LESSON PLAN

SUBJECT: OPERATING SYSTEM
SEMESTER: 5TH
NAME OF THE FACULTY: SANJIT MAZUMDER
DISCIPLINE: COMPUTER SCIENCE & TECHNOLOGY DEPARTMENT
LESSON PLAN DURATION: 13WEEKS

SUBJECT CODE		Course Offered in Part-II 1st Semester				Full Marks:100	
CST/5/503							
CHAPTER	Lecture Day	Title	Topics to be Covered	OBJECTIVES	INPUT(KEY WORD)	LEARNING OUTCOME	GOOGLE ATTENDANCE
1.1	1	Introduction	Components of Computer system – Structure of CPU, function of Memory unit and IO unit.	Objective of this unit is to learning common features of operating systemand understanding what an operating system does for the user.	Live online class, ppt, e-materials, online resource	Describe the important computer system resources and the role of operating system in their management policies and algorithms.	
1.2	2		Mainframe Systems – Batch, Multi programmed, Multitasking, Time sharing, Desktop.				
1.3, 1.4 &1.5	3		Multiprocessor Systems Distributed Systems. Clustered Systems.				
1.6 , 1.7 & 1.8	4		Real Time Systems. Special-Purpose Systems Open-Source Operating System				GOOGLE ATTENDANCE
2.1, 2.2 & 2.3	5	Operating System Structures	System components - Process management, Main memory management, File Management, I/O system management, Secondary storage management. Operating system services. System calls – Uses, process control, file management, Device management, Information Maintenance, communication.	Objective of this unit is to learning different types of operating system and their features	Live online class, ppt, e-materials, online resource	Describe the role of operating system in their management policies to manage I/O , memory and other devices	

					devices.	
2.4, 2.5	6		Operating system structure. Simple structure, layered, monolithic, microkernel.			
2.6	7		Booting Virtual Machine			
3.1	8	Process Management	Processes - Concept, process, state, process Control block.	To study the process management and scheduling. Processes, threads, and the differences between the two Interrupts, synchronization, waiting, and atomic behavior	Live online class, ppt, e-materials, online resource	Understand the process management policies and scheduling of processes by CPU
3.2	9		Process scheduling - Scheduling queues, Scheduler, context switch.			
3.3	10		Operations on processes - creation, termination.			
3.4	11		Inter process communication. Classical problems of synchronization, semaphores.			
3.5 & 3.6	12		Threads - Benefits, user and kernel threads. Multithreading Models -Many to one, one to one, many to many.			
4.1	13	Scheduling	Scheduling – Objectives, concept, criteria, CPU and I/O burst cycle.	To study the different scheduling algorithm and compare their performance by finding the TAT and WAT. Also to know the dead lock.	Live online class, ppt, e-materials, online resource	Student can find the average turnaround around time and average waiting time for compareing different process algorithms.
4.2	14		Types of Scheduling-Pre-emptive, Non pre-emptive.			
4.3	15 & 16		Scheduling Algorithms. First come first served (FCFS), Shortest job first (SJF), Round Robin (RR), Priority			
4.4	17		Other Scheduling. Multilevel, Multiprocessor, real-time			

4.5	18		Deadlock. System model, principle necessary conditions, mutual exclusion, critical region.				
4.6	19		Deadlock handling. Prevention and avoidance.				
5.1	20	**File System and Memory Management**	File- Concept, Attributes, Operations, Types, Structure	To know the different type of memory allocation, memory management, page replacement algorithm use in OS. To understand the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS	Live online class, ppt, e-materials, online resource	Student are able to know the Directory system, memory management and Student also know the virtual memory and it's page replacement algorithm.	
5.2	21		Access Methods – Sequential, Direct.				
5.3 & 5.4	22		Swapping and Allocation Methods – Contiguous, Linked, Indexed				
5.5	23		Directory Structure – Single level, Two level, Tree Structure.				
5.6 & 5.7	24		Protection –Types of accesses, Access control. & Basic Memory Management –Partitioning, Fixed & Variable.				
5.8 & 5.9	25		Free Space management techniques – Bitmap ,Linked List. Virtual Memory – Concept ,Paging, Page fault ,Page Table				
5.1	26		Page Replacement algorithms – FIFO(First in First out) ,Optimal Page replacement, LRU (Least recently used),NRU (Not recently used)				
6.1	27,28, & 29	**I/O Management**	I/O hardware, polling, interrupts	To understand the working of I/O manager and methods used to	Live online class, ppt, e-materials, online resource	Student are able to know the DMA technology and it working principal	
6.1	30 & 31		vs, DMA, application I/O interface (block and characterdevices, network devices, clocks and timers, blocking and nonblocking I/O),				

