

Data Structures Final Exam

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Section A

Full Name 10 Characters = KEVINHERMA

1. |KEVINHERMA
K|E VINHERMA
E K|V INHERMA
EK V|I NHERMA
EKI V|N HERMA
EKIN V|H ERMA
EKINH V|E RMA
EKINHE V|R MA
EKINHER V|M A
EKINHERM V|A
EKINHERMAV|
EKINHERM A|V
EKINHER M|A V
EKINHE R|A MV
EKINH E|A RMV
EKIN H|A ERMV
EKI N|A HERMV
EK I|A NHERMV
E K|A INHERMV
E|A KINHERMV
|AEKINHERMV
A|E KINHERMV
A E|K INHERMV
AE K|I NHERMV
AEI K|N HERMV
AEIK N|H ERMV
AEIKH N|E RMV
AEIKHE N|R MV
AEIKHEN R|M V
AEIKHENM R|V
AEIKHENMRV|
AEIKHENM R|V
AEIKHEN M|R V
AEIKHE N|M RV
AEIKH E|M NRV
AEIK H|E MNRV
AEI K|E HMNRV
AE I|E KHMNRV
AE|E IKHMNRV
A|E EIKHMNRV
|AEEIKHMNRV

A|E EIKHMNRV
 A E|E IKHMNRV
 AE E|I KHMNRV
 AEE I|K HMNRV
 AEEI K|H MNRV
 AEEIH K|M NRV
 AEEIHK M|N RV
 AEEIHKM N|R V
 AEEIHKMN R|V
 AEEIHKMN RV|
 AEEIHKMN R|V
 AEEIHKM N|R V
 AEEIHK M|N RV
 AEEIH K|M NRV
 AEEI H|K MNRV
 AEE I|H KMNRV
 AEE|HIKMNRV
 A E|E HIKMNRV
 A|E EHIKMNRV
 | AEEHIKMNRV
 Ascending Order using Bubble sort = AEEHIKMNRV

2. KEVINHERMA|
 KEVINHER M|A
Swap M AND Nearest E
 KEVINHM R|EA
Swap R and E
 KRVINHM|EEA
Swap M and H
 KRVINM|HEEA
Swap M and I
 KRVMN|IHEEA
Swap K and N
 NRVM|KIHEEA
M is Smaller than every letter in the left hand side of the wall.
 NRV|MKIHEEA
Swap V and N
 VR|NMKIHEEA
 V|RNMKIHEEA
 |VRNMKIHEEA
 Descending Order using Selection = VRNMKIHEEA

