Suggested link of Video lectures for Diploma (Information Technology) Students

Subject Name : Computer Architecture
Subject Code : CS 301

Sr. No.	COURSE CONTENT	Video URL Link
1	**COMPUTER ARCHITECTURE**	
	Register Transfer and Micro operations, Register Transfer: Bus and Memory Transfers.	https://www.youtube.com/watch?v=Gvx8ba6TfZg&t=136s
	Three-State Bus Buffers, Memory Transfer.	https://youtu.be/X9meoMkWtcM
	Arithmetic Micro operations: Binary Adder, Binary Adder Subtractor, Half Adder and Full Adder Binary Incrementer.	https://youtu.be/cwSz3gY8ssE
	Arithmetic Circuit, Logic Micro operations: List of Logic Micro operations, Hardware, Implementation.	https://youtu.be/a_j9JYEPNcY
	Shift Micro-operations: Hardware Implementation	https://www.youtube.com/watch?v=fNGRu-rC1mY
2	**BASIC COMPUTER ORGANIZATION AND DESIGN**	https://www.youtube.com/watch?v=zKHaFV3RNvI
	Instruction Codes: Stored Program Organization, Indirect Address Computer Registers: Common Bus System, Computer Instruction: Instruction Set Completeness Timing and Control	
	Instruction Cycle: Fetch and Decode, Type of Instruction, Register- Reference Instructions Memory-Reference Instructions: AND to AC, ADD to AC, Load to AC, Store to AC	https://www.youtube.com/watch?v=aq3L-A8RYPI&list=PLrP-pAdcAQnsD0ppSClSNzwpS7ECtjLjv&index=
	Branch Unconditionally, Branch and Save Return Address, ISZ, Control Flowchart Input-Output Configuration, Input-Output Instructions, Program Interrupt, Interrupt Cycle	https://www.youtube.com/watch?v=aq3L-A8RYPI&list=PLrP-pAdcAQnsD0ppSClSNzwpS7ECtjLjv&index=
	Complete Computer Description, Design of Basic Computer: Control Logic Gates, Control of Registers and Memory, Control of Single flip-flops, Control of Common Bus	
	Design of Accumulator Logic: Control of AC Register, Adder and Logic Circuit, Character Manipulation, Program Interrupt.	
	CENTRAL PROCESSING UNIT	https://www.youtube.com/watch?v=JFaThRTwVks
	Introduction	
	General Register Organization: Control Word	
	Stack Organization: Register Stack, Memory Stack, Reverse Polish Notation, Evaluation of Arithmetic Expressions	

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3	Instruction Formats: Three Address Instructions, Two Address Instructions, One Address Instructions, Zero Address Instructions, RISC Instructions	https://www.youtube.com/watch?v=WuQWOOUlS8Q&list=PLrP-pAdcAQnsD0ppSClSNzwpS7ECtjLjv&index=24
	Addressing Modes	https://www.youtube.com/watch?v=aq3L-A8RYPI&list=PLrP-pAdcAQnsD0ppSClSNzwpS7ECtjLjv&index=10
	Data Transfer and Manipulation: Data Transfer Instructions, Data Manipulation Instructions, Arithmetic Instructions, Logical and Bit Manipulation Instructions, Shift Instructions	https://www.youtube.com/watch?v=hjGC19X4M0Q&list=PLrP-pAdcAQnsD0ppSClSNzwpS7ECtjLjv&index=11
	Program Control: Status Bit Conditions, Conditional Branch Instructions Subroutine Call and Return, Program Interrupt, Types of Interrupts Reduced Instruction Set Computer (RISC): CISC Characteristics, RISC	https://www.youtube.com/watch?v=TmBmywnC9sQ
	Characteristics, Overlapped Register Windows	https://www.youtube.com/watch?v=k7pWfbRdp14
4	INPUT OUTPUT ORGANIZATION	https://www.youtube.com/watch?v=EkQaR6B3FSs
	Peripheral Devices: ASCII Alphanumeric Characters	
	Input-Output Interface: I/O Bus and Interface Modules, I/O Versus Memory Bus, Isolated versus Memory-Mapped I/O	
	Asynchronous Data Transfer: Strobe Control, Handshaking, Asynchronous Serial Transfer, Asynchronous Communication Interface First-In, First-Out, Buffer	
	Modes of Transfer: Interrupt-Initiated I/O, Software Considerations Priority Interrupt: Daisy-Chaining Priority, Parallel Priority Interrupt, Priority Encoder, Software Routines,	https://www.youtube.com/watch?v=7NDAwKW2hF8
	Direct Memory Access (DMA): DMA Controller, DMA Transfer Input-Output Processor: CPU-IOP Communication	https://www.youtube.com/watch?v=phnM0VVdKIs

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	Serial Communication: Character-Oriented Protocol, Data Transparency	https://www.youtube.com/watch?v=S6h0bo9_Q7Y
	Bit-Oriented Protocol	
5	**MEMORY ORGANIZATION**	https://www.youtube.com/watch?v=dCn9eGN9YvM
	Memory Hierarchy	
	Main Memory: RAM and ROM Chips, Memory Address Map, Memory Connection to CPU	
	Auxiliary Memory: Magnetic Disks, Magnetic Tape, CD, DVD Associative Memory: Hardware Organization, Read Operation, Write Operation	
	Cache Memory: Associative Mapping, Direct Mapping, Set-Associative Mapping, Writing into Cache, Cache Initialization	
	Virtual Memory: Address Space and Memory Space, Address Mapping	
6	**Advance Processor Architectures**	https://www.youtube.com/watch?v=Ro4w0W0l9Hk
	Instruction Pipelining, Arithmetic Pipelining, Super Scalar Processors, VLIW Processors, Parallel Processing, Flynn's Classification of Parallel Processing, Vector Computers, Array Processors, Distributed Shared Memory Parallel Computers. Cluster of Workstations.	

