

CSE 100 Midterm 1 Answer Sheet Winter 2017 Version C

Problem 1

1 points for each correct; 0 points for blank or incorrect

1.1 (a) T (b) T (c) F (d) T (e) T

1.2. (a)

<p>mandarin: <input type="text"/> 0 toki: <input type="text"/> 0</p> <p>saoFeng: <input type="text"/></p> <p>worf: <input type="text"/> 0</p>	<p>0.5 points for each correct entry 0 points for blank or incorrect</p> <p>Total = $6 * 0.5 = 3$ points</p>
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(b) T

2 points for correct answer
0 points for blank or incorrect

(c)

A. saoFeng B. mandarin C. mandarin D. toki E. mandarin

Problem 2

1 points for each correct; -1 points for each incorrect
Total = 0 if negative marks. Max = 4 points

2.1 (a) a, ape, eel, lap

(b) 11 * 5 * p = 55p

2 points for correct answer; 0 points for blank or incorrect

2.2 (a) -1 (b) 1

1 points for each correct
0 points for blank or incorrect

Problem 3

(x) points for each correct; 0 points for blank or incorrect

3.1 (a) O(D) **(1)** _____ (b) O(log(N)*D) or O(log(N)) **(0.5)** _____ (c) O(ND) or O(N) **(0.5)** _____

0.5 points for each correct. 0 points for incorrect

3.2 (a) _____ (b) _____ (c) X _____ (d) X _____3.3 _____ $(1 + 2 + 3 \dots + (n+2)) / n = (n + 3) * (n+2) / 2 / (n+2) = (n + 3) / 2 = O(n)$ _____

2 points for correct formula (either the series expanded or the simplified one)

0 points for blank or incorrect

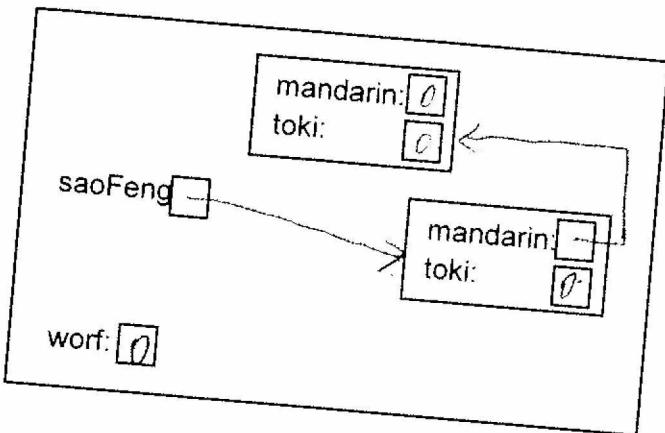
1 points for just writing **O(n)** or **(n+2)** or **(n + 3)**

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Problem 1

- 1.1 (a) T (b) F (c) T (d) T (e) T
1.2. (a)



(b) True

(c)

- A. sao Feng B. mandarin C. mandarin D. toki E. man darin

Problem 2

- 2.1 (a) a, ape, eel, lap
(b) top
- 2.2 (a) - | (b) |

problem 3

3.1 (a) $O(D)$ (b) $O(\log N)$

(c) $O(N)$

(d) X

3.2 (a) _____ (b) _____

(c) X (d) X

3.3 The average BSC training time: $\frac{(1+t)(t+2)}{2} \times \frac{(N+2)}{N+2} = \frac{3}{2}t$

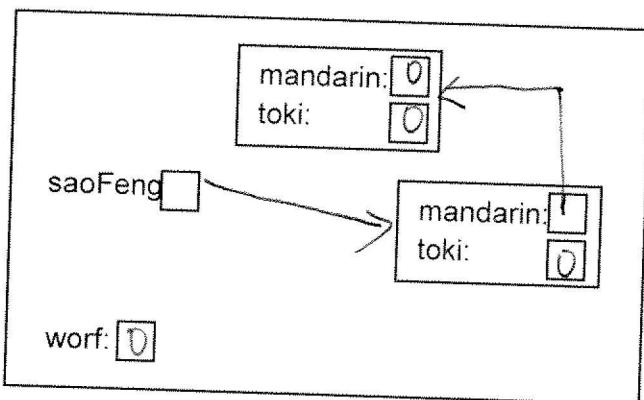
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Problem 1

1.1 (a) False (b) True (c) False (d) False (e) True

1.2. (a)



(b) True

(c)

