Revisiting lab

Treasure hunting

```
WWWWWWWWW
WS.T..TW
WT.....W
W...WWWW
WWWWWWWWW
```

Treasure hunting

```
WWWWWWWWW
WS.T..TW
WT.....W
W...WWWW
WWWWWWWWW
```

Suppose that the first treasure discovered is the closer of the two treasures to the right of the starting location. Which of the two remaining treasures MUST be discovered next? Briefly justify your answer. (Hint: What does finding that treasure first tell you about the order in which the program is trying the directions?)

Treasure hunting

```
WWWWWWWWW
WS.T..TW
WT.....W
W...WWWW
WWWWWWWWW
```

Suppose the first treasure discovered is the one below the starting location. Explain how either of the other treasures could be the next discovered. (Hint: For each of the remaining treasures, can you give an order in which the program could try directions that would result in that treasure being the next one discovered? Briefly justify that each of your chosen orders works.)

Other ADTs

Set ADT

- Represents unordered collection of values

  {“hello”, “there”, “=)”, “CS 142”}

- **No duplicate elements**

- Supports:
  - boolean add(value) //returns whether it was new
  - boolean contains(value)
  - Iterator iterator()

  Maybe also: size, remove, clear

Dictionary/Map ADT

- Map<K,V> //key type K, value type V
  - V put(K,V)
  - V remove(K)
  - V get(K)
  - boolean contains(K)
  - Set<K> keySet()
  - Collection<V> values()
  - boolean isEmpty()
  - int size()
  - void clear()

Priority Queue ADT

- Store collection of values and read them out in priority order (as given by a Comparator)
- Operations:
  - void enqueue(value) //add value to collection
  - value dequeue() //remove & return next val
  - value peek() //return next val w/o removing
  - int size() //get collection size

Design problems 2: Now with more ADTs!

- List
- Stack
- Queue
- Iterator
- Set
- Map
- Priority Queue

What ADT would you use for the diabetes problem?

A. Stack
B. Queue
C. Set
D. Map
E. Priority Queue

What ADT would you use for the diabetes problem?

A. Stack

B. Queue

C. Set

D. Map (food name to blood sugar level)

E. Priority Queue

What ADT would you use for the Happy Vet problem?

A. Stack
B. Queue
C. Set
D. Map
E. Priority Queue

What ADT would you use for the Happy Vet problem?

A. Stack

B. Queue

C. Set

D. Map

E. Priority Queue

What ADT would you use for the rat feeding problem?

A. Stack
B. Queue
C. Set
D. Map
E. Priority Queue

What ADT would you use for the rat feeding problem?

A. Stack
B. Queue
C. Set
D. Map
E. Priority Queue

What ADT would you use for the mascot selection problem?

A. Stack
B. Queue
C. Set
D. Map
E. Priority Queue

What ADT would you use for the mascot selection problem?

A. Stack

B. Queue

C. Set

D. Map (name to list of arguments)

E. Priority Queue

What ADT would you use for the baseball tournament problem?

A. Stack
B. Queue
C. Set
D. Map
E. Priority Queue

What ADT would you use for the baseball tournament problem?

A. Stack

B. Queue

C. Set

D. Map (name of player to statistics)

E. Priority Queue