src6/cli/ages.py

```python
"""Ages people by a year. Demonstrates lists."""

# determine number of people
while True:
    n = int(raw_input("Number of people in room: "))
    if (n >= 1):
        break

# declare list in which to store everyone's age
ages = []

# get everyone's age
for i in range(n):
    age = int(raw_input("Age of person #{}: ".format(i + 1)))
    ages.append(age)

# report everyone's age a year hence
print("Time passes...")
for i in range(n):
    print("A year from now, person #{} will be {} years old.".format(i + 1, ages[i] + 1))
```

src6/cli/f2c.py

```python
"""Converts Fahrenheit to Celsius. Demonstrates arithmetic."""

# ask user for temperature in Fahrenheit
f = float(raw_input("Temperature in F: "))

# convert F to C
c = 5.0 / 9.0 * (f - 32.0)

# display result to one decimal place
print("{:.1f}".format(c))
```

src6/cli/floats-0.py

```python
"""Tries to print 1/10 as a floating-point value. Demonstrates truncation."""

f = 1 / 10
print("{:.1f}".format(f))
```

src6/cli/floats-1.py

```python
"""Prints 1/10 as a floating-point value to one decimal place. Demonstrates division of floating-point values."""

f = 1.0 / 10.0
print("{:.1f}".format(f))
```

src6/cli/floats-2.py

```python
"""Prints 1/10 as a floating-point value to 28 decimal places. Demonstrates imprecision of floating-point values."""

f = 1.0 / 10.0
print("{:.28f}".format(f))
```

src6/cli/function-0.py

```python
"""Prints a user's name. Demonstrates a function (not from a library) with a side effect."""

def printName(name):
    print("hello, {}".format(name))

s = raw_input("Your name: ")
printName(s)
```

src6/cli/return.py

```python
"""Cubes a variable. Demonstrates use of parameter and return value."""

def cube(n):
    """Cubes n."""
    return n * n * n

x = 2
print("x is now {}".format(x))
print("Cubing...")
x = cube(x)
print("Cubed!")
print("x is now {}".format(x))
```

src6/cli/string-0.py

```python
"""Prints a string, one character per line."""

s = raw_input()
for c in s:
    print(c)
```

src6/web/counter/application.py

```python
"""Implements a counter.

Demonstrates sessions.

David J. Malan
malan@harvard.edu
"""

# import Flask, plus support for rendering templates and for sessions
from flask import Flask, render_template, session

# create an instance of Flask
app = Flask(__name__)

# http://flask.pocoo.org/docs/0.10/quickstart/#sessions
app.secret_key = "TODO"

@app.route("/")
def index():
    """displays number of times user has visited"""
    session["counter"] = session.get("counter", 0) + 1
    return render_template("index.html", counter=session["counter"])

# if the script is executed directly from the Python interpreter and not used as an imported module
if __name__ == "__main__":
    app.run(debug=True, host="0.0.0.0", port=8080)
```

src6/web/counter/templates/index.html

```
<!DOCTYPE html>

<html>
    <head>
        <title>counter</title>
    </head>
    <body>
        You have visited this site {{ counter }} time(s).
    </body>
</html>
```

```python
""" """

# import Flask, plus support for rendering templates and for accessing requests' parameters
from flask import Flask, render_template, request

# create an instance of Flask
app = Flask(__name__)

@app.route("/")
def index():
    """displays registration form"""
    return render_template("index.html")

@app.route("/register", methods=["POST"])
def register():
    """displays values of any parameters submitted via POST"""
    return render_template("register.html", form=request.form)

# if the script is executed directly from the Python interpreter and not used as an imported module
if __name__ == "__main__":
    app.run(debug=True, host="0.0.0.0", port=8080)
```

