```python
"""
Adds two numbers.

Demonstrates casting and arithmetic.
"""

# Prompt user for x
x = int(input("$"))

# Prompt user for y
y = int(input("$"))

# Print sum
print(f"${x + y}")
```

```python
"""
Counts down to 1.

Demonstrates a while loop.
"""

n = int(input("From: "))
while n > 0:
    print(n)
    n -= 1
print("Blast off!")
```

```
1   """
2   Says hello to the world.
3
4   Demonstrates a function with an argument.
5   """
6
7   print("hello, world")
```

```
1    """
2    Says hello to someone.
3
4    Demonstrates user input, a return value, a variable, and concatenation.
5    """
6
7    s = input()
8    print("hello, " + s)
```

```python
"""
Says hello to someone.

Demonstrates multiple arguments.
https://docs.python.org/3/library/functions.html#print
"""

s = input()
print("hello,", s)
```

```python
"""
Says hello to someone.

Demonstrates string formatting.
"""

s = input()
print("hello, {}".format(s))
```

```python
"""
Says hello to someone.

Demonstrates format strings (f-strings).
"""

s = input()
print(f"hello, {s}")
```

```python
1   """
2   Prints 1/10 as a floating-point value.
3
4   Demonstrates imprecision.
5   """
6
7   print(f"{1/10:.55f}")
```

```python
"""
Simulates taking inventory.

Demonstrates a sorted list (potentially with duplicates).
"""

# Take inventory
inventory = []
while True:
    item = input("Item: ")
    if not item:
        break
    inventory.append(item)

# Report inventory
for item in sorted(inventory):
    print(item)
```

```python
"""
Simulates taking inventory.

Demonstrates a set (without duplicates).
"""

# Take inventory
inventory = set()
while True:
    item = input("Item: ")
    if not item:
        break
    inventory.add(item)

# Report inventory
for item in sorted(inventory):
    print(item)
```

```python
"""
Simulates taking inventory.

Demonstrates a dictionary.
"""

# Take inventory
inventory = {}
while True:
    item = input("Item: ")
    if not item:
        break
    if item in inventory:
        inventory[item] += 1
    else:
        inventory[item] = 1

# Report inventory
for key, value in inventory.items():
    print(f"{key}: {value}")
```

python1

1. [`hello1.py`](hello1.py)
1. [`hello2.py`](hello2.py)
1. [`hello3.py`](hello3.py)
1. [`hello4.py`](hello4.py)
1. [`hello5.py`](hello5.py)
1. [`hello6.py`](hello6.py)
1. [`addition.py`](addition.py)
1. [`imprecision.py`](imprecision.py)
1. [`count2.py`](count2.py)
1. [`inventory1.py`](inventory1.py)
1. [`inventory2.py`](inventory2.py)
1. [`inventory3.py`](inventory3.py)

```python
from flask import Flask, redirect, render_template, session, url_for

app = Flask(__name__)

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

```
 1    <!DOCTYPE html>
 2
 3    <html>
 4        <head>
 5            <meta name="viewport" content="initial-scale=1, width=device-width"/>
 6            <title>Grumpy Cat</title>
 7        </head>
 8        <body>
 9            <img alt="Grumpy Cat" src="/static/cat.jpg"/>
10        </body>
11    </html>
```

```python
from flask import Flask, render_template, request

app = Flask(__name__)

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

@app.route("/register", methods=["POST"])
def register():
    if not request.form.get("name") or not request.form.get("dorm"):
        return render_template("failure.html")
    return render_template("success.html")
```

```
1  {% extends "layout.html" %}
2
3  {% block body %}
4  You must provide your name and dorm!
5  {% endblock %}
```

```
1    {% extends "layout.html" %}
2
3    {% block body %}
4    <h1>Register for Frosh IMs</h1>
5    <form action="/register" method="post">
6        <input name="name" placeholder="Name" type="text"/>
7        <select name="dorm">
8            <option disabled selected value="">Dorm</option>
9            <option value="Apley Court">Apley Court</option>
10           <option value="Canaday">Canaday</option>
11           <option value="Grays">Grays</option>
12           <option value="Greenough">Greenough</option>
13           <option value="Hollis">Hollis</option>
14           <option value="Holworthy">Holworthy</option>
15           <option value="Hurlbut">Hurlbut</option>
16           <option value="Lionel">Lionel</option>
17           <option value="Matthews">Matthews</option>
18           <option value="Mower">Mower</option>
19           <option value="Pennypacker">Pennypacker</option>
20           <option value="Stoughton">Stoughton</option>
21           <option value="Straus">Straus</option>
22           <option value="Thayer">Thayer</option>
23           <option value="Weld">Weld</option>
24           <option value="Wigglesworth">Wigglesworth</option>
25       </select>
26       <input type="submit" value="Register"/>
27   </form>
28   {% endblock %}
```

