Project for ICT Engineers Development for the Promotion of the ICT Industry and New Innovations (JICA-BCC-BASIS TCP)
ICT Tower, Agargaon, Dhaka

B-TopSE Cloud Course For Practitioners (2nd Batch)
17th, 19th & 20th September, 2025

Day	Sess	Lect	Mod	Title	Contents	Main Trainer	Advisor (Support)	Place	Time	Mins	Total Mins	Trainers
Day 1 17 September 2025 Wednesday	1			Opening remarks & Photo session	Opening remarks by JICA & BITM			BITM Lab #401	18:00-18:10	10	75	Dr. A. K. M. Muzahidul Islam (Professor, Department of Computer Science and Engineering, United International University) & Mr. Shahidul Islam (Sr. Machine Learning Engineer, HeadBlocks)
				Self-Introduction by Trainers	Having Self-Introductions from the trainers	Both	Both		18:10-18:15	5		
				Tea Break (15 mins) 18:15-18:30								
		1		Review Rec.1: Introduction	Purpose of this lecture Textbooks Definition: Distributed system Some Goals of Distributed Systems Focus of this lecture Typical Problem Setting Possible defects	Dr. A. K. M. Muzahidul Islam	Mr. Shahidul Islam	BITM Lab #401	18:30-19:00	30		
				Review Rec.1: Introduction	Properties to be guaranteed Difficulties Recent Trends (Cloud Environment) What the instructor expects Schedule	Mr. Shahidul Islam	Dr. A. K. M. Muzahidul Islam		19:00-19:20	20		
				Understanding of Cloud course	Whole contents including Quiz.	Both	Both		19:20-19:30	10		
Day 2 19 September 2025 Friday	1			Self-Introduction by Trainers	Having Self-Introductions from the trainers	Both	Both	BITM Lab #401	9:30-9:35	5	180	Mr. Md. Mazharul Islam (Technical Lead & System Analyst, Daffodil Computers Ltd) & Mr. Md Intekhabul Hafiz (Research Assistant, Department of Computer Science and Engineering,Brac University)
		2	A	Review of Lec.1		Mr. Md. Mazharul Islam	Mr. Md Intekhabul Hafiz		9:35-9:45	10		
			B	"#2 : Reuse of Basic Protocols 1. Agenda"	Agenda Example of Possible defects	Mr. Md. Mazharul Islam	Mr. Md Intekhabul Hafiz		9:45-9:55	10		
			C	2. Introduction to Basic Examples	Basic Example: Explain application Basic Example: Impact analysis of server crash Basic Example: Countermeasure Basic Example: Consideration of network failures	Mr. Md. Mazharul Islam	Mr. Md Intekhabul Hafiz		9:55-10:05	10		
			D	3. Protocol Reuse	Reuse of protocols Example of Protocol Protocol guarantees "correctness" Examples of Guaranteed Properties DEMO1: Analyze by general model checker DEMO2: Analyze by general model checker	Mr. Md. Mazharul Islam	Mr. Md Intekhabul Hafiz		10:05-10:15	10		
			E	4. Distributed Commitment	Commitment Problem Commitment Problem: Application Example Commitment Problem: Countermeasure Resolve by reusing protocols Two-phase commitment protocol 2PC: Basic flow of the protocol 2PC: Protocol Description (Basic) 2PC: Things to be considered 2PC: Failures of participants 2PC: Update of protocol	Mr. Md. Mazharul Islam	Mr. Md Intekhabul Hafiz		10:15-10:25	10		
				Tea Break (15 mins) 10:25-11:40								
		2	E	4. Distributed Commitment	Exercise Hint Answers are on a separate slide. 3PC (Three phase commitment protocol) 3PC (Basic) 3PC: Practical positioning Reference: Transaction Specifications for Web Services Two approaches to obstacles	Mr. Md. Mazharul Islam	Mr. Md Intekhabul Hafiz		10-40-11:10	30		
		3	F	Summary		Mr. Md. Mazharul Islam	Mr. Md Intekhabul Hafiz		11:10-11:20	10		
