



- Snarf the code for today's class
- Look at the code



Announcements

- APT Set 1 - Due Jan 17
- Hangman - Due Jan 24

- Midterm 1 - FRIDAY, FEBRUARY 15



Today

- Lists
- Sets
- Tradeoffs

- Next time (Wednesday 1/23)
 - How to measure “speed”
 - Reading assignment posted



Data Structures

- Array
- ArrayList
- Set
- Map



Hangman

misses left: 7

guesses so far:

What letter do you want to guess: e

no e



Hangman

misses left: 6

guesses so far: e

What letter do you want to guess: *a*

no a



Hangman

- What to keep track of
 - Secret word
 - showing blanks and correct guesses
 - Number of misses left until hanging occurs
 - Letters that have been guessed incorrectly
- What data structures??????????



Hangman

- What to keep track of
 - **Secret word**
 - showing blanks and correct guesses
 - Number of misses left until hanging occurs
 - Letters that have been guessed incorrectly
- What data structures??????????



Secret word

- In Hangman
 - You have a secret word. How do you save it?
 - ['_', '_', '_', '_'];
 - ["_", "_", "_", "_"];
 - " _ _ _ _ ";
 - What are the tradeoffs?



Hangman

- What to keep track of
 - Secret word
 - showing blanks and correct guesses
 - Number of misses left until hanging occurs
 - **Letters that have been guessed incorrectly**
- What data structures??????????



Guessed letters

- How do we store already guessed letters in Hangman?

Data Structure	How	Tradeoff



Guessed letters

- Array
 - Fixed size. How big should it be?
 - How many items are in array?
 - How do we search?



Guessed letters

- Array
 - Fixed **size**. How big should it be?
 - How many items are in array?
 - How do we search?



Guessed letters

- List
 - Add elements with `.add`
 - Query with `.contains`
 - Cannot store primitives!
 - `int`, `char`, `double`, `boolean`
 - Can store objects
 - `Integer`, `Character`, `Double`, `Boolean`, `String`



ArrayList

```
ArrayList<String> list = new ArrayList<String>();
```

```
// add to ArrayList
```

```
boolean canAdd = list.add("hello");
```

```
//check if element is in ArrayList
```

```
boolean inList = list.contains("hello");
```



Guessed letters

- Set
 - Add elements with `.add`
 - Query with `.contains`
 - Cannot store primitives!
 - `int`, `char`, `double`, `boolean`
 - Can store objects
 - `Integer`, `Character`, `Double`, `Boolean`, `String`
- Does not allow duplicates



HashSet

```
HashSet<String> set = new HashSet<String>();
```

```
// add to HashSet
```

```
boolean canAdd = set.add("hello");
```

```
//check if element is in HashSet
```

```
boolean inSet = set.contains("hello");
```



Code

- Snarf the code for today's class
- Run the code



Questions

- Answer the questions here:
 - <http://goo.gl/kcF8p>



Tradeoffs

- Array or ArrayList or HashSet?
- Memory and Speed
 - How do we measure “speed”?



Today

- Lists
- Sets
- Tradeoffs

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