3. KEVINHERMA|

Read M

KEVINHERM|A

Read R

KEVINHER|AM

Read E

KEVINHE|AMR

Read H

KEVINH|AEMR

Read N

KEVIN|AEHMR

Read I

KEVI|AEHMNR

Read V

KEV|AEHIMNR

Read E

KE|AEHIMNRV

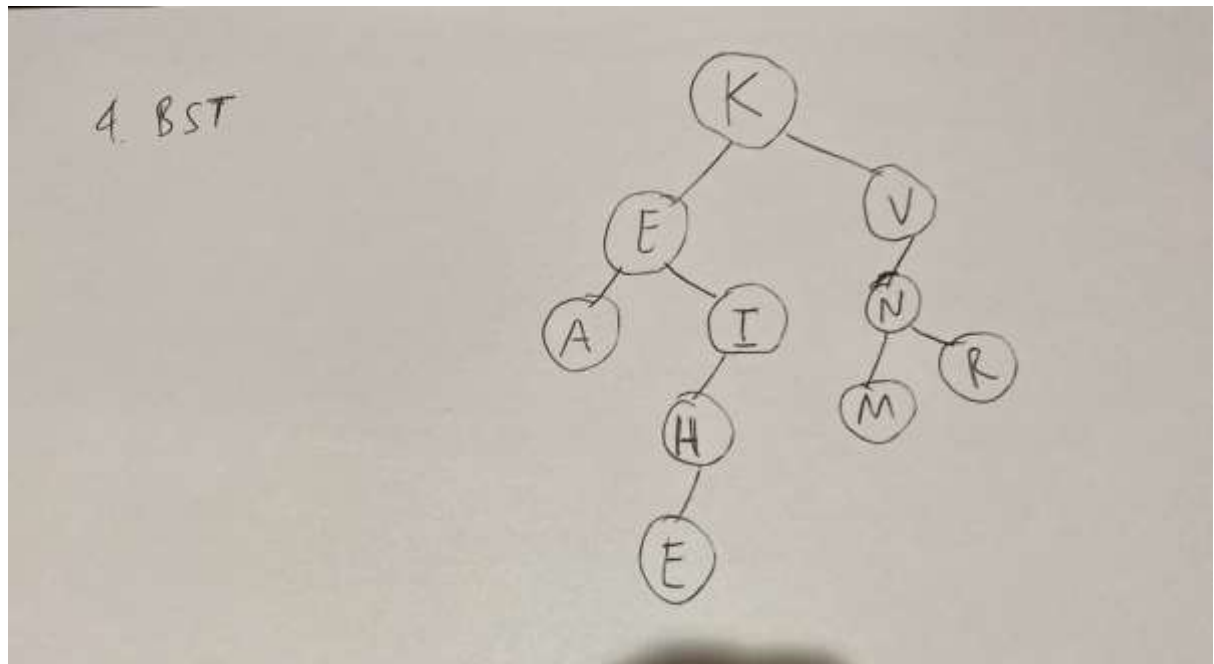
READ K

K|AEEHIMNRV

|AEEHIKMNRV

Descending Order using Insertion : AEEHIKMNRV

4. FULL NAME 10 Char = KEVINHERMA



5. Pre-Order : K E A I H E V N M R

6. Post-Order : A E H I E M R N V K

7. In-Order : A E E H I K M N R V

8. $(A + B) * (C + D) - E$

Step	Current symbol	Stack content	Postfix string
0	(((
1	A	((	A
2	+	((+	A
3	B	((+	AB
4	)	(	AB+
5	*	(*	AB+
6	(	(* (	AB+
7	C	(* (	AB+C
8	+	(* (+	AB+C
9	D	(* (+	AB+CD
10	)	(*	AB+CD+
11	-	(*	AB+CD+-
12	E	(*	AB+CD+-E
13	)		AB+CD+-E*

9. $(A + B) / F - E * G + H$

Step	Current symbol	Stack content	Postfix string
0	(((
1	A	((	A
2	+	((+	A
3	B	((+	AB
4	)	(	AB+
5	/	(/	AB+
6	F	(/	AB+F
7	-	(/	AB+F-
8	E	(/	AB+F-E
9	*	(/*	AB+F-E
10	G	(/*	AB+F-EG
11	+	(+	AB+F-EG*/
12	H	(+	AB+F-EG*/H
13	)		AB+F-EG*/H+

10. $((A+B)/(C-D)+E)*F-G$

Step	Current symbol	Stack content	Postfix string
0	(((
1	(((
2	A	((	A
3	+	((+	A
4	B	((+	AB
5	)	((	AB+
6	/	((/	AB+
7	(	((/(	AB+
8	C	((/(	AB+C
9	-	((/(-	AB+C
10	D	((/(-	AB+CD
11	)	((/	AB+CD-
12	+	((+	AB+CD-/
13	E	((+	AB+CD-/E
14	)	(	AB+CD-/E+
15	*	(*	AB+CD-/E+
16	F	(*	AB+CD-/E+F
17	-	(*	AB+CD-/E+F-
18	G	(*	AB+CD-/E+F-G
19	)		AB+CD-/E+F-G*

11. KEVINHERMA

ABEHI

12. C. I. Best Case = $\theta(1)$

II. worst case = $\theta(n)$

iii. average case = $O(n)$

13. D. Best Case = $\theta(1)$

II. worst case = $\theta(\log n)$

iii. average case = $O(\log n)$