			A	Review Lec.2		Mr. Md Intekhabul Hafiz	Mr. Md. Mazharul Islam	BITM Lab #401	11:20-11:25	5		
			B	"#3 : Quorum 1.Agenda"	Agenda	Mr. Md Intekhabul Hafiz	Mr. Md. Mazharul Islam		11:25-11:35	10		
			C	2.Quorum approach in groups with fixed members	Data replication Example of data replication Quorum: abstract Quorum Example of Quorum Quorum: supplement Quorum: Other use cases Examples of quorum implementations Other methods of replication management The Byzantine General Problem Well known solution Example Examples of things that don't work Explanation of Solution Correspondence with the real world	Mr. Md Intekhabul Hafiz	Mr. Md. Mazharul Islam		11:35-12:05	30		
			D	3.Building of group management service	Group management: design policy Group management: image Group management: coordinator Group management: points to note Guaranteed Properties Example of group management	Mr. Md Intekhabul Hafiz	Mr. Md. Mazharul Islam		12:05-12:35	30		
			E	Summary		Mr. Md Intekhabul Hafiz	Mr. Md. Mazharul Islam		12:35-12:45	10		
				Lunch Break & Prayer time (1 hour and 45 minutes) 12:45-14:30 @BASIS Auditorium								
			A	Self-Introduction by Trainers		Both	Both		14:30-14:35	5		
			B	Review Lec.3		Mr. Md. Mohiuddin	Ms. Shamima Haque		14:35-14:45	10		
			C	"#4 : Ordering 1.Agenda"		Mr. Md. Mohiuddin	Ms. Shamima Haque		14:45-14:55	10		
			D	2.Order, Causality and Consistency	Failure due to order Order and Causality Order and Absolute time Order and Agreement Order and Causality (Examples outside of replication)	Mr. Md. Mohiuddin	Ms. Shamima Haque		14:55-15:05	10		

Day 2 19 September 2025 Friday	2	4	E	3.Logical Clock	Logical Clock Logical Clock: Bad Example Logical Clock: Good Example Logical Clock: Clock Correction Logical Clock: Vector Timestamp	Mr. Md. Mohiuddin	Ms. Shamima Haque	BITM Lab #401	15:05-15:15	10	170	Mr. Md. Mohiuddin (Senior Software Engineer, Esteem Soft Limited) & Ms. Shamima Haque (Trainer, AI Software Solutions)
			F	4.Ordered Multicast	Ordered Multicast FIFO Multicast Causal Ordering Multicast Causal Ordering Multicast: Motivation Causal Ordering Multicast: Generalize	Mr. Md. Mohiuddin	Ms. Shamima Haque		15:15-15:45	30		
					Exercise Exercise: Scenario Total Order Multicast Atomic Multicast Durable Atomic Multicast	Mr. Md. Mohiuddin	Ms. Shamima Haque		15:45-15:55	10		
			G	"5.Defining Consistency in Replication Management"	Consistency in data replication Consistency Model Various Consistency Models Sequential Consistency Causal Consistency FIFO Consistency Weak Consistency Eventual Consistency Example of Eventual Consistency Use of different data stores based on consistency model Summary	Mr. Md. Mohiuddin	Ms. Shamima Haque		15:55-16:05	10		
		5	A	Review Lec.4		Ms. Shamima Haque	Mr. Md. Mohiuddin		16:05-16:10	5		
			B	#5 : Design Philosophy for the Cloud Service		Ms. Shamima Haque	Mr. Md. Mohiuddin		16:10-16:20	10		
			C	2.Cloud Overview (very brief)	Definition of Cloud (1) Definition of Cloud (2) Cloud Service Model Cloud Utilization Case Studies Scalability and Cost Elasticity and Cost Design Philosophy for the Cloud Supplement: Scale-up and Scale-out	Ms. Shamima Haque	Mr. Md. Mohiuddin		16:20-16:30	10		
			D	3.Example design using Amazon Web Services -Architecture for the Cloud-	What is “Architecture for the Cloud”?	Ms. Shamima Haque	Mr. Md. Mohiuddin		16:30-16:35	5		
