

Unit 11

Web Development in Python (Practical)

In this exercise, we were introduced to the use of Flask as a simple web server. Together with Flask, exposure was made to Jinja templates.

Web Server

```
from flask import Flask, render_template
from flask_mysql import MySQL
```

```
app = Flask(__name__)
app.config['MYSQL_HOST'] = 'localhost'
app.config['MYSQL_USER'] = 'root'
app.config['MYSQL_PASSWORD'] = 'codio'
app.config['MYSQL_DB'] = 'students'
```

```
mysql = MySQL(app)
```

```
@app.route('/')
@app.route('/index')
```

```
def index():
    query = "SELECT score from grades;"

    cursor = mysql.connection.cursor()
```

```
cursor.execute(query)

results = cursor.fetchall()

cursor.close()


return render_template('index.html', title='Home', scores=results)


if __name__ == '__main__':
    app.run(host='0.0.0.0')
```

Data for Web Server

```
-- MySQL dump 10.13  Distrib 5.7.31, for Linux (x86_64)
--
-- Host: localhost    Database: students
-- -----
-- Server version      5.7.31-0ubuntu0.18.04.1

/*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */;
/*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
/*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION */;
/*!40101 SET NAMES utf8 */;
/*!40103 SET @OLD_TIME_ZONE=@@TIME_ZONE */;
/*!40103 SET TIME_ZONE='+00:00' */;
/*!40014 SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0 */;
/*!40014 SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS,
FOREIGN_KEY_CHECKS=0 */;
/*!40101 SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='NO_AUTO_VALUE_ON_ZERO' */;
/*!40111 SET @OLD_SQL_NOTES=@@SQL_NOTES, SQL_NOTES=0 */;

--
```

```
-- Table structure for table `grades`
--

DROP TABLE IF EXISTS `grades`;
/*!40101 SET @saved_cs_client      = @@character_set_client */;
/*!40101 SET character_set_client = utf8 */;
CREATE TABLE `grades` (
  `surname` varchar(30) DEFAULT NULL,
  `forename` varchar(30) DEFAULT NULL,
  `module_code` varchar(8) DEFAULT NULL,
  `score` int(11) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `grades`
--

LOCK TABLES `grades` WRITE;
/*!40000 ALTER TABLE `grades` DISABLE KEYS */;
INSERT INTO `grades` VALUES
('Smith','John','MATH101',85),('Jones','Dave','COMP101',93),('Bob','Alice',
'MATH101',50),('Alice','Bob','MATH101',66);
/*!40000 ALTER TABLE `grades` ENABLE KEYS */;
UNLOCK TABLES;
/*!40103 SET TIME_ZONE=@OLD_TIME_ZONE */;

/*!40101 SET SQL_MODE=@OLD_SQL_MODE */;
/*!40014 SET FOREIGN_KEY_CHECKS=@OLD_FOREIGN_KEY_CHECKS */;
/*!40014 SET UNIQUE_CHECKS=@OLD_UNIQUE_CHECKS */;
/*!40101 SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT */;
/*!40101 SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS */;
```

```
/*!40101 SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION */;
/*!40111 SET SQL_NOTES=@OLD_SQL_NOTES */;

drop table if exists `modules`;
create table modules (
code varchar(10) not null,
name varchar(20) not null);
insert into modules values('MOD1', 'Main Module'), ('MOD2', "Second Module"),
('MOD3', 'Third Module');

drop table if exists students;
create table students(
id int(4) not null auto_increment,
forename varchar(20) not null,
    surname varchar(20) not null,
primary key(id));
insert into students values ('Mary', 'Bary'), ("Sam", "Jam"),
('Flipp', 'Pilf');

drop table if exists student_grades;
create table student_grades(
student_id int(4) not null,
)
```

Basic Template for Web Server

```
<html>
  {% block content %}
    <h1>Scores</h1>
    <ul>
      {% for score in scores %}
        <li>
```

```
    {{score[0]}}  
</li>  
    {% endfor %}  
</ul>  
{% endblock %}  
</html>
```