Inspector

Inspector for Java

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Commands

Solution

- A class for each command
- Get the right command using reflection
- All commands `execute()` the same way

Example

```
public class MCommand {
    ...
    public Object execute() throws Exception {
        ...
    }
    ...
}
```

Commands

Example

```
Class<?> c = Class.forName(className);
Constructor<?> constructor = c.getConstructors()[0];
Object[] args = new Object[] { this.state, ... };
Command cmd = (Command) constructor.newInstance(args);
...
this.state = cmd.execute();
...
```

Commands

List of commands

- `i` *field*, inspects object
- `m` *field* *value*, modifies *field* of inspected object
- `c` *method* *arg*$_1$...*arg*$_N$, calls *method* of inspected object with the specified parameters
- `d`, dumps the inspected object
- `l`, lists the methods of the inspected object
- `s` *name*, saves the inspected object with *name*
- `u`, inspects the previous object
- `r`, reinspects the object after the undo operation
- `q`, quits the inspector

Types

Solution

- The `Type` annotation defines which types are processed by a certain method
- The `TypeChecking` class implements these methods and it allows to find the right method when necessary

Example

```
public @interface Type {
    String[] value();
}
```

Example

```
@Type({ "int", "Integer" })
```

Types

Supported types

- Primitive types
- Strings
- Arrays of other supported types

Example

```
 > m s "hello world"
...
> c f "hello \"new\" world" [1, 2, 3]
...
> m a ["goodbye", "cruel", "world"]
...
```

Extras

Save object

- Object are saved in a Map, with a name
- This objects can be used in method calls and for modify the value of a field

Example

```
> d
Test is an instance of class java.lang.String
--------------
private final char[] java.lang.String.value = [C@...
...
> s str
The object Test was saved with the name str
```

Extras

Shadowed fields

- Show superclass fields overrided by the current class
- Access the field by providing the field's full name

Example

```
ist.meic.pa.Test@4310b053 is an instance of class
ist.meic.pa.Test
--------------
public int ist.meic.pa.Test.d = 0
...
public int ist.meic.pa.SuperTest.d = 0
public float ist.meic.pa.SuperTest.f = 0.0
```

Extras

Navigate object graph

- Two commands to accomplish this task: `u` and `r`
- The current object maintains a reference to the previous and next objects in the graph
- The reference to the next object is lost if some operation is performed with the current one

Example

```
 > d
Test@4310 is an instance of class ist.meic.pa.Test
--------------

...
> i name
Test is an instance of class java.lang.String
--------------

...
> u
Test@4310 is an instance of class ist.meic.pa.Test
--------------

...
> r
Test is an instance of class java.lang.String
--------------

...
```