			kernel I/O subsystem (scheduling,buffering, caching, spooling and device reservation, error handling)	methods used to implement DMA in OS	materials, online resource	technology and it working principal.	
6.2	32 & 33						
6.2	34		I/O system performance				
7	35, 36 &37	**Disk Management**	disk structure, disk scheduling (FCFS, SSTF, SCAN,CSCAN)	To understand the secondory memory management, different scanning technicques	Live online class, ppt, e-materials, online resource	Student are able to know the different scanning techniques.	
7	38,39 &40		disk reliability, disk formatting, boot block, bad blocks.				
8.1	41 & 42	**Case Studies**	General overview of Unix System System Structure, Operating System Structure	To know the inter connection between the Theory and the actual case, and to attract student towards the OS	Live online class, ppt, e-materials, online resource		
8.2	43 & 44		Introduction to kernel Kernel data structure, System Administratio				
45 & 46	45 & 46		Internal Representation of Files I nodes, Structureof regular file, Super block				

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LESSON PLAN

SEMESTER: 5 TH

NAME OF THE FACULTY: SANJIT MAZUMDER

DISCIPLINE: COMPUTER SCIENCE & TECHNOLOGY DEPARTMENT

LESSON PLAN DURATION: 13WEEKS

BPIE
A POLYTECHNIC COLLEGE
BISHNUPUR PUBLIC INSTITUTE OF ENGINEERING

CHAPTER	Day	Experiment Name	Objective	Input	Outcome	GOOGLE ATTENDANCE
		SUBJECT CODE	Full Marks:100			
Use of file and directory manipulation commands	1	Identify the major desktop components, interfaces and their	Describe the basic file system in Linux and its file attributes. Appraise different filters, process handling, regular expressions and network handling features using suitable commands. Summarize different Linux commands to write Shell Programs.		Understanding syntax of commands Interpretation of commands Execution of commands	
	2	Use of file and directory manipulation commands – ls, rm, my, cp, join, split, cat, head, tail, touch, diff, comm., pr, chmod, mkdir, rmdir, cd, pwd, dir, cmp.				
	3	Use of text processing and communication commands – tr, wc, cut, paste, spell, sort, grep, msg, talk, wall, (write, who, who am i ,news, mail)				
	4	Use of general purpose and process commands- ps, wait, sleep, exit, kill, bc, date, time, cal, clear, banner, tty, script, su, man.				
Use of vi Editor	5	Use of vi editor & perform all editor commands.				
Schell Programming	6	Write a shell script to evaluate basic arithmetic operations.				
	7	Write a shell script to check whether a line is parallel or intersecting. Start co-ordinate (x1, y1)and end quadinate (x2, y2) is given by the user.				
	8	Write a shell script to print first n integers. Value of n is given by user				
	9	Write a shell script to print the pattern: * * *				
	10	Write the shell script to print Fibonacci Series.				
	11	Write a shell script to find the factorial of a given number.				
	12	Write a shell script to check whether a given number is prime or not.				
	13	Write a shell script to implement Linear Search				
	14	Write a shell script to implement Binary Search				
	15	Write a shell script to implement Bubble Sort.				

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LESSON PLAN

SUBJECT: THEORY OF COMPUTATION

SEMESTER: 5th
NAME OF THE FACULTY: SANJIT MAZUMDER
DISCIPLINE: COMPUTER SCIENCE & TECHNOLOGY DEPARTMENT
LESSON PLAN DURATION: 13WEEKS

BPIE
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A POLYTECHNIC COLLEGE
BISHNUPUR PUBLIC INSTITUTE OF ENGINEERING