src6/web/froshims-0/templates/index.html

```html
<!DOCTYPE html>

<html>
    <head>
        <title>froshims-0</title>
    </head>
    <body style="text-align: center">
        <h1>Register for Frosh IMs</h1>
        <form action="/register" method="post">
            Name: <input name="name" type="text"/>
            <br/>
            Term:
            <input name="term" type="radio" value="fall"/> Fall
            <input name="term" type="radio" value="spring"/> Spring
            <br/>
            Dorm:
            <select name="dorm">
                <option value="">Choose...</option>
                <option value="Apley Court">Apley Court</option>
                <option value="Canaday">Canaday</option>
                <option value="Grays">Grays</option>
                <option value="Greenough">Greenough</option>
                <option value="Hollis">Hollis</option>
                <option value="Holworthy">Holworthy</option>
                <option value="Hurlbut">Hurlbut</option>
                <option value="Lionel">Lionel</option>
                <option value="Matthews">Matthews</option>
                <option value="Mower">Mower</option>
                <option value="Pennypacker">Pennypacker</option>
                <option value="Stoughton">Stoughton</option>
                <option value="Straus">Straus</option>
                <option value="Thayer">Thayer</option>
                <option value="Weld">Weld</option>
                <option value="Wigglesworth">Wigglesworth</option>
            </select>
            <br/>
            Captain: <input name="captain" type="checkbox"/>
            <br/>
            <input type="submit" value="Register"/>
        </form>
    </body>
</html>
```

```
<!DOCTYPE html>

<html>
    <head>
        <title>froshims-0</title>
    </head>
    <body>
        <ul>
            {% for key, value in form.items() %}
                <li>{{ key }}={{ value }}</li>
            {% endfor %}
        </ul>
    </body>
</html>
```

src6/web/froshims-1/application.py

```python
"""Implements a registration form for Frosh IMs; redirects user back to form to upon error.

Demonstrates Bootstrap.

David J. Malan
malan@harvard.edu
"""

# import Flask, plus support for redirects, rendering templates, accessing requests' parameters, and generating URLs
from flask import Flask, redirect, render_template, request, url_for

# create an instance of Flask
app = Flask(__name__)

@app.route("/")
def index():
    """displays registration form"""
    return render_template("index.html")

@app.route("/register", methods=["POST"])
def register():
    """ensures user provides name, term, and dorm when registering"""
    if not (request.form.get("name") and request.form.get("term") and request.form.get("dorm")):
        return redirect(url_for("index"))
    return render_template("register.html", form=request.form)

# if the script is executed directly from the Python interpreter and not used as an imported module
if __name__ == "__main__":
    app.run(debug=True, host="0.0.0.0", port=8080)
```

```
<html>
    <head>
        <meta charset="utf-8"/>
        <meta http-equiv="X-UA-Compatible" content="IE=edge"/>
        <meta name="viewport" content="width=device-width, initial-scale=1"/>
        <link href="static/css/bootstrap.min.css" rel="stylesheet"/>
        <title>froshims-1</title>
    </head>
    <body lang="en">
        <div class="container">
            <h1>Register for Frosh IMs</h1>
            <form action="/register" method="post">
                <div class="form-group">
                    <label class="sr-only" for="name">Name</label>
                    <input class="form-control" id="name" name="name" placeholder="Name" type="text"/>
                </div>
                <div class="radio">
                    <label>
                        <input id="fall" name="term" type="radio" value="fall"/> Fall
                    </label>
                </div>
                <div class="radio">
                    <label>
                        <input name="term" type="radio" value="spring"/> Spring
                    </label>
                </div>
                <select class="form-control" name="dorm">
                    <option value="">Dorm</option>
                    <option value="Apley Court">Apley Court</option>
                    <option value="Canaday">Canaday</option>
                    <option value="Grays">Grays</option>
                    <option value="Greenough">Greenough</option>
                    <option value="Hollis">Hollis</option>
                    <option value="Holworthy">Holworthy</option>
                    <option value="Hurlbut">Hurlbut</option>
                    <option value="Lionel">Lionel</option>
                    <option value="Matthews">Matthews</option>
                    <option value="Mower">Mower</option>
                    <option value="Pennypacker">Pennypacker</option>
                    <option value="Stoughton">Stoughton</option>
                    <option value="Straus">Straus</option>
                    <option value="Thayer">Thayer</option>
                    <option value="Weld">Weld</option>
                    <option value="Wigglesworth">Wigglesworth</option>
                </select>
                <div class="checkbox">
                    <label>
                        <input name="captain" type="checkbox"/> Captain?
                    </label>
                </div>
                <button class="btn btn-default" type="submit">Register</button>
            </form>
        </div>
    </body>
</html>
```

