^+E-F/G	+
EOE	ABD^+E-F/G+	

G+)F-E(/)D^B+AC

Expression	Prefix	Stack
G	G	
+	G	+
)	G	+)
F	GF	+)
-	GF	+)-
E	GFE	+)-
(	GFE-	+
/	GFE-	+/
)	GFE-	+/()
D	GFE-D	+/)
^	GFE-D	+/)^
B	GFE-DB	+/)^
+	GFE-DB^	+/)+
A	GFE-DB^A	+/)+
(	GFE-DB^A+	+/
EDE	GFE-DB^A+/+	

+/+A^BD-EFG

(C) A + (B * C - (D / E ^ F) * G) * H

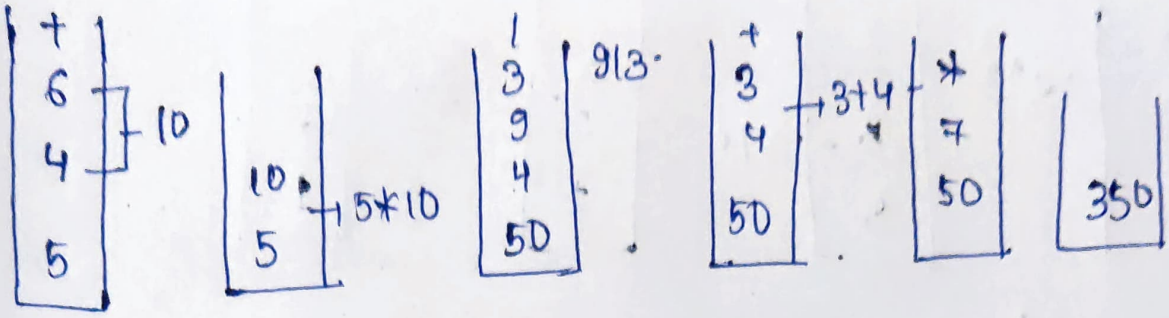
Expression	Postfix	Stack
A	A	
+	A	+
(	A	+(
B	AB	+(
*	AB	+(*
C	ABC	+(*
-	ABC-	+(*
C	ABC-	+(*C
D	ABC-D	+(*C
/	ABC-D	+(*C/
E	ABC-DE	+(*C/
^	ABC-DE	+(*C/^
F	ABC-DEF	+(*C/^
)	ABC-DEF^/	+(*
*	ABC-DEF^/*	+(*
G	ABC-DEF^/*G	+(*
)	ABC-DEF^/*G*	+
*	ABC-DEF^/*G*	+*
H	ABC-DEF^/*G*H	+*
EOE	ABC-DEF^/*G*H*+	

Reverse: H*)G*)F^E/D(-C^B(+A

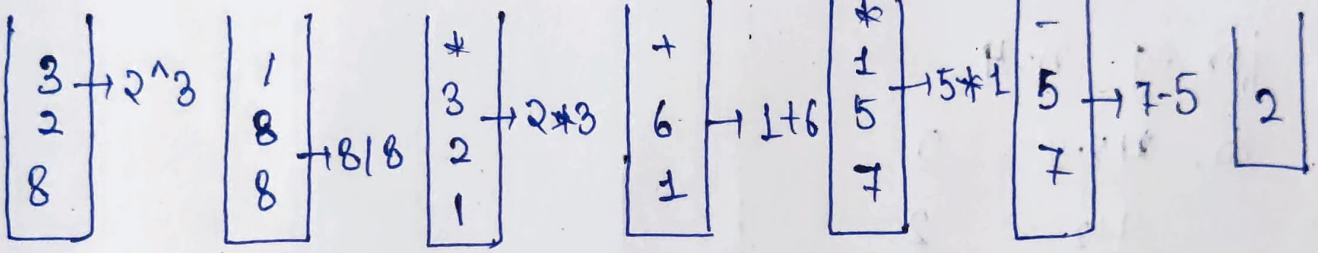
Expression	Prefix	Stack
H	H	empty
*	H	*)
)	H	*)
G	HG	*)
*	HG	*)
)	HG	*)*)
F	HGF	*)*)
^	HGF	*)*)^
E	HGFE	*)*)^
/	HGFE^	*)*)/
D	HGFE^D	*)*)/
C	HGFE^D/	*)*)/
-	HGFE^D/*	*)*
C	HGFE^D/*C	*)-
*	HGFE^D/*C	*)-*
B	HGFE^D/*CB	*)-*
C	HGFE^D/*CB*-	*
+	HGFE^D/*CB*-*	+
A	HGFE^D/*CB*-*A	+
End	HGFE^D/*CB*-*A+	empty

