LECTURE 35

MAKING SIMPLE APIS WITH FLASK

MCS 260 Fall 2021

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REMINDERS

- Homework 12 due Tue Nov 16 at 10am
- Read the project 4 description
- Project 4 proposals due by Nov 17

FLASK

Flask is a Python **web framework**. It lets you build APIs and web sites with Python.

Competitors include:

- Bottle — minimalist like Flask
- Django — huge and full-featured

INSTALLING FLASK

Using `pip` to install, if the interpreter name is `python3`:

```
python3 -m pip install flask
```

Confirm installation by testing import in the REPL:

```
>>> import flask
>>>
```

If Flask is not installed, this will produce an error.

DECORATORS

Flask uses a lot of decorators, a Python feature we haven't covered yet.

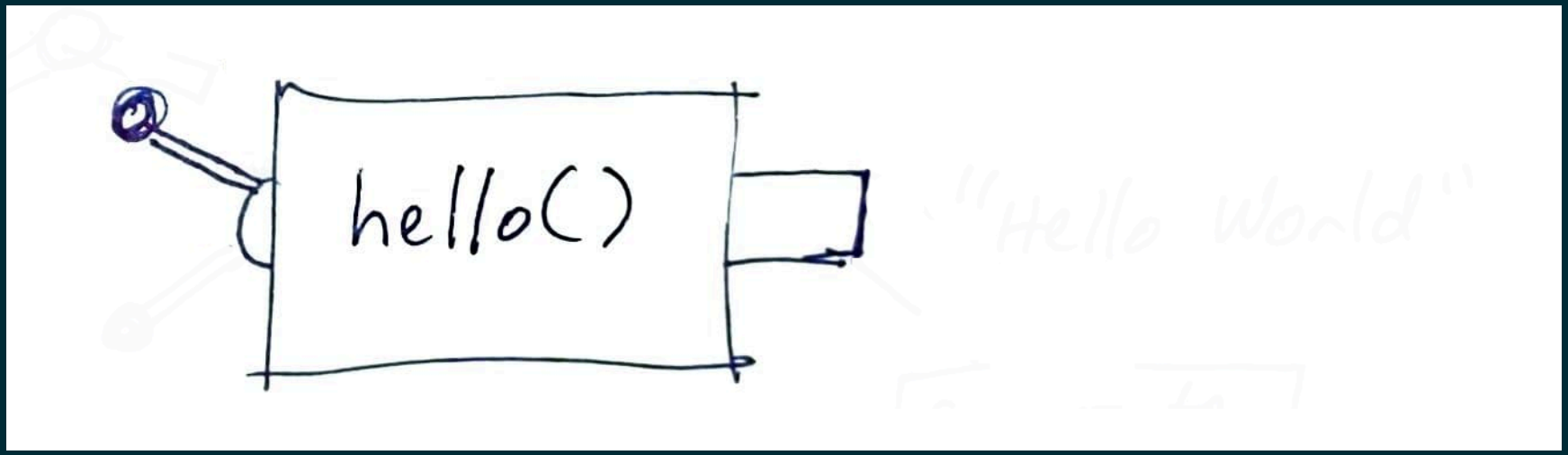
Basically, on a line immediately before a function definition, you put a command beginning with `@`, e.g.

```
@decname
def f(x,y,z):
```

Here, `decname` needs to be replaced with the name of a decorator, which is a certain kind of higher-order function. It modifies the behavior of `f`.

WHY DECORATORS IN FLASK?

We might write a function that returns a string:



