Web Application Design

Course Presentation

Introduction

- **Web applications have a client GUI in an Internet browser and communicate with a web container through the HTTP protocol. Web applications have become a major form of software delivery with the rise of Internet and Intranet computing over the last 20 years. To a great extent they are replacing the traditional method of delivering software applications as installable binaries.**

- **To be stable, maintainable, and extensible, complex systems must have a good architecture. Over the last 20 years a common system architecture has evolved that is at the basis of most modern web applications. There are a variety of system principles and design patterns that are involved in modern web applications. The most important architectural pattern in modern web applications is the Model-View-Controller (MVC) architecture for web applications.**

Focus

- **This course focuses on:**
  - **the protocols,**
  - **principles,**
  - **design patterns,**
  - **architecture of web applications,**
  - **web development frameworks that embody such principles and architecture.**

- **The course also focuses on principles and patterns that are general across platforms and frameworks.**

Focus

• This course provides a systematic introduction to programming interactive and dynamic web applications.

• During this course, we will use PHP for server side processing. PHP is a widely used web application server side scripting language. It has been used for some very large systems (e.g., Facebook), but generally is used for smaller applications. The course will introduce HTML and CSS as they are currently used, and also covers Javascript, Ajax, jQuery, and web security.

Objectives

- **Students will gain the skills and project-based experience needed for developing complex web applications;**

- **Students will be able to use a variety of strategies and tools to create complex web applications;**

- **Students will develop awareness and appreciation of the myriad ways that people access the web and will be able to create standards-based websites that are accessible and usable by a full spectrum of users;**

Structure

- Web applications
  - Business
  - View
    - HTML
    - CSS
- Model-View-Controller
- Data Models
  - Modelling data
  - Databases
  - Doctrine / Hibernate
- Unit Tests

Structure

- **Functional Tests**

- **Forms**
  - **Handling dynamic data in HTML**
  - **Dynamic forms**
  - **Validation**

- **User – Session**
  - **Sending information between pages;**
  - **Storing user information between pages**

Structure

- AJAX
  - Javascript
  - jQuery
- Web Services
  - Web Service Model
  - Accessing Web Services
  - Web Services vs. RESTful Web Services
- Security
  - Format String problems
  - Integer range errors
  - SQL injection
  - Cross-site scripting
  - Failing to protect network traffic
  - Use of "magic" URLs and hidden fields

Structure

- **Internationalization and Localization**

- **Cache**
  - **Storing recently accessed pages**
  - **Accelerators**

- **Deployment**