CS459 – Introduction to Services Computing

Course Information

Instructor: In-Young Ko
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Office Hours: Tuesday & Thursday 2:00 PM – 4:00 PM

Class Hours: Monday & Wednesday 2:30 PM – 3:45 PM
Classroom: N1 111

Prerequisites: None

TA: EunChan Park (Office: N1 Bld. 522, Email: eunchan.park .AT. kaist.ac.kr, Phone: 042-350-7747)

Readings: Reading materials will be available on the course homepage

References: [BaDi13] Douglas K. Barry and David Dick, *Web Services, Service-Oriented Architectures, and Cloud Computing*, Morgan Kaufmann, 2013

[ECP+13] Thomas Erl, et al., *SOA with REST: Principles, Patterns & Constraints for Building Enterprise Solutions with REST*, Prentice Hall, 2013

[New21] Sam Newman, *Building Microservices*, 2nd Ed., O'Reilly Media, Inc., 2021

[BWZ15] Len Bass, Ingo M. Weber, Liming Zhu, *DevOps: A Software Architect's Perspective*, Addison-Wesley, 2015

Class Homepage: https://klms.kaist.ac.kr/course/view.php?id=150528

Grading Policy: Reading & practice assignments (40%), Quizzes (15%), Term project (35%), Participation (10%)

Objective: This course is designed to learn technologies and strategies for modeling and building service-oriented architecture and service applications for various computing environments such as the Internet of Things (IoT), mobile computing, and cloud computing environments. Specifically, students will learn how to identify and model essential services in an application domain, integrate various computing resources (including IoT, Web, and Cloud resources) and capabilities from users' points of view, and build microservice architecture to build and execute applications in a flexible and dynamic manner.

Course Policies: Academic Dishonesty: *Plagiarism* is a serious offense and may be punished by failure in the course and or expulsion from the University. All assignments will be checked carefully for plagiarism.

Attendance: Students who miss more than 15% of the classes without a proper reason and advance notice will get F

Schedule

Week	Date	Topics	Readings	Lecture	Assignment Due & Quiz
1	8/28	Course introduction		Lecture #1	
1	8/30	Basic concepts of services	[Sta02]	Lecture #2	
2	9/4	Components and service-oriented architecture (SOA)	[BBB+00]	Lecture #3	
2	9/6	SOA case studies	[HuSi05]	Lecture #4	Reading #1
3	9/11	Web services architecture	[W3C04]	Lecture #5	
3	9/13	Service-oriented modeling	[Ars04] [AGA+08]	Lecture #6	Quiz #1
4	9/18	Service-oriented Architecture Modeling Language (SoaML)	[Cas09] [BES11]	Lecture #7	Reading #2
4	9/20	SoaML example and elements	[SoaML09]	Lecture #8	**Project team**
5	9/25	Services for Internet of Things (IoT) Service mashups	[BDS08]	Lecture #9	
5	9/27	Web services standards (SOAP & WSDL)	[CDK+02] [MiLa07] [BoLi07]	Lecture #10	Reading #3
6	10/2	RESTful services and OpenAPIs	[BSB+12]	Lecture #11	
6	10/4	Cloud computing and cloud services	[Sul10] [KKJ+16]	Lecture #12	Quiz #2
7	10/9	*No class (national holiday)*			
7	10/11	*Project mentoring meetings*			Practice #1
8	10/18	*Midterm project presentations*			**Proposal**
9	10/23	Microservices	[New15]	Lecture #13	
9	10/25	Microservice modeling	[New21]	Lecture #14	
10	10/30	Tutorials on microservice implementation, SoC Cloud, Raspberry Pi I		Tech. Tutorial	
10	11/1	Tutorials on microservice implementation, SoC Cloud, Raspberry Pi II		Tech. Tutorial	Practice #2
11	11/6	Service discovery techniques	[JFG+08] [GPS+06] [McMa03]	Lecture #15	
11	11/8	DevOps I	[BWZ15]	Lecture #16	Quiz #3
12	11/13	DevOps II	[New21]	Lecture #17	
12	11/15	SOA strategy	[BaDi13]	Lecture #18	Reading #4
13	11/20	SOA architecture options	[BaDi13]	Lecture #19	
13	11/22	Web services composition	[Pel03b]	Lecture #20	
14	11/27	SOA with REST	[ECP+13]	Lecture #21	Quiz #4
14	11/29	*No class (undergraduate admission interviews)*			
15	12/4	*Project mentoring meetings*			
15	12/6	*Project mentoring meetings*			
16	12/13	*Final project presentations*			**Final report Peer-evaluation**

Above schedule is subject to change.