SUBJECT CODE	CST/5/504	Course Offered in Part-II 1st Semester					Full Marks:100
CHAPTER	Lecture Day	Title	Topics to be Covered	OBJECTIVES	INPUT(KEY WORD)	LEARNING OUTCOME	GOOGLE ATTENDANCE
1.1	1	Introduction to Theory of Computation	Definition of Languages, Definition of Grammars	Apply knowlwdge to know what is Automata and how it is used in automation	Live online class	Acquire a fundamental understanding of the core concepts in automata theory and formal languages.	
1.2	2		Definition of Automata				
1.3	3		Some applications				
1.3	4		Definition of an Automaton				
2.1	5 & 6	Finite Automata	Block diagram of finite Automaton, Transition system	Introduce students to the mathematical foundations of computation including automata theory; DFA and NDFA. Also introduce MOORE and MEALY Machine machine.	Live online class, ppt, e-materials, online resource	Able to design DFA and NDFA for accepting strings and able to convert from NDFA to DFA and able to reduce the state of a DFA . Also they know the automata with output and their equivalent machines.	
2.1	7		Properties of Transition Functions				
2.1	8		Acceptability of a string by Finite Automaton.				
2.1	9		Processing of string				
2.1	10		Problem solving of DFA				
2.1	11		Definition of NFA				
2.2	12 & 13		The equivalence of DFA and NDFA				
2.2	14		A theorem on equivalence of DFA and NDFA				
2.2	15		Minimization Of DFA (Out of Syllabus)				
2.2	16		Mealy and Moore machine,				
2.3	18		Procedure for Transforming a Mealy Machine into				
2.3	19		Procedure for Transforming a Moore Machine to a Mealy Machine				
3.1	20	Regular Expressions	Definition of Regular expression	We switch from machine like description of language to an algebraic description. Provide knowledge how regular			
3.1	21		Definition of Regular expression and regular set, Identities of regular expressions				
3.1	22		Arden's theorem				
3.2	23		Relation between regular expression and finite automata				

3.2	24	**Regular Expressions**	Transition system containing /\-mores	expression as the input language for any system. For example Lexical Analyser generate. Prove whether a language is or isn't regular or context-free: by using the Pumping Lemmas, or by using Reduction	Live online class, ppt, e-materials, online resource	Student are able to know what is regular expression, how to build regular expression, how to construct RE from DFA also know Pumping lema.	
3.2	25		Conversion of Non-deterministic systems to deterministic system				
3.2	26		Construction of finite automata equivalent to a regular expression				
3.2	27		Equivalence of two finite automata				
3.2	28 & 29		Pumping lemma				
3.2	30		Closure properties of regular sets, Construction of regular grammar for				
4.1	31 , 32 & 33	**Context free Languages**	Context free Grammars, Example of context free Languages and grammars, Leftmost and rightmost	Provide Knoledge of CFG, Chomsky Hierarchic, minimization of grammar, CNF and GNF.	Live online class, ppt, e-materials, online resource	Student are able to construct a context-free grammar for an extensionally defined language; Find the CNF and GNF from a grammar.	
4.2	34, 35 & 36		Ambiguity in Context free Grammar and Parse tree, Removal of ambiguity				
4.3	37 & 38		Simplification of Context free grammar				
4.3	39 & 40		Removal of Useless symbols, Removal of Unit production, Removal of ε-				
4.4	41 & 42		Chomsky normal form and Greibach normal form.				
5.1	42 & 44	**Push Down Automata**	Definition of a Pushdown Automaton	Provide Knowledge of PDA, What is PDA how to construct PDA of aCFG.	Live online class, ppt, e-materials, online resource	Student can construct a pushdown automaton for a given context-free language	
5.2	45 & 46		Two types of acceptance by PDA				
5.3	47, 48 & 49		Correspondence between PDA and Context Free Language – PDA corresponding to a given CFG – CFG corresponding to a given PDA – Only Concept of Deterministic PDA and Deterministic CFL.				
6.1	50 & 51	**Turing Machine**	Structure and working of a simple Turing Machine	Provide knowledge of Turing Machine, How to construct turing machine for Unrestricted Grammar, What is universal Turing Machine.	Live online class, ppt, e-materials, online resource	Can construct Turing Machine from unrestricted Grammar.	
6.2	52		Instantaneous description of Turing Machine				
6.3	53 & 54		Turing Machine as Language accepter				
6.4	55		Universal Turing Machine				

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BISHNUPUR PUBLIC INSTITUTE OF ENGINEERING

LESSON PLAN
SUBJECT: JAVA PROGRAMMING   SUBJECT CODE : CST / 5/502
SEMESTER: 5 TH
NAME OF THE FACULTY: ANIMESH SARKAR
DISCIPLINE: COMPUTER SCIENCE & TECHNOLOGY DEPARTMENT
LESSON PLAN DURATION: 13WEEKS