(5)

(a) 5 4 6 + * 4 9 3 / + *

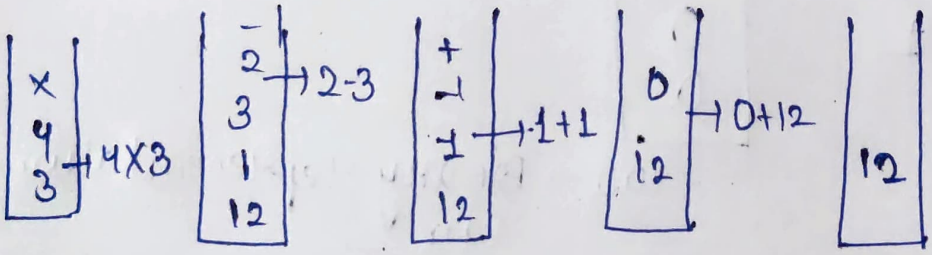


(b) 8 2 3 ^ / 2 3 * + 5 1 * -

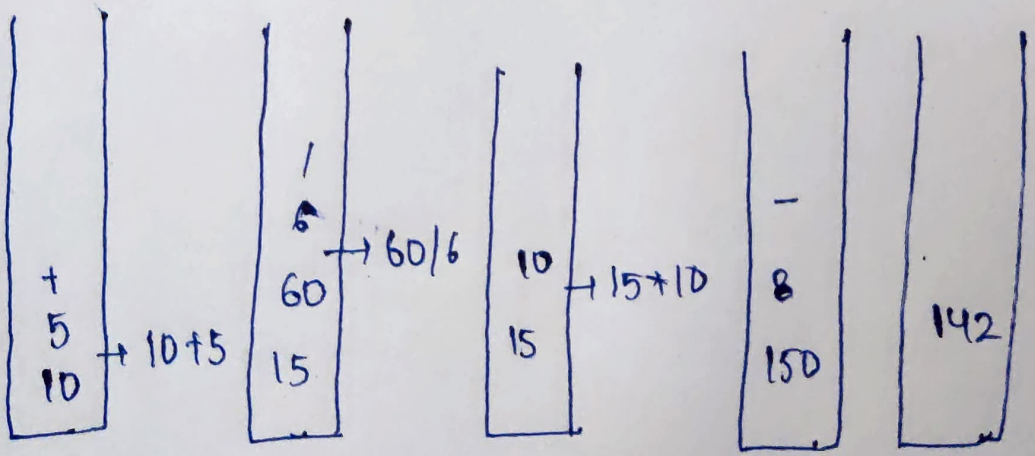


(c) + + - 2 3 / * 4 3

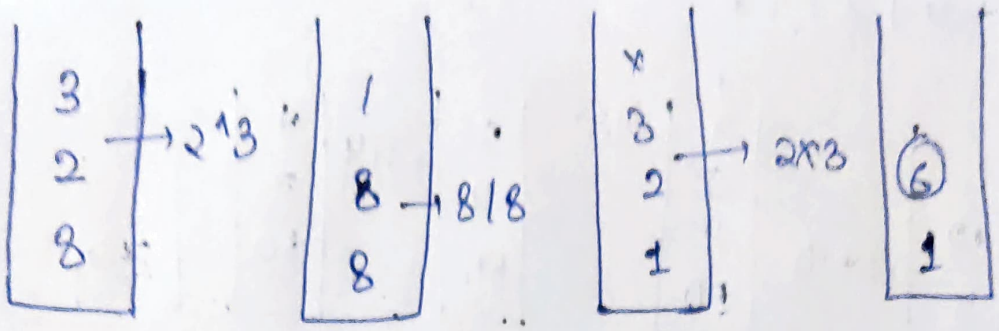
Reverse → 3 4 * / 3 2 - + +



(d) 10 5 + 60 6 / * 8 -



(6)



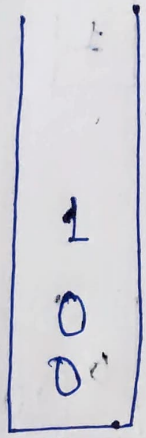
Answer: 6

(7) This algorithm prints binary representation of n

for eg: n=4

So,

4%2	0
4/2	2
2%2	0
2/2	1
1%2	1
1/2	



= 100 → Binary representation of 4.