SINGAPORE UNIVERSITY OF SOCIAL SCIENCES

ICT239 Web Programming

Back End Development – Flask II - Seminar 5

RECAP: SEMINAR OVERVIEW

BACK END PROGRAMMING – LEARNING OBJECTIVES

1. Differentiate Static vs Dynamic Sites
2. Understand the different purposes of Client side vs Server side programming
3. Learn about Web Application Programming Frameworks
4. Deploy a Web Application - Flask

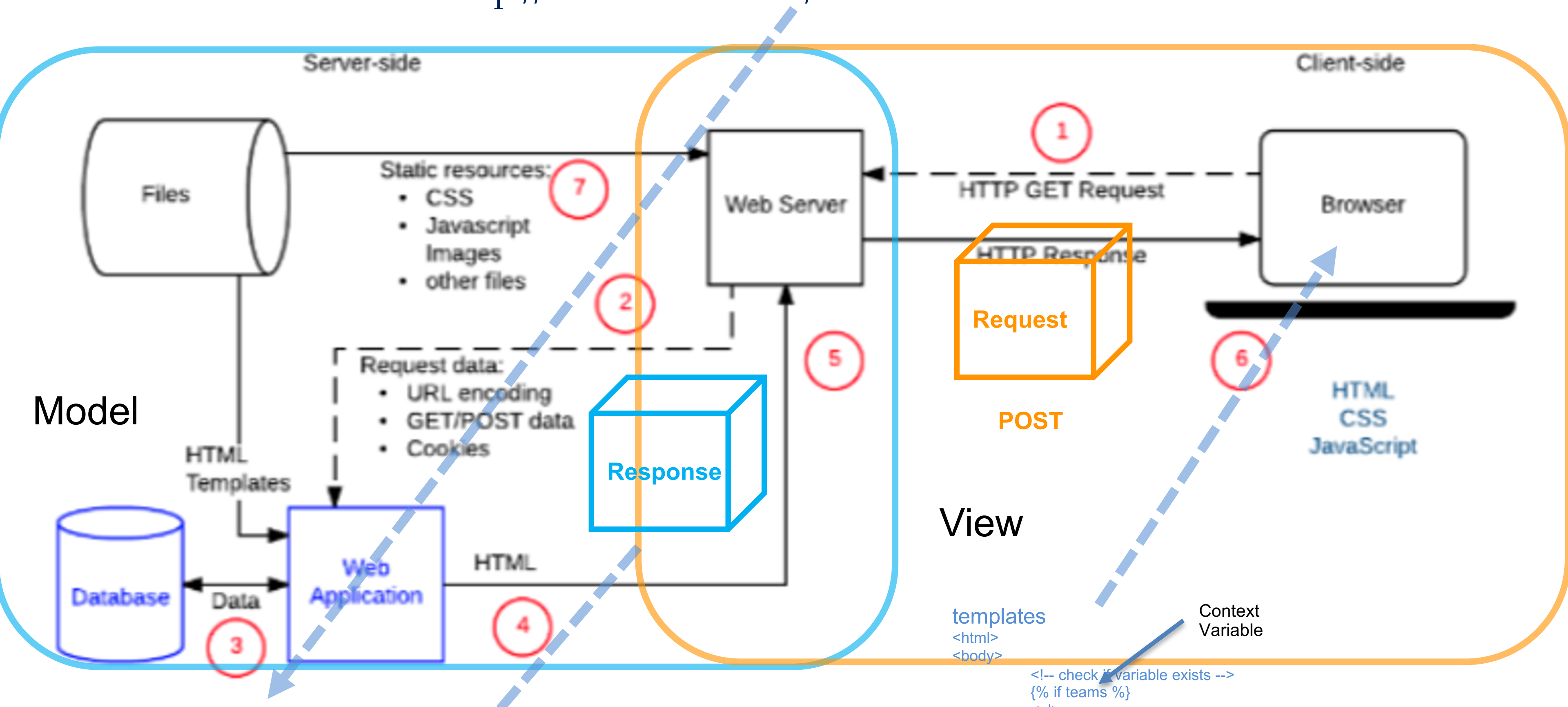
SEMINAR OVERVIEW

FLASK WEB (MICRO) FRAMEWORK – LEARNING OBJECTIVES

1) Employ a Web application programming framework to develop a dynamic website
2) Use Flask as a MVC Web Framework to develop a web application
3) Implement and use routes and templates to handle request and responses
4) Implement CRUD operations on databases