SUBJECT CODE : CST/		Course Offered in Part-lli 1st Semester		Full Marks:100			GOOGLE ATTENDANCE
CHAP TER	Lecture Day	Title	Topics to be Covered	Objectives	Input	Outcome	
1.1	1	Introductio n to Java	Object and Classes, Data abstraction and encapsulation,Inheritance, Polymorphism, Dynamic Binding	Concept of object	1. Objects and classes. 2. Inheritance.	Demonstration of data encapsulation, ambiguity & features of java	
1.2	2		Java Features Compiled and Interpreted, Platform independent and portable	Java features	1. Compiler. 2. Interpreter.	Characteristics of java	
	3		Object orientedDistributed, Multithreaded and interactive, High performance	Java features	1. Javas dependency platform. 2. Multithreaded and interactive	Characteristics of java	
1.3	4		Constant, Variables and Data TypesConstant, Data Types	Various data types	variable, constants, Data types	Type conversation	
	5		Scope of variable, Symbolic Constant, Type casting, Standard default values	Various data types	1.variables. 2. constants3. symbolic constants. 4. Default values.	Lifetime of a variable.	
1.4	6		Operator and Expression Arithmetic Operators, Relational Operators, Logical Operators	Discussion of operators	1. Arithmetic operator.2. Relational operator. 3. Logical operator	Demonstration of operators	
1.4	7		Assignment Operator Increment and Decrement Operator, ConditionalOperator, Bit wise Operator, Special Operator	special operators	1. Assignment operator. 2. conditional operator. 3. Bitwise operator	Demonstration of operators	
s	8		Decision making and Branching Decision making with if statement, Simple if statement,	Conditional statement	1. If statement. 2. If else statement.	yes or no output from each program	
	9		The if elsestatement, The else if ladder, The switch statement, The? : Operator	Conditional statement	1.swich statement 2. else if ladder	yes or no output from each program	
1.6	10		Decision making and LoopingThe While statement, The do statement, The for statement, Jumps in Loops, Labeled Loops	Decision maker	1. While loop.2. Do while loop. 3. For statement	Formation of pyramid	
2.1	11	Class and Object	Classes, Object and Methods Defining a class, Creating object,	Class and object concept	1. Class. 2. Object. 3, Methods	object creation	
2.1	12		Accessing class members, Constructor,Methods Overloading, Static Member	Class and object concept	1. constructor. 2. Methods overloading. 3. Static method and data	object creation	
	13		Inheritance Extending a Class (Defining a subclass Constructor,Multilevel inheritance,	Inheritance	1. Subclass constructor. 2. Multiple inheritance. 3. Multilevel inheritance	Class hierarchy	
2.2	14		Hierarchical inheritance, Overriding Methods,Final variable and Methods, Final Classes, Abstract method and Classes	Heierachical inheritance	1. Final variable. 2. Final class. 3. Abstract methods.	Concept of preventing overriding	
2.3	15	Interfaces and Packages	Visibility Control Public access, friend access, Protected access, Private access, PrivateProtected access	Access specifier	Public, private, protected	visibility of data types	
2.4	16		Array, Strings and Vectors Arrays, One Dimensional array, Creating an array, Two Dimensionalarray, Strings, Vectors, Wrapper Classes	Array demonstration	1.string acceibility2. One dimensional array	Differentiation between array and strings	
3.1	17		Interface: Multiple Inheritance Defining interfaces, Extending interfaces,	Interface	1.Interface extension2. Multiple inheritance	Dynamic method dispatch	
3.1	18		Implementing interfaces,Accessing Interface variable	Interface	1.Interface extension2. Accessing interface variables	Interface using abstract method	
3.2	19		Packages: Putting Classes Together System Package, Using system Package,	Package	1.How to create a package2. System package	Nomenclature of classes using package	
3.2	20		Naming Convention, CreatingPackage, Accessing a package, Using a package, adding a class to apackage	Package	1.How to create a package2. Use a package. 3. adding a class to apackage.	Summation of classes into a package	