A. SaoFeng B. mandarin C. mandarin D. toki E. mandarin

Problem 2

2.1 (a) a, ape eel, lap

(b) 5 (P+I)

2.2 (a) - / (b) /

Problem 3

3.1 (a) $O(D)$ (b) $O(D \log N)$ (c) $O(D \cdot N)$

3.2 (a) _____ (b) _____ (c) X (d) X

3.3

average time = $\left(\frac{1+2+3+4\dots+(n+2)}{n+2} \right)$

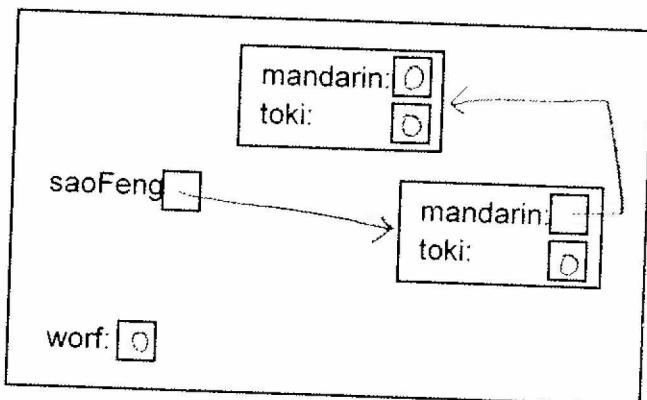
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Problem 1

1.1 (a) T (b) F (c) F (d) T (e) T

1.2. (a)



(b) T

(c)

A. saoFeng B. mandarin c. mandarin d. toki E. mandarin

Problem 2

2.1 (a) a, ape, eel, lap

(b) 55p

2.2 (a) 0 (b) 4

Problem 3

3.1 (a) $O(D)$ (b) $O(\log(N))$ (c) $O(D \cdot N)$
3.2 (a) _____ (b) _____ (c) \times (d) \times

3.3 $\frac{1}{n+2} (1 + 2 + \dots + (n+1) + (n+2))$

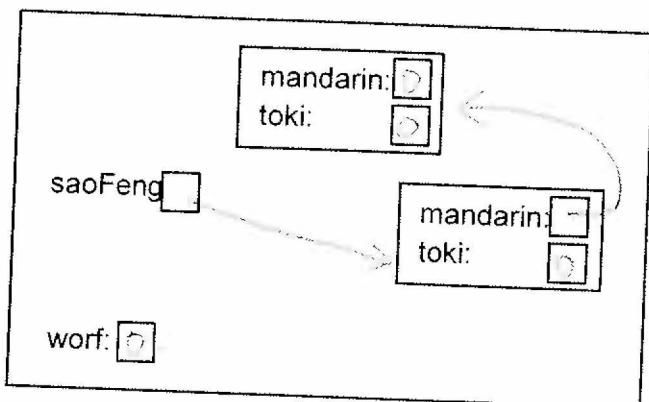
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Problem 1

1.1 (a) (b) (c) (d) (e)

1.2. (a)



(b)

(c)

A. saoFeng B. mandarin C. worf D. toki E. toki

Problem 2

2.1 (a) bird, ape, red, tap

(b) dog

2.2 (a) — (b) —

Problem 3

3.1 (a) $O(D)$ (b) $O(\log N)$ (c) $O(N)$

3.2 (a) _____ (b) _____ (c) X (d) X

3.3

$$\frac{1}{n+2} \cdot (1+2+\dots+(n+2))$$

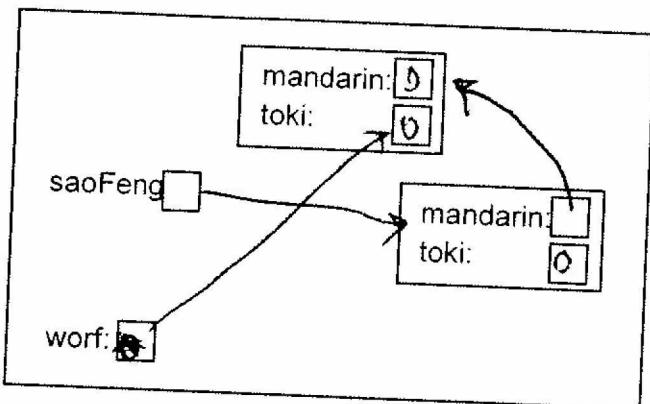
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Problem 1

1.1 (a) True (b) false (c) false (d) True (e) True

1.2. (a)



(b) True

(c)