```
1    <!DOCTYPE html>
2
3    <html>
4        <head>
5            <meta name="viewport" content="initial-scale=1, width=device-width"/>
6            <title>froshims0</title>
7        </head>
8        <body>
9            {% block body %}{% endblock %}
10       </body>
11   </html>
```

```
1   {% extends "layout.html" %}
2
3   {% block body %}
4   You are registered! (Well, not really.)
5   {% endblock %}
```

```python
1    from flask import Flask, redirect, render_template, request
2
3    # Configure app
4    app = Flask(__name__)
5
6    # Registrants
7    students = []
8
9    @app.route("/")
10   def index():
11       return render_template("index.html")
12
13
14   @app.route("/registrants")
15   def registrants():
16       return render_template("registrants.html", students=students)
17
18
19   @app.route("/register", methods=["POST"])
20   def register():
21       name = request.form.get("name")
22       dorm = request.form.get("dorm")
23       if not name or not dorm:
24           return render_template("failure.html")
25       students.append(f"{name} from {dorm}")
26       return redirect("/registrants")
```

```
1   {% extends "layout.html" %}
2
3   {% block body %}
4   You must provide your name and dorm!
5   {% endblock %}
```

```
1    {% extends "layout.html" %}
2
3    {% block body %}
4    <h1>Register for Frosh IMs</h1>
5    <form action="/register" method="post">
6        <input name="name" placeholder="Name" type="text"/>
7        <select name="dorm">
8            <option disabled selected value="">Dorm</option>
9            <option value="Apley Court">Apley Court</option>
10           <option value="Canaday">Canaday</option>
11           <option value="Grays">Grays</option>
12           <option value="Greenough">Greenough</option>
13           <option value="Hollis">Hollis</option>
14           <option value="Holworthy">Holworthy</option>
15           <option value="Hurlbut">Hurlbut</option>
16           <option value="Lionel">Lionel</option>
17           <option value="Matthews">Matthews</option>
18           <option value="Mower">Mower</option>
19           <option value="Pennypacker">Pennypacker</option>
20           <option value="Stoughton">Stoughton</option>
21           <option value="Straus">Straus</option>
22           <option value="Thayer">Thayer</option>
23           <option value="Weld">Weld</option>
24           <option value="Wigglesworth">Wigglesworth</option>
25       </select>
26       <input type="submit" value="Register"/>
27   </form>
28   {% endblock %}
```

```
1    <!DOCTYPE html>
2
3    <html>
4        <head>
5            <meta content="initial-scale=1, width=device-width" name="viewport"/>
6            <title>froshims1</title>
7        </head>
8        <body>
9            {% block body %}{% endblock %}
10       </body>
11   </html>
```

```
1    {% extends "layout.html" %}
2
3    {% block body %}
4
5    <ul>
6        {% for student in students %}
7        <li>{{ student }}</li>
8        {% endfor %}
9    </ul>
10
11   {% endblock %}
```

```python
import os
import smtplib
from flask import Flask, render_template, request

# Configure app
app = Flask(__name__)

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


@app.route("/register", methods=["POST"])
def register():
    name = request.form.get("name")
    email = request.form.get("email")
    dorm = request.form.get("dorm")
    if not name or not email or not dorm:
        return render_template("failure.html")
    message = "You are registered!"
    server = smtplib.SMTP("smtp.gmail.com", 587)
    server.starttls()
    server.login("jharvard@cs50.net", os.getenv("PASSWORD"))
    server.sendmail("jharvard@cs50.net", email, message)
    return render_template("success.html")
```

```
1    {% extends "layout.html" %}
2
3    {% block body %}
4    You must provide your name and dorm!
5    {% endblock %}
```