src6/web/froshims-1/templates/register.html

```html
<!DOCTYPE html>

<html>
    <head>
        <title>froshims-1</title>
    </head>
    <body>
        You are registered! (Well, not really.)
    </body>
</html>
```

src6/web/froshims-2/application.py

```python
"""Implements a registration form for Frosh IMs; informs user of any errors.

David J. Malan
malan@harvard.edu
"""

# import Flask, plus support for redirects, rendering templates, accessing requests' parameters, and generating URLs
from flask import Flask, redirect, render_template, request, url_for

# create an instance of Flask
app = Flask(__name__)

def validate(form):
    """validates form by ensuring all fields are non-empty"""
    return (request.form.get("name") and request.form.get("term") and request.form.get("dorm"))

@app.route("/")
def index():
    """displays registration form"""
    return render_template("index.html")

@app.route("/register", methods=["POST"])
def register():
    """reminds user as needed to provide name, term, and dorm when registering"""
    return render_template("register.html", valid=validate(request.form))

# if the script is executed directly from the Python interpreter and not used as an imported module
if __name__ == "__main__":
    app.run(debug=True, host="0.0.0.0", port=8080)
```

src6/web/froshims-2/templates/index.html

```
<!DOCTYPE html>

<html>
    <head>
        <title>froshims-2</title>
    </head>
    <body style="text-align: center">
        <h1>Register for Frosh IMs</h1>
        <form action="/register" method="post">
            Name: <input name="name" type="text"/>
            <br/>
            Term:
            <input name="term" type="radio" value="fall"/> Fall
            <input name="term" type="radio" value="spring"/> Spring
            <br/>
            Dorm:
            <select name="dorm">
                <option value="">Choose...</option>
                <option value="Apley Court">Apley Court</option>
                <option value="Canaday">Canaday</option>
                <option value="Grays">Grays</option>
                <option value="Greenough">Greenough</option>
                <option value="Hollis">Hollis</option>
                <option value="Holworthy">Holworthy</option>
                <option value="Hurlbut">Hurlbut</option>
                <option value="Lionel">Lionel</option>
                <option value="Matthews">Matthews</option>
                <option value="Mower">Mower</option>
                <option value="Pennypacker">Pennypacker</option>
                <option value="Stoughton">Stoughton</option>
                <option value="Straus">Straus</option>
                <option value="Thayer">Thayer</option>
                <option value="Weld">Weld</option>
                <option value="Wigglesworth">Wigglesworth</option>
            </select>
            <br/>
            Captain: <input name="captain" type="checkbox"/>
            <br/>
            <input type="submit" value="Register"/>
        </form>
    </body>
</html>
```

```
<!DOCTYPE html>

<html>
    <head>
        <title>froshims-2</title>
    </head>
    <body>
        {% if valid %}
            You are registered! (Well, not really.)
        {% else %}
            You must provide a name, term, and dorm! Go <a href="/">back</a>.
        {% endif %}
    </body>
</html>
```

src6/web/froshims-3/application.py

```python
"""Implements a registration form for Frosh IMs; reports registration via email.

David J. Malan
malan@harvard.edu
"""

# import Flask, plus support for redirects, rendering templates, accessing requests' parameters, and generating URLs
from flask import Flask, redirect, render_template, request, url_for

# import Flask-Mail for sending email
from flask_mail import Mail, Message

# create an instance of Flask
app = Flask(__name__)

# configure Flask-Mail
app.config["MAIL_DEFAULT_SENDER"] = ("TODO", "TODO")
app.config["MAIL_PASSWORD"] = "TODO"
app.config["MAIL_PORT"] = 465
app.config["MAIL_SERVER"] = "smtp.gmail.com"
app.config["MAIL_USE_SSL"] = True
app.config["MAIL_USERNAME"] = "TODO"
mail = Mail(app)

@app.route("/")
def index():
    """displays registration form"""
    return render_template("index.html")

@app.route("/register", methods=["POST"])
def register():
    """sends email upon each registration"""

    # ensure user provides name, term, and dorm when registering
    if not (request.form.get("name") and request.form.get("term") and request.form.get("dorm")):
        return redirect(url_for("index"))

    # prepare body of email
    body = """This person just registered:
Name: {}
Term: {}
Dorm: {}
Caption: {}
""".format(request.form.get("name"), request.form.get("term"), request.form.get("dorm"), request.form.get("captain"))

    # send email
    msg = Message("registration", body=body, recipients=["TODO"])
    mail.send(msg)

    # confirm registration
    return render_template("register.html")

# if the script is executed directly from the Python interpreter and not used as an imported module
if __name__ == "__main__":
    app.run(debug=True, host="0.0.0.0", port=8080)
```

