

Flask: The First Application

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In the following documents, we will focus on one actual application. Let's learn by an example.

UIC Calendar

Let's consider a UIC Calendar application. In this application, normal users can get the immediate information on today's event, and check the events in any given day. After login, the administrator of this application can add, modify, and delete any events.

URLs & Webpages

Let's plan our URLs and pages.

- `'/'` : index page. The index page will be the immediate information on the current local time.
- `'/query'` : event query page. The user can input a date and check events happened/will happen on that date.
- `'/login'` : admin login page.
- `'/admin'` : admin page. Administrator can add/update/delete events.

Templates

To get a page displayed, we need to get our HTML files and functions ready. However, we are going to put **variables** in HTML files like what you have done during you were learning PHP. Let's see an example template.

```
<!doctype html>
<title>Hello from Flask</title>
{% if name %}
  <h1>Hello {{ name }}!</h1>
{% else %}
  <h1>Hello, World!</h1>
{% endif %}
```

You can see there is a mix of HTML and some **variables** and **flow control** statements between two braces, `{ }`. For the particular piece of code, it checks the variable `name`, if it is not empty, display 'Hello + `name`'. If it is empty, display 'Hello World'.

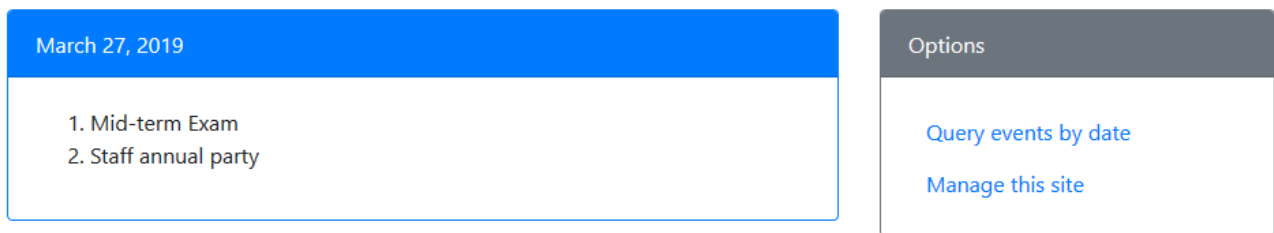
Let's do a practice. Inside the `code` folder of the materials you downloaded, you should see a structure like this,

```
/application.py
/templates
  /index.html
  /query.html
  /login.html
  /admin.html
/static
  /bootstrap.min.css
  /bootstrap.min.map
```

We assume you have knowledge of Bootstrap. Now, open the command prompt or PowerShell in the `code` folder, set environment variable as `application.py` and run Flask, you can refer to the pervious notes for starting up a Flask application.

When you open the index page, it should look like the picture below.

UIC Calendar



OK, it seems everything works fine.

Keep the folder and the command prompt (PowerShell) window opened through the whole tutorials and restart Flask when you want to see changes.

Task 2.1: Can you identify the variables and logic on this webpage? If you can find, please modify the HTML file, and change them to the variables like the example code above, then save the file.

Please try this task before you read the following contents.

Feed Values to Templates

I believe you have done very well on the task above. You should find some variables from the plain HTML file, and change them into template variables. Now, let's write some Python code to feed values to the template from Python variables.

In the `code` folder, there is a file `application.py`. You will do all Python code in this file. Let's recall the first piece of code from the previous notes,

```
# hello.py

from flask import Flask
app = Flask(__name__)

@app.route('/')
def hello_world():
    return 'Hello, World!'
```

From the above code, we are going to feed values to your template in `index()` function of the file `application.py`. To achieve this, we need to import a class and initialize some variables. Let's begin with applying a current date to your template.

```
# application.py

import datetime

from flask import Flask, render_template

app = Flask(__name__)

@app.route('/')
def index():
    # Get the current time.
    dt = datetime.datetime.now()
    # Assign the variables, convert to string.
    date = dt.strftime("%Y-%m-%d")
    # Render the template with arguments.
    return render_template('index.html', date=date)
```

At the same time, the `index.html` file will be changed as below (you should have done before).

```
<!-- index.html -->

<!-- Before -->
<div class="card-header bg-primary text-white">March 27, 2019</div>
<!-- After -->
<div class="card-header bg-primary text-white">{{ date }}</div>
```

Till now, you should see the date changed to the current date, like the image below (at the image are the same...).

UIC Calendar

2019-03-27

1. Mid-term Exam
2. Staff annual party

Options

- [Query events by date](#)
- [Manage this site](#)

If you can see the above change, congratulations!

Task 2.2: Now is your turn. Please store the ordered list from static text to a collection (Python data structure).

Pro tip: use a loop in your template.

Please try this task before you read the following contents.

References

- <http://flask.pocoo.org/docs/1.0/quickstart/>
- <http://jinja.pocoo.org/docs/2.10/>