```
1    {% extends "layout.html" %}
2
3    {% block body %}
4    <h1>Register for Frosh IMs</h1>
5    <form action="/register" method="post">
6        <input name="name" placeholder="Name" type="text"/>
7        <input name="email" placeholder="Email" type="email"/>
8        <select name="dorm">
9            <option disabled selected value="">Dorm</option>
10           <option value="Apley Court">Apley Court</option>
11           <option value="Canaday">Canaday</option>
12           <option value="Grays">Grays</option>
13           <option value="Greenough">Greenough</option>
14           <option value="Hollis">Hollis</option>
15           <option value="Holworthy">Holworthy</option>
16           <option value="Hurlbut">Hurlbut</option>
17           <option value="Lionel">Lionel</option>
18           <option value="Matthews">Matthews</option>
19           <option value="Mower">Mower</option>
20           <option value="Pennypacker">Pennypacker</option>
21           <option value="Stoughton">Stoughton</option>
22           <option value="Straus">Straus</option>
23           <option value="Thayer">Thayer</option>
24           <option value="Weld">Weld</option>
25           <option value="Wigglesworth">Wigglesworth</option>
26       </select>
27       <input type="submit" value="Register"/>
28   </form>
29   {% endblock %}
```

```
1    <!DOCTYPE html>
2
3    <html>
4        <head>
5            <meta content="initial-scale=1, width=device-width" name="viewport"/>
6            <title>froshims2</title>
7        </head>
8        <body>
9            {% block body %}{% endblock %}
10       </body>
11   </html>
```

```
1  {% extends "layout.html" %}
2
3  {% block body %}
4  You are registered! (Really.)
5  {% endblock %}
```

```python
from flask import Flask, render_template, request
import csv

app = Flask(__name__)

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

@app.route("/register", methods=["POST"])
def register():
    if not request.form.get("name") or not request.form.get("dorm"):
        return render_template("failure.html")
    file = open("registrants.csv", "a")
    writer = csv.writer(file)
    writer.writerow((request.form.get("name"), request.form.get("dorm")))
    file.close()
    return render_template("success.html")
```

```
1    {% extends "layout.html" %}
2
3    {% block body %}
4    You must provide your name and dorm!
5    {% endblock %}
```

```
1   {% extends "layout.html" %}
2
3   {% block body %}
4   <h1>Register for Frosh IMs</h1>
5   <form action="/register" method="post">
6       <input name="name" placeholder="Name" type="text"/>
7       <select name="dorm">
8           <option disabled selected value="">Dorm</option>
9           <option value="Apley Court">Apley Court</option>
10          <option value="Canaday">Canaday</option>
11          <option value="Grays">Grays</option>
12          <option value="Greenough">Greenough</option>
13          <option value="Hollis">Hollis</option>
14          <option value="Holworthy">Holworthy</option>
15          <option value="Hurlbut">Hurlbut</option>
16          <option value="Lionel">Lionel</option>
17          <option value="Matthews">Matthews</option>
18          <option value="Mower">Mower</option>
19          <option value="Pennypacker">Pennypacker</option>
20          <option value="Stoughton">Stoughton</option>
21          <option value="Straus">Straus</option>
22          <option value="Thayer">Thayer</option>
23          <option value="Weld">Weld</option>
24          <option value="Wigglesworth">Wigglesworth</option>
25      </select>
26      <input type="submit" value="Register"/>
27  </form>
28  {% endblock %}
```

```html
1   <!DOCTYPE html>
2
3   <html>
4       <head>
5           <meta name="viewport" content="initial-scale=1, width=device-width"/>
6           <title>froshims3</title>
7       </head>
8       <body>
9           {% block body %}{% endblock %}
10      </body>
11  </html>
```

```
1   {% extends "layout.html" %}
2
3   {% block body %}
4   You are registered! (Really.)
5   {% endblock %}
```

```python
from flask import Flask, redirect, render_template, request, session, url_for

app = Flask(__name__)

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

```
 1    <!DOCTYPE html>
 2
 3    <html>
 4        <head>
 5            <meta name="viewport" content="initial-scale=1, width=device-width"/>
 6            <title>Grumpy Cat</title>
 7        </head>
 8        <body>
 9            Here is a cat for you, {{ name }}.
10            <img alt="Grumpy Cat" src="/static/cat.jpg"/>
11        </body>
12    </html>
```

```python
 1    # Implements a web server
 2
 3    from http.server import BaseHTTPRequestHandler, HTTPServer
 4
 5
 6    # HTTPRequestHandler class
 7    class HTTPServer_RequestHandler(BaseHTTPRequestHandler):
 8
 9        # GET
10        def do_GET(self):
11
12            # send response status code
13            self.send_response(200)
14
15            # send headers
16            self.send_header("Content-type", "text/html")
17            self.end_headers()
18
19            # write message
20            self.wfile.write(bytes("hello, world", "utf8"))
21
22
23    # configure server
24    port = 8080
25    server_address = ("0.0.0.0", port)
26    httpd = HTTPServer(server_address, HTTPServer_RequestHandler)
27
28    # run server
29    httpd.serve_forever()
```