- A. saoFeng B. mandarin C. Mandarin D. toki E. Mandarin ~~E. Mandarin~~

Problem 2

2.1 (a) a, ape, ell, lap

(b) 10 p

2.2 (a) -1 (b) 1

Problem 3

3.1 (a) $O(D)$ (b) $O(\log N)$ (c) $O(\log N)$

3.2 (a) _____ (b) _____ (c) X (d) X

3.3 $\frac{1+2+3+\dots+(n+1)+(n+2)}{n+2} = O(n)$

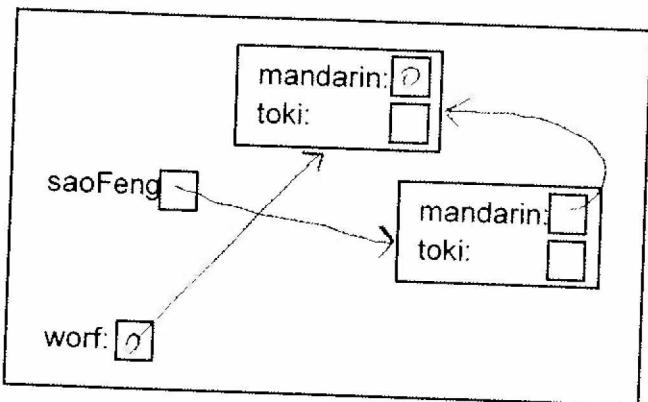
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Problem 1

1.1 (a) T (b) F (c) F (d) T (e) T

1.2. (a)



(b) T

(c)

A. saoFeng B. mandarin C. mandarin D. toki E. mandarin

Problem 2

2.1 (a) a, aɪ, eɪ, ʌ

(b) ɒ p

2.2 (a) - 1 (b) 1

Problem 3

3.1 (a) $\Theta(4)$ (b) $\Theta(N)$ (c) $\Theta(N)$

3.2 (a) _____ (b) _____ (c) X (d) X

3.3 $\frac{1+3+5+\dots+(n+2)}{n+2}$

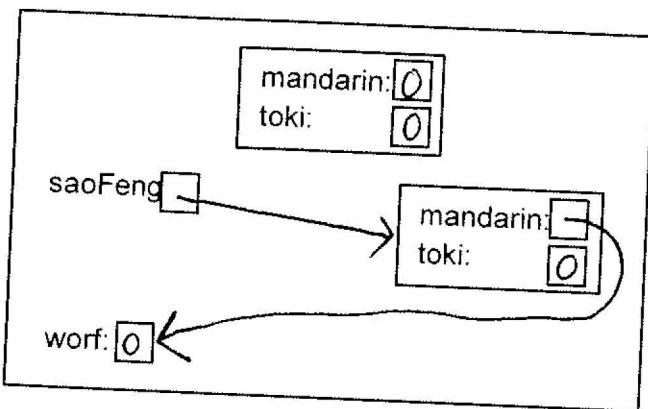
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Problem 1

1.1 (a) T (b) ✗ T (c) F (d) T (e) T

1.2. (a)



(b) True

(c)

A. saoFeng B. mandarin C. mandarin D. toki E. mandarin

Problem 2

2.1 (a) a / ape / eel / lap

(b) 11 x 5P = 55P

2.2 (a) -| (b) |

Problem 3

3.1 (a) $O(1)$ (b) $O(\log N \cdot D)$ (c) $O(N \cdot D)$

3.2 (a) _____ (b) _____ (c) X (d) X

$$\frac{1+2+3+4+\dots+(n-1)+n+(n+1)+(n+2)}{(n+2)} = \frac{(n+2+1)(n+2)}{2 \times (n+2)} = \frac{n+3}{2}$$

3.3 $= O(n)$

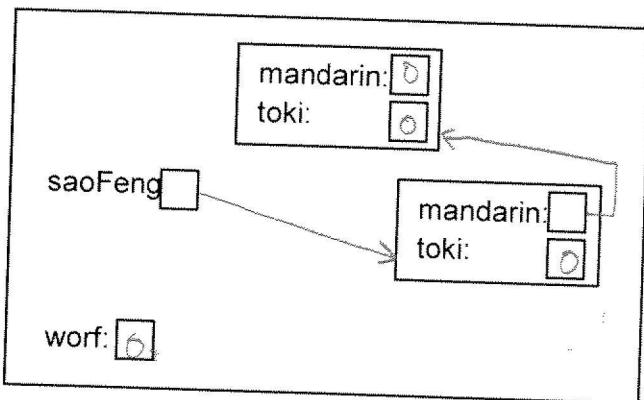
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Problem 1