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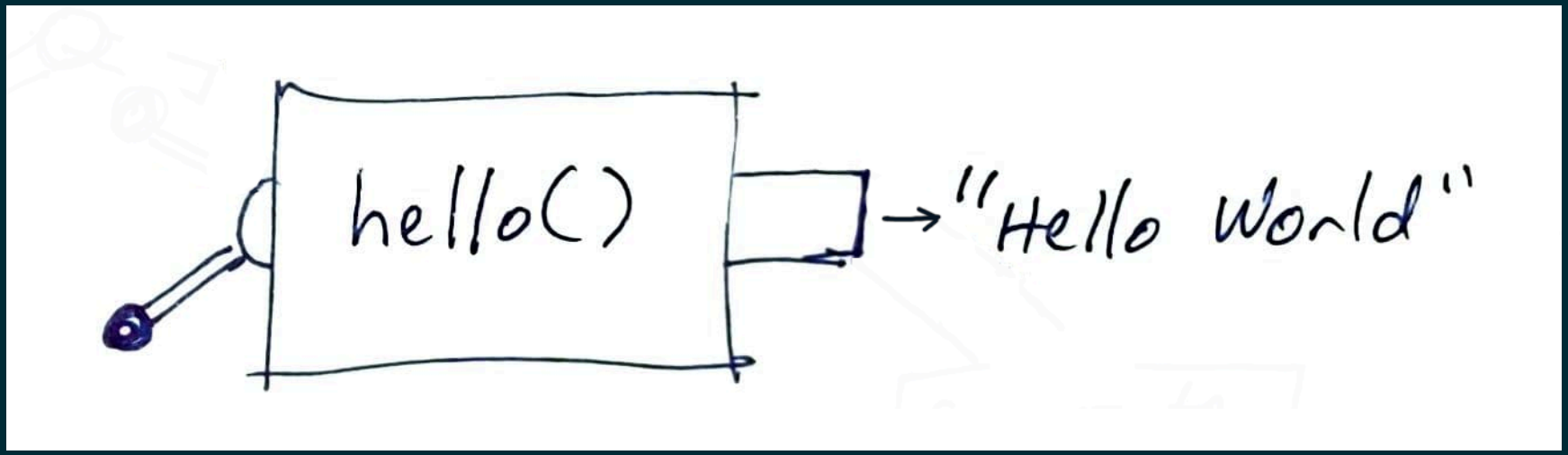

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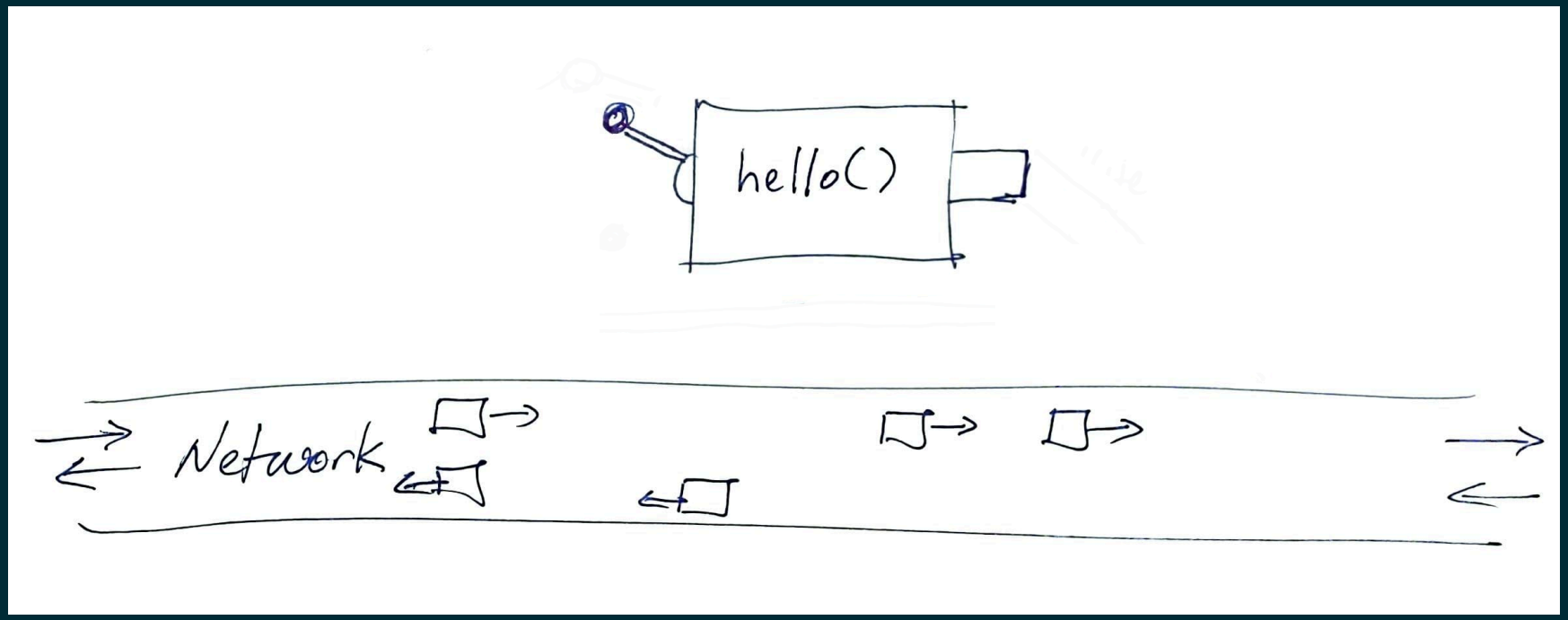
A Flask decorator lets us link it directly to a URL:



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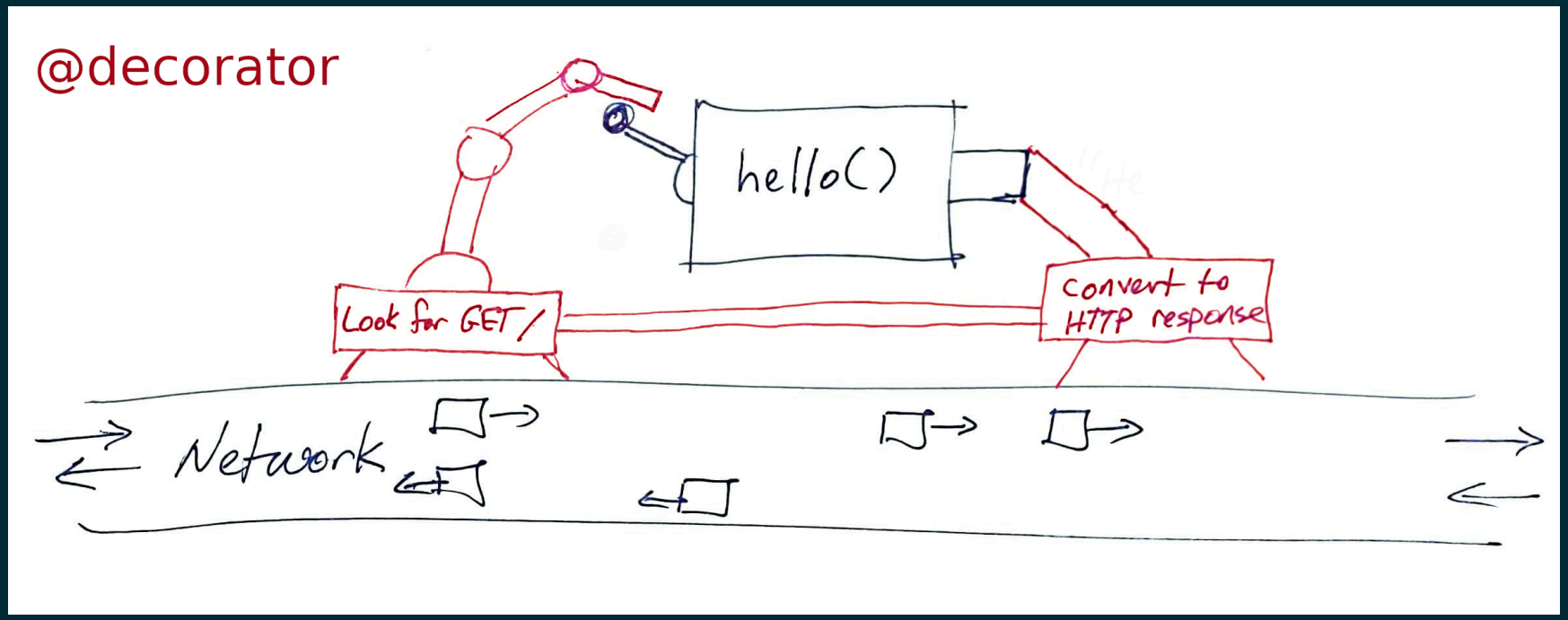

GOAL 1

Build API so that

`/`

returns

`"Hello World".`

GOAL 2

Build API so that

```
/element/random
```

returns a JSON object with info about a randomly-selected chemical element.

GOAL 3

Build API that checks whether a given word is a palindrome, so

```
/palindrome/test?word=banana
```

would return `False` in JSON.

SUMMARY

- Name `localhost` or IP address `127.0.0.1` is used to refer to the same host you're making a request from.
- `http://domain.com:1234/rest/of/URL/` means to use port 1234 instead of the default (which is 80 for HTTP).
- If `app` is a `flask.Flask` object, the decorator `@app.route("/path/part/of/URL/")` makes a function into a URL handler.
- Names of functions that handle URLs are distinct from the URLs they answer to.
- `flask.jsonify` converts a Python value into a suitable return value from a URL handler.

REFERENCES

- The Flask tutorial is nice but is focused on building web pages.
- This Flask API development tutorial by Patrick Smyth is nice.

REVISION HISTORY

- 2021-11-11 Initial publication