4.1	21		Multi Threading: Creating Thread, Extending a thread class, Stopping and Blocking athread	Thread concept	1. Simple thread concept.2. How to create a thread.			
4.1	22	Multithreaded Programming and Exception handling	Life cycle of thread, Using thread method, Thread exceptions	Thread concept	1.Implement a thread using interface 2. Thread life cycle. 3. Thread exception	Threat priority		
	23		Thread priority, Synchronization, Implementing a 'Runnable'' Interface	Thread concept	1. Thread synchronization. 2. implementation of runnable interface	Threat priority		
4.2	24		Managing Errors and Exceptions Types of errors, Exception	Exception handling	if, else, try, catch statement	How to handle an error		
	25		Multiple catch statement, using finallystatement, Using Exception for Debugging	Exception handling	if, else, try, catch statement	How to handle an error		
5.1	26		Applet Programming Local and remote applets, How applet differ from application	Introduction of applet	HTML code	Building web page using applet		
	27		Preparing to write applets, Building applet code, Applet life cycle,Creating an Executable Applet	Introduction of applet	HTML code	Building web page using applet		
5.1	28	Java Applets and Graphics Programming	Designing a Web page, Applet tag,Adding Applet to HTML file, Running the Applet, Passing parameter to applet	Introduction of applet	HTML code	Building web page using applet		
5.2	29		Graphics Programming The Graphics Class, Lines and rectangle, Circle and Ellipse,	Graphics programming	Rectangular object , circle object	Concept of animation technique		
5.2	30		DrawingArcs, Drawing Polygons, Line Graphs, Using control loops in Applets,Drawing Bar charts	Graphics programming	Rectangular object , circle object	Concept of animation technique		
6.1	31	Streams and File I/O	Stream Classes Character Stream	File handling	Bit, Byte	How to handle a file , input, output file.	
6.1	32		Byte Stream Serialization	File handling	Bit, Byte	How to handle a file , input, output file.	
7.1	33		Java Data Base Client/ Server Java as a Database front end Database client/server methodology	Database connectivity	client, server model	Database designing	
7.1	34		Two-Tier Database Design Three-Tier Database Design	Database connectivity	client, server model	Database designing	
7.2	35	DATA BASE CONNECTIVITY : JDBC	The JDBC API The API Components, Limitations Using JDBC(Applications vs. Applets)	Database connectivity	various drivers	Connection between bridges	
7.2	36		Security Considerations, A JDBC Database ExampleJDBC Drivers ,JDBC-ODBC Bridge Current JDBC Drivers	Security of jdbc drivers	Bridge communication	Concept of Database using the drivers	

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		LESSON PLAN				
		SUBJECT: JAVA PROGRAMMING LAB				
		SEMESTER: 5 TH				
		NAME OF THE FACULTY: ANIMESH SARKAR				
		DISCIPLINE: COMPUTER SCIENCE & TECHNOLOGY DEPARTMENT				
		LESSON PLAN DURATION: 13WEEKS				

SUBJECT CODE		Full Marks:100				
CHAPTER	Lecture Day	Topics to be Covered	Objective	Input	Outcome	GOOGLE ATTENDANCE
1	1	Write a simple Java program to demonstrate use of command line arguments in Java..	Command Line arguments	Various data types	Enumerated data types	
1	2	Write a Java Program to define a class, describe its constructor, overload the constructors and instantiate its object	Constructor overloading	Class member	Instantiation of constructor	
2	3	Write a Java Program to define a class, define instance methods for setting and retrieving values of instance variables and instantiate its object	Definition of method	Variables and its corresponding data types	How to create an object	
2	4	Write a Java Program to define a class, define instance methods and overload them and use them for dynamic method invocation.	Class handling using methods	Data types and method	Dynamic method dispatch	
2	5	Write a Java Program to demonstrate use of sub class	Concept of subclass	Super class	Concept of inheritance	
2	6	Write a Java Program to demonstrate use of nested class.	Concept of nested class	Inner class, super class	Wrapper class	
3	7	Write a Java Program to practice use of single Dimensional array.	Array demonstration	Interger, float , and character data type	Multi dimensional array	
3	8	Write a Java Program to implement array of objects.	Array of objects	Single dimensional array	Accession of array using object	
4	9	Write a Java Program to implement Vector class and its methods.	Vector class	Concept of data types	Vector normalization	
4	10	Write a Java Program to implement Wrapper classes and their methods	Wrapper class	Inner class	Methods accession of inner class	
5.0	11	Write a Java Program to implement single inheritance by applying various access controls to its data members and methods.	Single inheritance	Super class	subclass	
5	12	Write a Java Program to implement multilevel inheritance by applying various access controls to its data members and methods.	Multiple inheritance	Interface	Problem of multiple inheritance using interface	
5	13	Write a Java Program to implement inheritance and demonstrate use of method overriding.	Method overriding	Inheritance concept	Conflictness of methods	
6	14	Write a Java program to implement the concept of importing classes from user defined package and creating packages.	Package	Class member and methods	Combination of classes into Package	
6	15	Write a program to implement the concept of Exception Handling - using predefined exception. - by creating user defined exceptions.	Exception handling	Various types of errors	Thread concept	
7	16	Write programs for using Graphics class to display basic shapes and fill them.	Graphics programming	Basic real life objects	Animation technique	
7	17	Write program to demonstrate use of I/O streams.	File Handling	Input stream	Output stream	
7	18	Write an Application program /Applet to make connectivity with database using JDBC API	JDBC connectvity	Data base driver	Bridge communication	
7	19	Write an Application program/Applet to send queries through JDBC bridge & handle result.				

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