1.1 (a) True (b) True
 ^{"may"} (c) False (d) True (e) True

1.2. (a)



(b) True

(c)

A. Saofeng B. mandarin C. mandarin D. toki E. mandarin

Problem 2

2.1 (a) a, ape, rel, lat, lap

(b) 10P

2.2 (a) -1 (b) 1

Problem 33.1 (a) $O(D)$ (b) $O(\log N)$ (c) $O(N)$ 3.2 (a) \times (b) _____ (c) _____ (d) \times 3.3 $O(n)$

$$\textcircled{a} \quad \underline{(n+2)n^{n+2}} \rightarrow O(n)$$

$$\frac{(n+2)n}{n} \rightarrow \left[\frac{n^{(n+2)}}{n} \right] \rightarrow O(n)$$

$n = n+2$

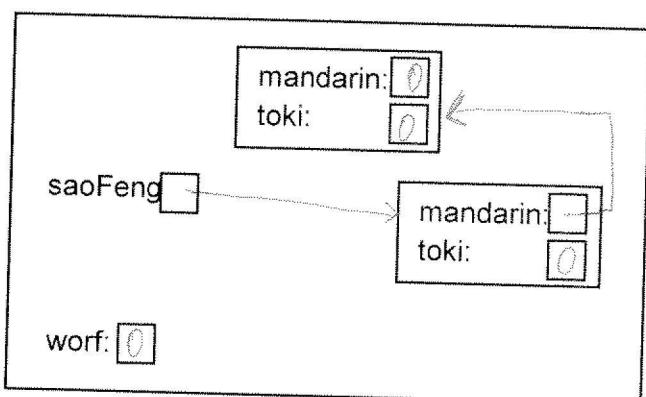
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Problem 1

1.1 (a) T (b) F (c) F (d) F (e) T

1.2. (a)



(b) True

(c)

A. saoFeng B. mandarin C. mandrain D. toki E. mandarin

Problem 2

2.1 (a) a, ape eel, lap

(b) 10P

2.2 (a) -1 (b) /

Problem 3

3.1 (a) $\Theta(D)$ (b) $\Theta(\log(n))$ (c) $\Theta(N)$

3.2 (a) _____ (b) _____ (c) X (d) X

3.3 $\frac{1+2+3+\dots+n+(n+1)+(n+2)}{(n+2)}$ $\in \Theta(n)$

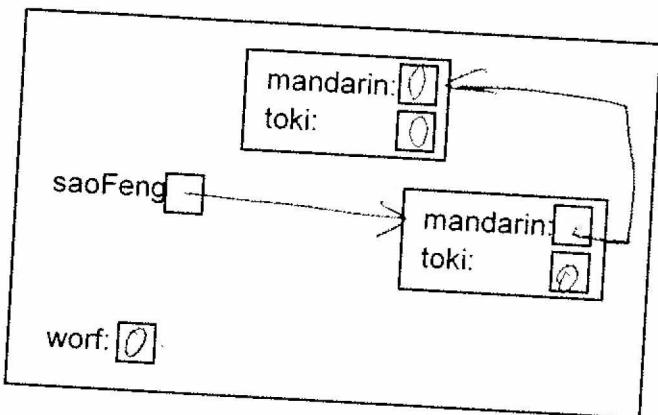
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Problem 1

1.1 (a) True (b) False (c) False (d) True (e) False

1.2. (a)



(b) True

(c)

A. saoFeng B. mandarin c. mandarin D. toki E. madarin

Problem 2

2.1 (a) A, ape, eel, lap

(b) $3P + 3P + 4P = 10P$

2.2 (a) 0 (b) 4

Problem 3

3.1 (a) O(D)

(b) $\Theta(D \log N)$

(c) $\Theta(DN)$

3.2 (a) X

(b) X

(c) _____

(d) _____

3.3

$$\begin{aligned} & [1 + 2 + 3 + \dots + (n+2)] / (n+2) \\ &= [(1+n+2)(n+2)] / [2(n+2)] \\ &= (n+3)/2 \end{aligned}$$

