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Questions

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I do declare

4/4 points (graded)

```
String hello = "Hello";

List<String> words1 = new ArrayList<>();
words1.add(hello);

ImList<String> words2 = ImList.empty();
words2.cons(hello);
```

What is the declared type of variable `hello` ?

- ◯ none
- ◯ char[]
- ⦿ String
- ◯ unknown, depends on rep of String
- ◯ invalid question

✔

What is the actual type of variable `hello` ?

- ◯ none
- ◯ char[]
- ◯ String
- ◯ unknown, depends on rep of String
- ⦿ invalid question

✔

What is the declared type of the object `hello` refers to?

- ◯ none
- ◯ char[]
- ◯ String
- ◯ unknown, depends on rep of String
- ⦿ invalid question

✔

What is the actual type of the object `hello` refers to?

- ○ none
- ○ char[]
- ● String
- ○ unknown, depends on rep of String
- ○ invalid question

✔

Explanation

Variables have a declared type; objects, created during the actual execution of the program, have an actual type.
In this case, the declared type and the actual type are the same.

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Words, words, words

4/4 points (graded)

Same code again:

```
String hello = "Hello";

List<String> words1 = new ArrayList<>();
words1.add(hello);

ImList<String> words2 = ImList.empty();
words2.cons(hello);
```

This time, when we say declared/actual type of a variable, we always mean the variable itself **or** the object pointed to by that variable, whichever is appropriate.

What is the declared type of `words1` ?

- ○ String
- ● List
- ○ ArrayList
- ○ ImList
- ○ Empty
- ○ Cons

✔

What is the actual type of `words1` ?

- ○ String
- ○ List
- ● ArrayList
- ○ ImList
- ○ Empty
- ○ Cons

✔

What is the declared type of `words2` ?

- ⚪ String
- ⚪ List
- ⚪ ArrayList
- 🔘 ImList
- ⚪ Empty
- ⚪ Cons

✔

What is the actual type of `words2` ?

- ⚪ String
- ⚪ List
- ⚪ ArrayList
- ⚪ ImList
- 🔘 Empty
- ⚪ Cons

✔

Explanation

The first three are straightforward.

The last one was a trick question, because we discarded the return value of `cons` . `words2` still points to the `Empty` instance; the `Cons` object that was created by `cons` is now lost.

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