Programming in Network Environments

Biomedicine Engineering Degree 2020-2021

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Course Goals

To understand the **computers networks** and how to create software applications over them in order to find solutions to the current challenges that biomedicine has in the present.

The course will be **very practical** with all the sessions in the laboratories and most of them with **programming** exercises to be implemented in order to learn the concepts presented in the course, and also, to learn programming.

The human genome has 3000 million of elements in its sequence. There are 7500 million of persons in the Earth. How to manage this huge volume of data? Computers networks.

Course Contents

Introduction to the tools

Object Oriented Programming

Network Service Models (client/server)

Communication Protocols Programming (TCP/IP, HTTP)

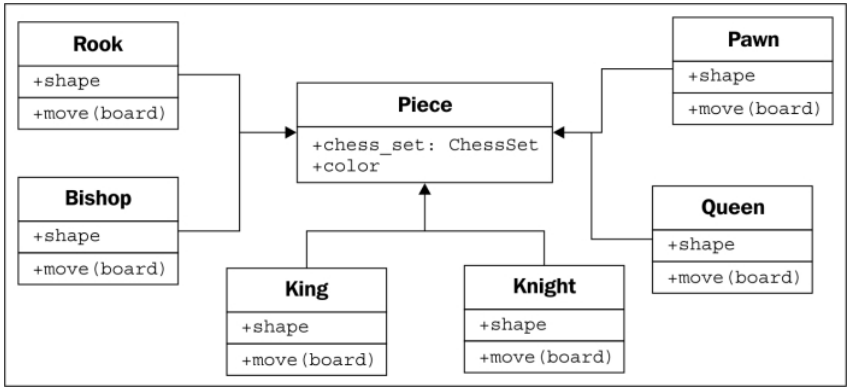
Web Applications Programming

https://github.com/davidrol6/2019-2020-PNE/wiki

Block 0. Tools

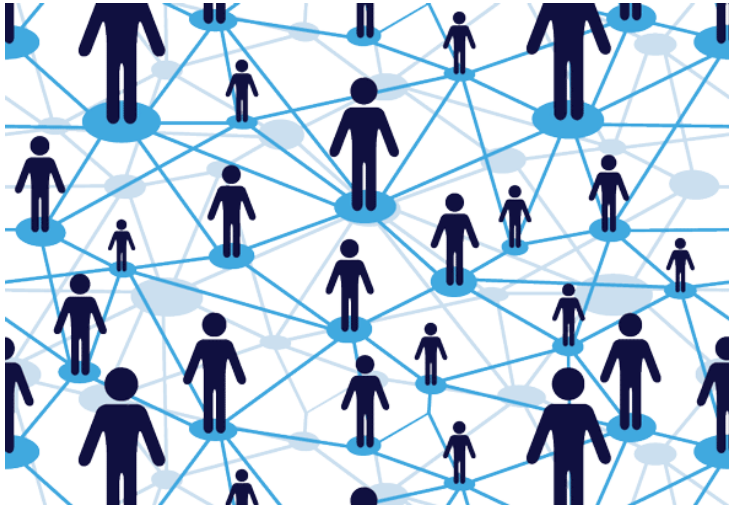
PyCharm

Block 1. Object Oriented Programming



- Classes
- Inheritance
- Objects and Methods

Block 2. Network Services Models



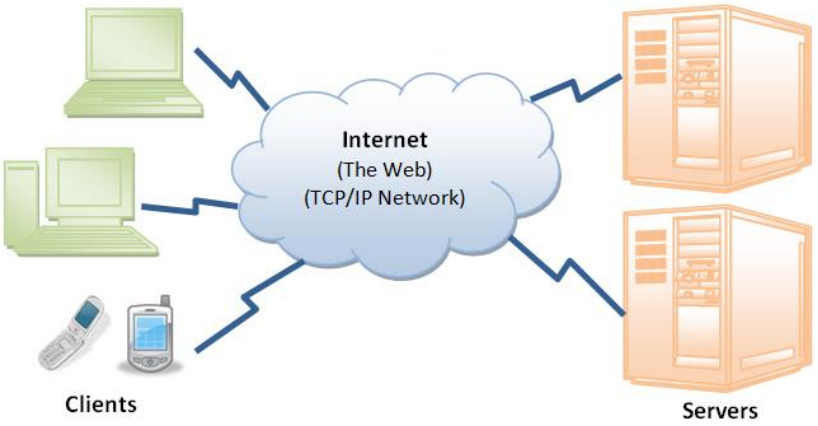
Network Services Models Introduction

Peer to Peer Model (P2P)

REST Model

Cloud Computing for network services deployment

Block 3. Communications Protocols Programming



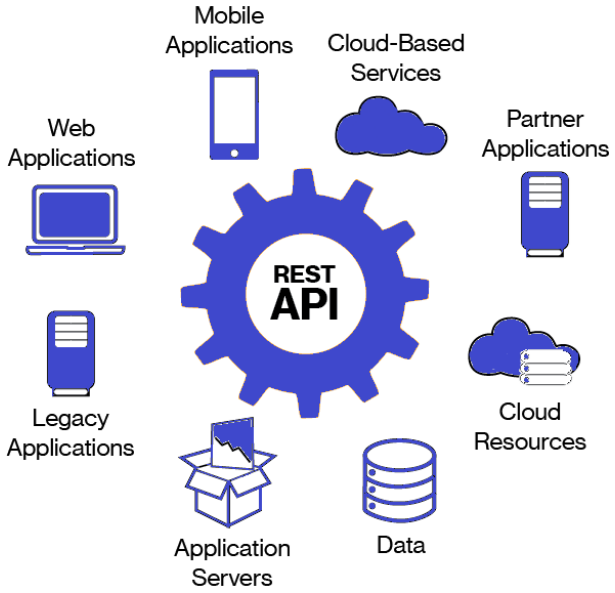
Protocol TCP/IP Protocol

Protocol HTTP Protocol

Security in Computer Networks

Distributed Applications Programming Techniques

Block 4. Web Applications Programming



Basic Elements

API REST Description

API REST Design

API REST Use

Basic information

Schedule:

Tuesdays: 15:00 a 17:00 (Theory) (Aula S001 Edificio Gestión)
Wednesday: 17:00 to 19:00 (Practice) (Aula S001 Edificio Gestión)

If you need support, please send an email or leave a message in Teams

Practices

The description of the practices will be available both in “Aula Virtual” and in github

All the practices will be done using the **Python** programming language.

Evaluation

- 40%: Test about the concepts (20% mid-term test, 20% final-test)
- 60%: Practices
  - 20% one random practice, corrected in the middle of the term.
  - 40% final project, corrected at the end of the term.
  - A presential defense will be required for the practice and the final project.

Each student will upload the practices to his/her github account following the instructions provided