RECAP: Request and Response

http://www.server.com/best?team=mctan011&show=11



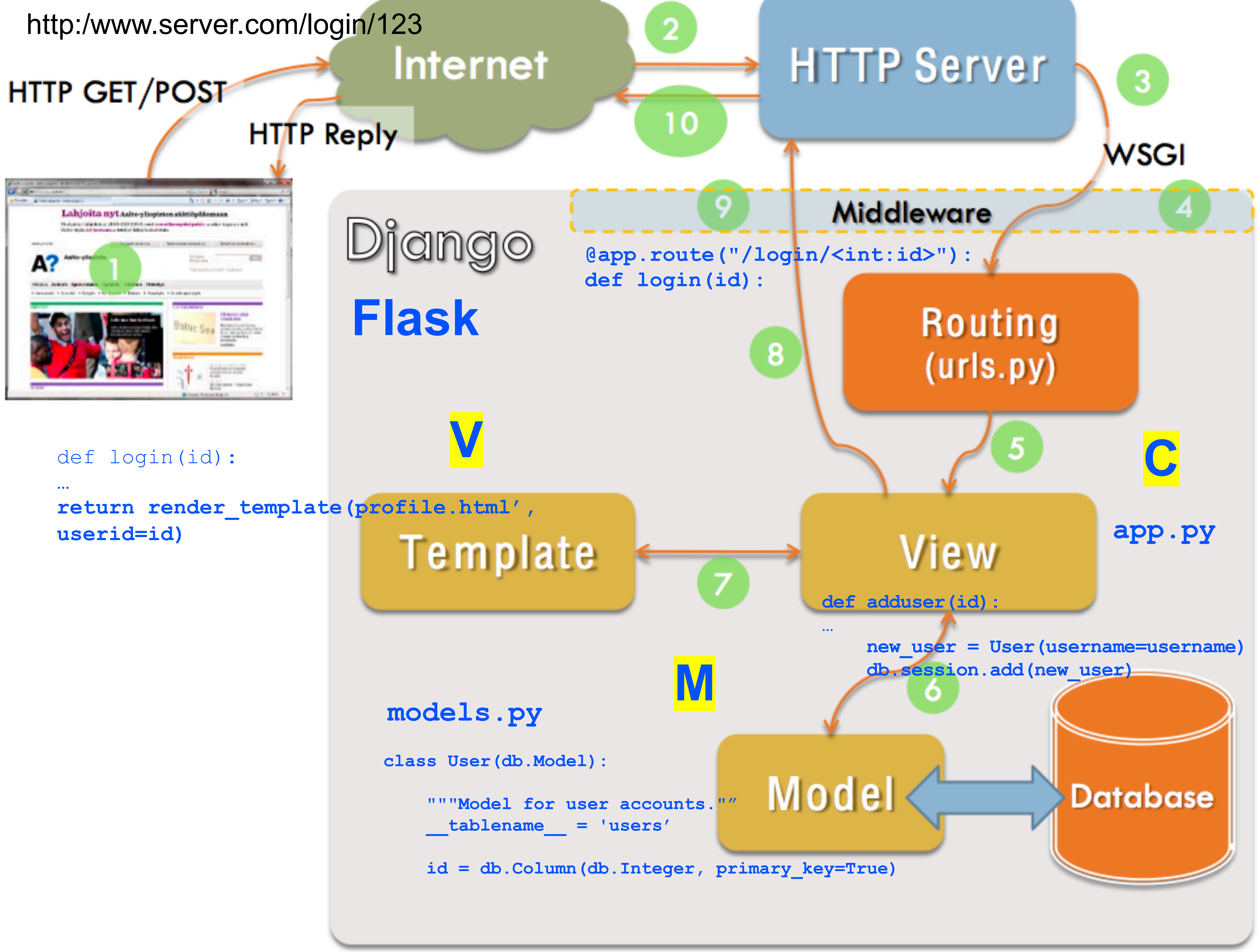
templates

```
<html>
<body>
        <!-- check if variable exists -->
        {% if teams %}
        <ul>
                {% for team in team_list %}
                        <li>{{ team.team_name
        }}</li>
                {% endfof %}
        </ul>
        {% endif %}
</body>
</html>
```

Controller

Route = /best

```
@app.route("/best", methods = ["GET"])
def best():
    name = request.form["team"]
    show = request.form["show"]
    db = get_db()
    cur = db.execute('select * from team where team="'  + name + '" limit ' + show  + ')
    team_list = cur.fetchall()
    return render_template (team_list)
```



```
@app.route("/login/<int:id>"):
def login(id):
```

```
def login(id):
…
return render_template(profile.html',
userid=id)
```

```
def adduser(id):
…
    new_user = User(username=username)
    db.session.add(new_user)
```

```
class User(db.Model):

    """Model for user accounts."”
    __tablename__ = 'users'

    id = db.Column(db.Integer, primary_key=True)
```