			E	4.Example design using Amazon Web Services -Service for the Cloud_ Simple DB-	Amazon SimpleDB Eventual Consistency NoSQL Distributed Key-Value store Comparison of RDB and NoSQL (roughly)	Ms. Shamima Haque	Mr. Md. Mohiuddin		16:35-16:40	5		
			Tea Break (15 mins) (16:40-16:55)									
			F	5.Example design using Amazon Web Services -Service for the Cloud_ SQS-	Amazon SQS Supplement: Amazon Web Services Summary	Ms. Shamima Haque	Mr. Md. Mohiuddin	BITM Lab #401	16:55-17:35	40		
Day 3 20 September 2025 Saturday	1	6		Self-Introduction by Trainers	Having Self-Introductions from the trainers	Both	Both	BITM Lab #401	10:00-10:05	5	170	Mr. Sadik Ahammed Siddique (Assistant Programmer, BCC) & Mr. Md Al-Imran (Senior Lecturer, Department of Computer Science and Engineering, East West University)
			A	Review Lec.5		Mr. Sadik Ahammed Siddique	Mr. Md Al-Imran		10:05-10:10	10		
			B	"#6_Design Philosophy for the Cloud Service (2) 1.Agenda"	Fundamentals of Distributed Systems and Use in the Cloud: Design Philosophy for the Cloud Service (2)	Mr. Sadik Ahammed Siddique	Mr. Md Al-Imran		10:10-10:20	10		
			C	2.Design of Amazon DynamoDB	Amazon DynamoDB Design of Initial DynamoDB: Principle Design of Initial DynamoDB: Version Control Design of Initial DynamoDB: Read/Write	Mr. Sadik Ahammed Siddique	Mr. Md Al-Imran		10:20-10:30	10		
			D	3.Exercise_ System design using cloud services	Exercise: Designing features that take into account the limitations of the data store	Mr. Sadik Ahammed Siddique	Mr. Md Al-Imran		10:30-11:10	40		
			E	"4.Supplement_ Examples of other services related to duplication management"	Memcached Google BigTable Other services Summary	Mr. Sadik Ahammed Siddique	Mr. Md Al-Imran		11:10-11:30	20		
		Tea Break (15 mins) 11:30-11:45										
		7	A	Review Lec.6		Mr. Md Al-Imran	Mr. Sadik Ahammed Siddique	BITM Lab #401	11:45-11:50	5		
			B	"#7_Discussion and Summary 1.Design Philosophy_ CAP Theorem and BASE"	CAP Theorem CAP Theorem in Cloud Refutation of the CAP Theorem CAP Theorem: Understanding in this lecture BASE Other goals in cloud First Tier Design Principles Second Tier Design Principles Second Tier Design Principles	Mr. Md Al-Imran	Mr. Sadik Ahammed Siddique		11:50-12:00	10		
			C	2.Relation to Software Engineering Technologies	Things not covered in this lecture Relation to Software Engineering Use of existing software engineering technology	Mr. Md Al-Imran	Mr. Sadik Ahammed Siddique		12:00-12:10	10		
			D	3.Summary	Recent Trends (Cloud Environment) What the instructor expects	Mr. Md Al-Imran	Mr. Sadik Ahammed Siddique		12:10-12:20	10		
			E	Group discussion		Mr. Md Al-Imran	Mr. Sadik Ahammed Siddique		12:20-13:00	40		
	Lunch Break (1 hour 15 mins) 13:00-14:15 @BASIS Auditorium											
	2	8		Self-Introduction by Trainers	Having Self-Introductions from the trainers	Both	Both	BITM Lab #401	14:15-14:20	5	125	Mr. Annajiat Alim Rasel (Senior Lecturer, Department of Computer Science and Engineering, BRAC University) & Mr. Abdullahel Kafi (Coordinator (Service Relationship), BCC)
			A	#8_Discussion and Summary	Cloud : Final Assessment	Mr. Annajiat Alim Rasel	Mr. Abdullahel Kafi		14:20-15:40	80		
				Feedback sharing session		Both	Both		15:40-15:50	10		
				Closing ceremony					15:50-16:10	20		
				Photo session & Refreshment Distribution					16:10-16:20	10		