Service-Oriented Architectures

السنه الرابعه هندسة برمجيات

Course Syllabus

Course Description:

•Service Oriented Architecture (SOA) is an archetectural approach to organize and manage various processes where components work seamlessly with each other. From the software engineering point of view, SOA an architectural pattern in computer software design in which reusable well-defined application components provide services to other components via a communications protocol, typically over a network. The principles of service-orientation are independent of any vendor, product or technology. It provides platform, technology and programming language independence to achieve great flexibility of a solution.

Aims

- The goal of this course is to:
  - understand the basic concepts of Web service technology and the problems and solutions in service oriented architectures.

Learning Outcomes:

By the end of this course, students will able to:

- build a larger service-oriented application based on Web services
- create Web services based on their description
- use Web services according to their description
- describe the coordination between several Web services
- document a larger service-oriented application based on Web services
- interpret standard documents related to Web services
- discuss service-oriented architectures

Prerequisites

- SWE Foundation Courses
- OOP and Web programming skills.
  - Strong Java Programming Knowledge
- Basic knowledge on operating systems ,networking , Database systems

Text Book

- No official textbook but the lecture slides provides a good start
- Several web sites and e-books to be available through the course

Recommended References

- Web Services: Principles and Technology. Michael P. Papazoglou, Prentice Hall/Pearson Education.
- Web Services and SOA: Principles and Technology (2nd Edition). Michael P. Papazoglou, Prentice Hall/Pearson Education
- Enterprise SOA: Service-oriented Architecture Best Practices, D. Krafzig, K. Banke and D. Slama, Prentice-Hall Inc
- Service-Oriented Computing and Web Data Management: From Principles to Development (2nd Edition), Yinong Chen and Wei-Tek Tsai, ISBN: 978-0-7575-7747-5

Web Resources:

- W3 Schools
  - http://www.w3schools.com
- Java
  - http://docs.oracle.com/javase/tutorial/
- .....

Course Outlines

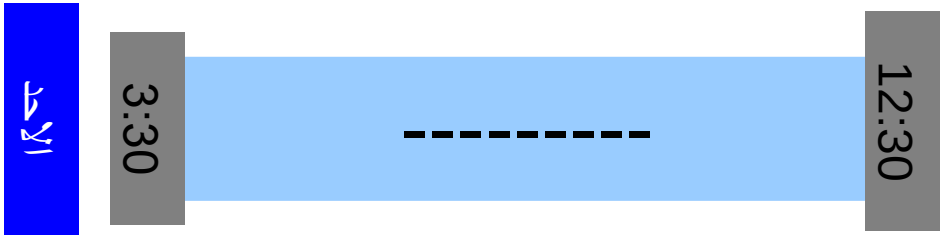
- Introduction to Distributed Computing
- Service-Oriented Computing & Web Services
- Web Service Data Representation
- Resource-Oriented (Web) Services
- Interface-Oriented Web Services
- SOA Design & Implementation
- Business Process Execution Language (BPEL)

(Note: This syllabus is subject to further changes of which the students will be informed in sufficient time).

Teaching Method

- Class Lectures that outlines the theories behind the course.
- Practical Sessions that design & implement some programs.

Class Time and Location



Lectures: 30 hours

Tutorials: 15 hours, (average 1 per week)

Assessment :

- Coursework (Projects) 40%
- Final Exam 60%

(Note: This grade distribution is subject to further changes of which the students will be informed in sufficient time).

Projects

A number of projects will be suggested
(but you may initiate your own upon approval).

Projects

- Assignments will involve the use of tools such as:
  - Glassfish (an application server that includes an implementation of Web Sockets).
  - Jersey for Web services.
  - Hadoop, Pig and Hive (programming environments for cloud data processing).
  - Cassandra (a popular NoSQL data store).

Course website

Piazza:

بالتوفيق