Magic of a perfect Pedagogy lies in its Unpredictable Turns along unquantifiable Distance

Paper Name: Internet Technology

Paper Code: IT701 Stream: IT-4th year (7th Semester) Odd Semester, 2015 ©Soham Sengupta

Table-1: Initial Action:
✓ **Shuffle Syllabus in a more rational technique considering:** o Audience Pre-requisite o Need of Industry o Attracting students and not bring monotonies to them about the subject o Time constraint in Odd Semester *following* the Autumnal Festive
✓ **Since I taught and am in regular interaction with the target audience, I considered re-building the** *Content-To-Be Delivered* **to best suit them**
✓ **Make the best use of 4 lectures (***Concept Tutorials being withheld***)**
✓ **Considering migration of Operating System, certain dynamic plans imply**

Table-2: Reshuffling of Topics and Clubbing them to a Module		
1	*Advanced Computer Networking*	**Network Layer & Transport Layer** **Introducing Wireshark and Packet Analysis etc.** **[Content Beyond –but-Indispensable-in Curriculum]**
2	*Web Technology*	✓ **Concept of Hyper Text, Browser, Mark-up, Scripting** ✓ **Server Side Programming** ✓ **Database Connectivity: JDBC, JPA etc.** ✓ **Concept Web Services**
3	*Network Programming*	✓ **Socket Programming, RMI, CORBA** ✓ **Correlating with Module [1] using Wireshark** **[Content Beyond –but-Indispensable-in Curriculum]**
4	*Network Security*	✓ **Concept and Classification of Attacks** ✓ **Analysis of attacks** ✓ **Cryptographic Paradigms** ✓ **Network and Transport Layer Security mechanisms** ✓ **Filters and Firewalls**
5	*Multimedia & Networking*	✓ **VoIP** ✓ **Streaming Protocols** ✓ **Streaming Control mechanisms** ✓ **Codecs and Plugin**
6	*Impelling Internet Topics*	✓ **SEO** ✓ **Crawler** ✓ **CDN [Content Beyond Curriculum]** ✓ **Web caching like AKAMAI [Content Beyond Curriculum]**

Table 3.1: Module-1 #*Advanced Computer Networking*			
1	**Network Layer**	Concept of Network Layer, Need of Internetworking, Network Convergence	
2		**Protocols in Network Layer: ARP, IPv4**	
3		**Protocol Architecture: ARP , IPv4, analysis of Headers, Problems**	
4		**IPv4 Addressing , Net mask, Subnets, CIDR, IP Address-Classes, NAT**	
5		**Routing Protocols**	
6	**Transport Layer**	**Concept of Transport Layer, Port, Active & Passive Ports, UDP Vs. TCP**	
7		**TCP: Connection setup, Protocol architecture, Header analysis**	
8		**Services of TCP : Congestion Control, Error Control, Flow Control, QoS,**	
9	**Analysis of Packets**	**Using Wireshark to capture and analyse packet belonging to different protocols and header analysis**	

Table 3.2: Module-2 #*Web Technology*			
1	**Hyper Text**	**Concept of Hyper Text, Roles of Browsers**	
2	**Mark-up**	**HTML-4.x: Tags mentioned and unmentioned important tags**	
3	**Scripting & Styling**	**Need of scripting in Client side**	
4		**Javascript: variables, arrays, structure of programs**	
5		**Handling Events, Bubbling of events, Validations**	
6		**Manipulation of DOM, CSS, Linking to .js and .css files,**	
7		**Basic Javascript objects: Date, String, regular Expressions etc.**	
8	**Server Side**	**Concept of server-client, Servlet 2.x , Context root tree, web.xml, Life cycle, Programming basic servlet applications without using Tools**	
9		**Request and response, Request data, GET versus POST**	
10		**HTTP statelessness: Cookies, Session**	
11		**Servlet Collaboration, Filters**	
12	**Persistence Layer**	**JDBC 2.x : Architecture, Drivers, Connecting to MySQL, Oracle, DB2**	
13		**Basic CRUD SQL using JDBC :** *java.sql* **package:** *Statement, PreparedStatement, ResultSet*	
14		**Stored Procedure :** *CallableStatement*	
15		**Connection Pools, Batch Execution, TFM :Save Point, SQL Injection etc.**	

Table 3.3: Module-3 #*Network Programming*			
1	**Socket Programming**	**Socket programming in Java and C.**	
2	**HTTP Tunnelling**	**Serialization, Concept of Tunnelling,** *java.net.HTTPURLConnection*	
3	**RMI**	**Concept and Need, Architecture, Programming, Stub and Skeleton**	
4	**CORBA**	**Concept of Brokers**	
5	**Correlating to [Module-1]**	**Using Wireshark to monitor and test TCP traffic off a Socket Application**	

Table 3.4: Module-4 #*Network Security*			
1	**Attacks**	**Basic Attacks**	
2	**Security Paradigm**	**Confidentiality, Authenticity, Integrity, Non-repudiation**	
3	**Measures in Security**	**Symmetric and Asymmetric Approach, Digest, Signature, Digital Signature, Certificate etc.**	
4	**Network Layer Security**	**IPSec, SSH, Tunneling**	
5	**SSL**	**Need, architecture and analysis**	
6	**Cryptology**	**Packet filters, Firewalls**	

Table 3.5: Module-5 #*Multimedia and Real time Communication*			
1	**RTP**	**Architecture and protocol, packets,**	
2	**RTCP**	**What and why, Architecture and protocol**	
3	**Codecs and Plugins**	**Concept of rendering logic, CODEC, types, Plugins etc.**	
4	**VoIP**	**Architecture**	
5	**RTSP**	**Need and architecture**	

Table 3.6: Module-6 #*Impelling Internet Topics*			
1	**Web Crawler**	**What and why? Web Indexing, Architecture, Selection Policy, Parallelization, Security**	
2	**SEO**	**What and why, Black-hat Vs. White hat, Page Ranking, Crawl Prevention, Legalities**	