src6/web/froshims-3/templates/index.html

```html
<!DOCTYPE html>

<html>
    <head>
        <title>froshims-3</title>
    </head>
    <body style="text-align: center">
        <h1>Register for Frosh IMs</h1>
        <form action="/register" method="post">
            Name: <input name="name" type="text"/>
            <br/>
            Term:
            <input name="term" type="radio" value="fall"/> Fall
            <input name="term" type="radio" value="spring"/> Spring
            <br/>
            Dorm:
            <select name="dorm">
                <option value="">Choose...</option>
                <option value="Apley Court">Apley Court</option>
                <option value="Canaday">Canaday</option>
                <option value="Grays">Grays</option>
                <option value="Greenough">Greenough</option>
                <option value="Hollis">Hollis</option>
                <option value="Holworthy">Holworthy</option>
                <option value="Hurlbut">Hurlbut</option>
                <option value="Lionel">Lionel</option>
                <option value="Matthews">Matthews</option>
                <option value="Mower">Mower</option>
                <option value="Pennypacker">Pennypacker</option>
                <option value="Stoughton">Stoughton</option>
                <option value="Straus">Straus</option>
                <option value="Thayer">Thayer</option>
                <option value="Weld">Weld</option>
                <option value="Wigglesworth">Wigglesworth</option>
            </select>
            <br/>
            Captain: <input name="captain" type="checkbox"/>
            <br/>
            <input type="submit" value="Register"/>
        </form>
    </body>
</html>
```

```
<!DOCTYPE html>

<html>
    <head>
        <title>froshims-3</title>
    </head>
    <body>
        You are registered! (Really.)
    </body>
</html>
```

src6/web/hello-0/application.py

```python
"""Says hello.

Demonstrates templates.

David J. Malan
malan@harvard.edu
"""

# import Flask, plus support for rendering templates
from flask import Flask, render_template

# create an instance of Flask
app = Flask(__name__)

@app.route("/")
def index():
    """says hello"""
    return render_template("index.html")

# if the script is executed directly from the Python interpreter and not used as an imported module
if __name__ == "__main__":
    app.run(debug=True, host="0.0.0.0", port=8080)
```

src6/web/hello-0/templates/index.html

```html
<!DOCTYPE html>

<html>
    <head>
        <title>hello-0</title>
    </head>
    <body>
        hello, world
    </body>
</html>
```

src6/web/hello-1/application.py

```python
"""Says hello.

Demonstrates templates with parameterization.

David J. Malan
malan@harvard.edu
"""

# import Flask, plus support for rendering templates and for accessing requests' parameters
from flask import Flask, render_template, request

# create an instance of Flask
app = Flask(__name__)

@app.route("/")
def index():
    """says hello"""
    return render_template("index.html", name=request.args.get("name"))

# if the script is executed directly from the Python interpreter and not used as an imported module
if __name__ == "__main__":
    app.run(debug=True, host="0.0.0.0", port=8080)
```

src6/web/hello-1/templates/index.html

```html
<!DOCTYPE html>

<html>
    <head>
        <title>hello-1</title>
    </head>
    <body>
        hello, {{ name }}
    </body>
</html>
```

```python
"""Says hello.

Demonstrates variable rules.

David J. Malan
malan@harvard.edu
"""

# import Flask, plus support for rendering templates and for accessing requests' parameters
from flask import Flask, render_template, request

# create an instance of Flask
app = Flask(__name__)

@app.route("/<name>")
def index(name):
    """says hello"""
    return render_template("index.html", name=name)

# if the script is executed directly from the Python interpreter and not used as an imported module
if __name__ == "__main__":
    app.run(debug=True, host="0.0.0.0", port=8080)
```

src6/web/hello-2/templates/index.html

```html
<!DOCTYPE html>

<html>
    <head>
        <title>hello-2</title>
    </head>
    <body>
        hello, {{ name }}
    </body>
</html>
```