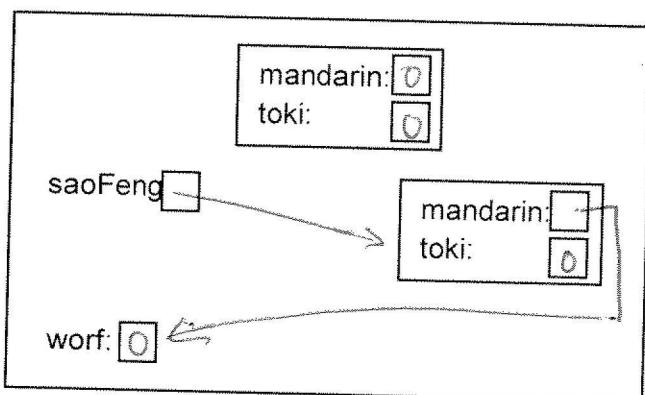
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Problem 1

1.1 (a) T (b) T (c) F (d) T (e) T

1.2. (a)



(b) True

(c)

- A. ~~saoFeng~~ B. mandarin C. mandarin → toki D. ~~mandarin~~ E. mandarin

Problem 2

2.1 (a) a, ape, eel, lap,

(b) 55p

2.2 (a) -1 (b) 1

Problem 3

- 3.1 (a) $O(D)$ (b) $O(\log(n))$ (c) $O(N)$
- 3.2 (a) _____ (b) _____ (c) X (d) X
- 3.3 _____
 ~~$\frac{2+3+4+\dots+(n+2)}{n+2} = O(n^2)$~~
 $\left(\sum_{i=0}^{n+2} (i+2) \right) / (n+2)$

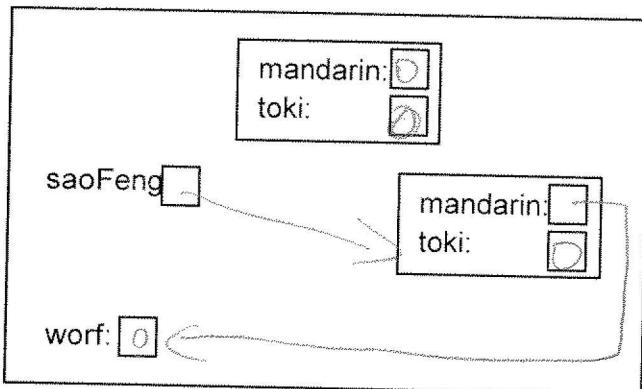
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Problem 1

1.1 (a) T (b) T (c) F (d) T (e) T

1.2. (a)



(b) I

(c)

A. saoFeng B. mandarin C. mandarin D. toki E. mandarin

Problem 2

2.1 (a) ap, oa, ae, al, at, opep, opep, upee, epe, upet, eela, ecle, eelp, eell, eelt, lape, lape, la
lapl, lapl, lapl, lapl, lapl

(b) lop

2.2 (a) -1 (b) 1

Problem 3

3.1 (a) $O(D)$ (b) $O(D \log N)$ (c) $O(DN)$

3.2 (a) _____ (b) _____ (c) \times (d) \times

3.3 $\frac{1}{n+2!} \sum_{i=1}^{(n+2)!} \left(\frac{1+2+3+\dots+n+i}{n+2} \right)$

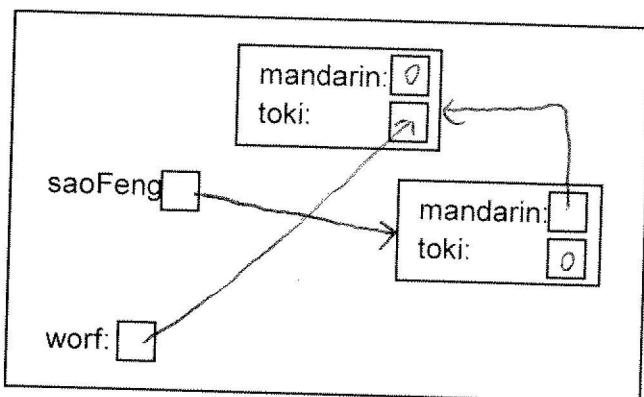
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Problem 1

1.1 (a) T (b) T (c) F (d) F (e) T

1.2. (a)



(b) T

(c)

A. Sao Feng B. mandarin C. mandarin D. toki E. mandarin

Problem 2

2.1 (a) ape ; eel ; lap ; a

(b) 10 p

2.2 (a) - | (b) |

Problem 3

3.1 (a) $O(D)$ (b) $O(\log N)$ (c) $O(N)$

3.2 (a) _____ (b) _____ (c) X (d) X

3.3 $\frac{[1+2+\dots+(n+2)] \cdot (n+2)}{2}$

~~2~~