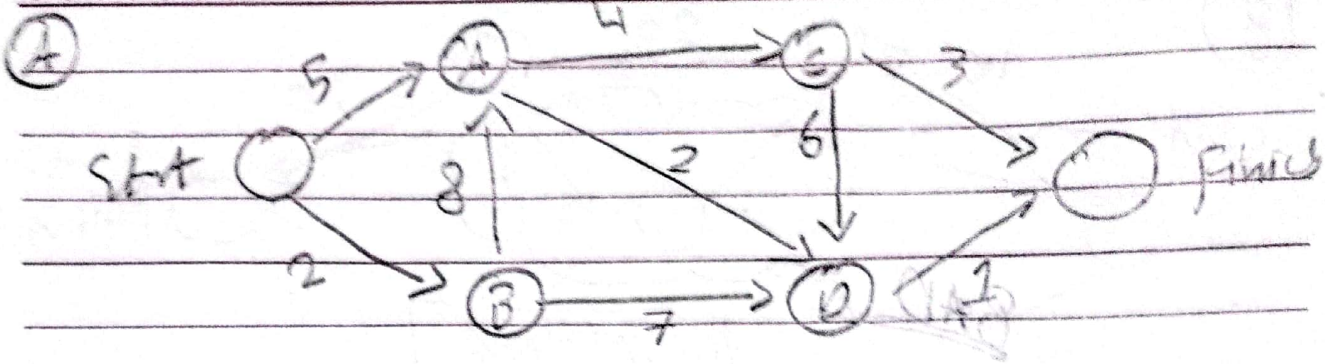
# Ch 7: Exercises

Date: / /

## 7.1

object:




| Node | Cost |
|---|---|
| A | 5 |
| B | 2 |
| C | — |
| D | — |
| Finish | — |

B

| Parent | Node | Cost | |
|---|---|---|---|
| Start | A | 5 | |
| Start | B | 2 | → Choose |
| B | A | 10 | 2+8 |
| B | D | 9 | 2+7 |
| — | Finish | ∞ | |

A

| | | | |
|---|---|---|---|
| Start | A | 5 | |
| Start | B | 2 | |
| A | C | 9 | 5+4 |
| A | D | 7 | 5+2 |
| — | Finish | ~ | |

path (A) is faster to Reach D, C

path D

path C

| | | | |
|---|---|---|---|
| Start | A | 5 | |
| Start | B | 2 | |
| A | C | 9 | |
| A | D | 7 | |
| D | Finish | 8 | 7+1 |

| | | | |
|---|---|---|---|
| C | Finish | 12 | 9+3 |

path (D) is faster to Reach finish than (C)

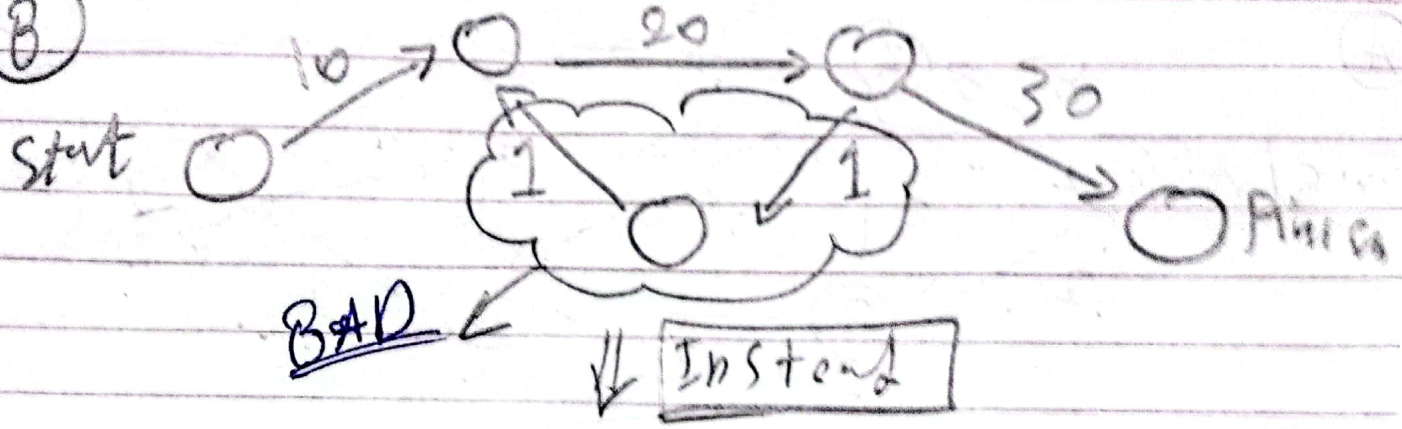
Start → A → D → Finish = 8

Date: / /

7.2

object:

(B)




Instead

start $\xrightarrow{10}$ ○ $\xrightarrow{20}$ ○ $\xrightarrow{30}$ finish

cost = 60 ✗

7.3

(C) negative cycle

↳ no shortest path ✗

Ch, 9 Exercises

Date: object:

9.1) No, Because there is no point in Stealing an item with the same weight and Less value

9.2)

| Pounds / items | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Water | 0 ↓ | 0 ↓ | 10 ↓ W | 10 ↓ W | 10 ↓ W | 10 ↓ W |
| Book | 3 B | 3 B | 10 ↓ W | 13 B, W | 13 B, W | 13 B, W |
| Food | 3 B | 9 F | 12 B, F | 13 B, W | 19 W, F | 22 W, B F |
| Jacket | 3 B | 9 F | 12 B, F | 14 F, J | 19 W, F | 22 W, B F |
| Camera | 6 C | 9 F | 15 C, F | 18 F, C, B | 20 F J C | 28 W B F C |

Water, Book, Food, Camera

9.3)

| | b | L | u | e |
|---|---|---|---|---|
| C | 0 | 0 | 0 | 0 |
| L | 0 | 1 | 0 | 0 |
| u | 0 | 0 | 2 | 0 |
| e | 0 | 0 | 0 | 3 |
| s | 0 | 0 | 0 | 0 |

Longest Common Substring = 3

# Ch 8 Exercises

8.1 pick the biggest box in size until the the truck is at it's limit.
⇒ Not the optimal solution

8.2 pick the things with the highest point until your 7-days are over
⇒ not the optimal solution

8.3 Quick sort → Not greedy ✗

8.4 Breadth first search → greedy ✓

8.5 Dijkstra's Algorithm → greedy ✓
→ Because I have to consider multiple solutions with different values

8.6 yes ; 8.7 yes ; 8.8 yes