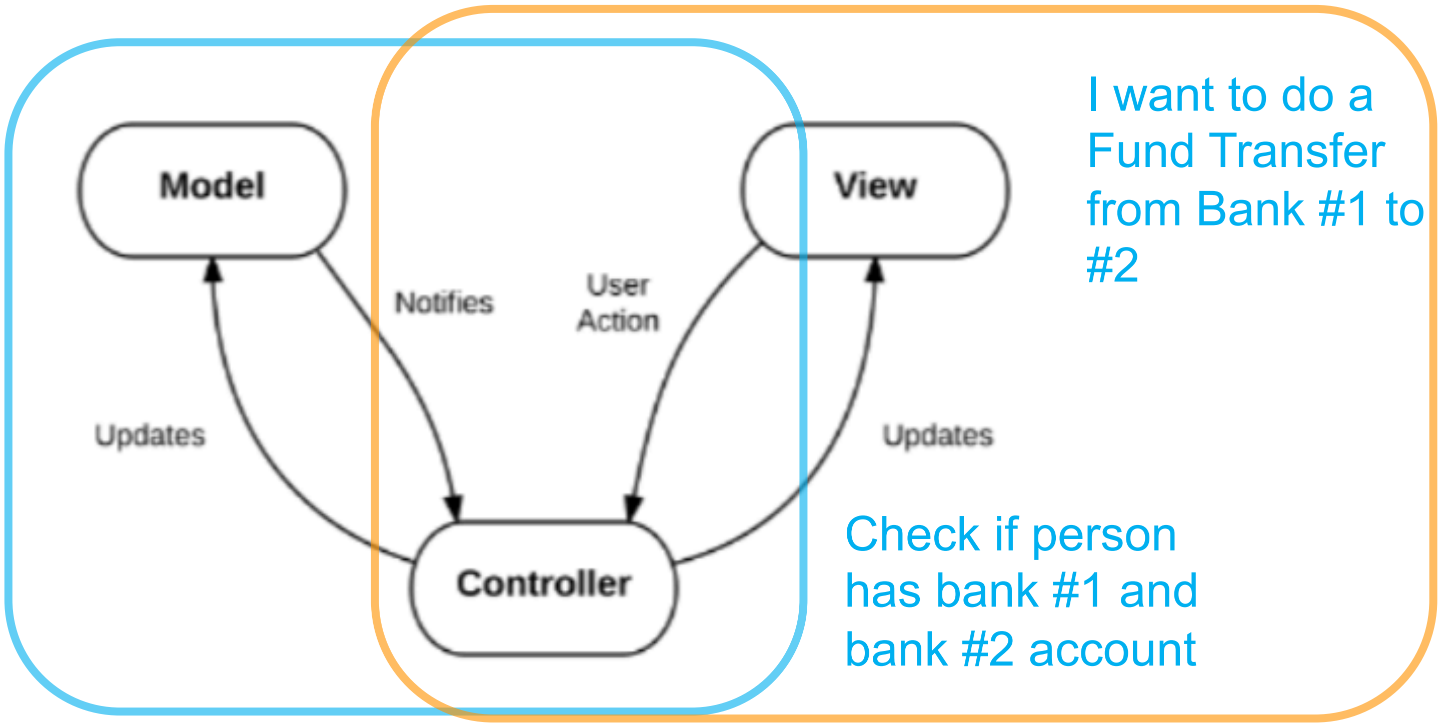
Client and Server

Model View Controller (MVC) Architecture

A software design pattern used to organise application logic into 3 parts

- Modular
- Collaboration
- Reuse

bank #1 - $100
Bank #2 + $100



I want to do a Fund Transfer from Bank #1 to #2

Check if person has bank #1 and bank #2 account

Server / Backend Programming

Figure 3: MVC architecture
Source: Wikipedia

Client / Frontend Programming

SEMINAR OVERVIEW

BACK END PROGRAMMING – LEARNING OBJECTIVES

1. Employ a Web application programming framework to develop a dynamic website

2. Use Flask as a MVC Web Framework to develop a web application

3. Implement and use routes and templates to handle requests and responses

4. Implement CRUD operations on databases

Flask Framework Deployment

Set up and Dependencies

- python – programming language
- pip - is a package-management system used to install and manage software packages written in Python.
- virtualenv - https://virtualenv.pypa.io – tool for creating isolated versions/environment for python
- http://flask.pocoo.org/docs/1.0/

```
#app.py
from flask import Flask
app = Flask(__name__)
@app.route("/")
def main():
   return "Hello World!"

if __name__ == "__main__":
   app.run(debug=True)


FLASK_APP=app.py flask run

python app.py
```

python app.py
flask_app=app.py
flask run

CRUD APPLICATION

First CRUD Application

- Data Store or Model
  - Python data structure (in memory)
  - Database (in memory and disk)
  - Objects (in memory or disk) (ie ORM)
- Operations
  - Read
  - Create
  - Update
  - Delete

CRUD APPLICATION

Topic 3: Flask Templating System

- http://jinja.pocoo.org
- Features
  - Placeholders and Context
  - Loops and Conditional Statements
  - Templates inheritance
  - Custom Filters

CRUD APPLICATION

Topic 1: Database Integration

- Relational SQL database or NoSQL
- Local (ie localhost) or Remote (ie cloud)

SEMINAR OVERVIEW

FLASK WEB (MICRO) FRAMEWORK – LEARNING OBJECTIVES

1) Employ a Web application programming framework to develop a dynamic website
2) Use Flask as a MVC Web Framework to develop a web application
3) Implement and use routes and templates to handle request and responses
4) Implement CRUD operations on databases

TODO BEFORE NEXT SEMINAR

Reminder

- Read Study Unit 6
- References
  - All References we have covered so far
- Use your Canvas resources
  - Study Guide
  - Discussion Forums
  - Course Textbook / Google

SINGAPORE UNIVERSITY OF SOCIAL SCIENCES

Thank You.