Suggested link of Video lectures for Diploma (Information Technology) Students

Subject Name : Operating System
Subject Code : IT 302

Sr. No.	Course Content	Video URL Link
1	**INTRODUCTION TO OPERATING SYSTEM** Basics of Operating System, its functions, Objectives and Types of operating System Introduction of time sharing, real time, Parallel and Distributed Multiprocessor embedded O.S. Structure of Operating System:- System components, Operating System services, System calls and Programs, System Structure Case study of UNIX, Linux, Windows Vista & Windows Seven	https://www.youtube.com/watch?v=WJ-UaAaumNA&list=PLxCzCOWd7aiGz9donHRrE9I3Mwn6XdP8p&index=2
2	**PROCESS MANAGEMENT** Concepts of Processes; Process state (state diagram), Process Process Scheduling & Algorithms- Basic Concepts, Scheduling criteria Dead Locks - Basic Concept of deadlock, deadlock detection Case study of UNIX, Linux, Windows Vista & Windows Seven on Process	https://www.youtube.com/watch?v=2dJdHMpCLIg&list=PLxCzCOWd7aiGz9donHRrE9I3Mwn6XdP8p&index=4
3	**MEMORY MANAGEMENT** Concept of Memory Management- Logical v/s Physical address, Cache Concepts of paging and segmentation, Paged Segmentation & Concepts of Virtual Memory- Demand Paging, Page Fault, Page replacement and its Algorithms, Allocation of frames, Thrashing Case study of UNIX, Linux, Windows Vista & Windows Seven on Memory	https://www.youtube.com/watch?v=TAk822Wz4x4
4	**FILE MANAGEMENT SYSTEM** File System interface: File Concepts, Types of Files, Access Methods File System Implementation: File System Structure, Allocation Methods Case study of UNIX, Linux, Windows Vista & Windows Seven on, Final	https://www.youtube.com/watch?v=vqdTDdHyU5U&list=PL0SMgh8aTQIdmG1vQYI2HGFvqRitkffZB
5	**DEVICE MANAGEMENT** Input Output System : I/O Hardware & Interface, Kernel I/O Sub System, I/O request streams.	https://www.youtube.com/watch?v=f3F4-oxiGNQ

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5	Disk Management- Disk Structure, Disk Scheduling and its algorithms	https://www.youtube.com/watch?v=1SP4-0xjGNQ
	Case study of UNIX, Linux, Windows Vista & Windows Seven on Device Management.	
6	**PROTECTION AND SECURITY**	https://www.youtube.com/watch?v=uFIzD1k5S5U
	Goal of Protection, Domain of Protection, Security Problems	
	Case study of UNIX, Linux, Windows Vista & Windows Seven on Protection	
7	**Other Operation System**	https://www.youtube.com/watch?v=txINpzNRLbw
	Introduction to Network Operation System (Only Brief Concept)	https://www.youtube.com/watch?v=Ut0MS8_Oo7Q
	Introduction to Distributed Operation System (Only Brief	

Suggested link of Video lectures for Diploma (Information Technology) Students

Subject Name : Networking Essentials
Subject Code : IT 303

Sr. No.	Course Content	Video URL Link
1	**INTRODUCTION :**	https://www.youtube.com/watch?v=xw59J8Euq-I
	Basics of Networks - Definition, Need, Uses and Advantages.	
	Types of Computer Networks-Local area Networks (LAN), Wide Area	
	Network Architectures- Peer to Peer , Client-Server, Hybrid, Intranet and Internet	
	Different Topologies – Bus, Ring, Star, Hybrid	
2	**NETWORKING MODELS :**	
	OSI Reference Model- Introduction to each layer , Its Functionalities , Related Protocols and device name.	https://www.youtube.com/watch?v=-wKwDv5DPCQ
	TCP/IP Reference Model- Introduction to each layer , Its Functionalities , Related Protocols and device name.	https://www.youtube.com/watch?v=8RIijFkL_o0
	comparison Between OSI Vs. TCP/IP reference Model.	https://www.youtube.com/watch?v=MO1dJc3qz9s
	Introduction to various LAN Protocols.	https://www.youtube.com/watch?v=FgPd77t1gYE
	Introduction to various WAN Protocols.	https://www.youtube.com/watch?v=6x5WqEJCfIw
3	**Network Address :**	10https://www.youtube.com/watch?v=30P73tWmU0s
	Overview, Type of Addresses : Physical Address and Logical address	
	Physical Address: Need , Advantages And Disadvantages	
	Logical Address : Need , Advantages And Disadvantages	
	IP Addresses : Class Full Addressing Network ID, Host ID Special Addressing	
	Overview Subnetting and Supernetting	
4	**Network Operating System(NOS):**	https://www.youtube.com/watch?v=txINpzNRLbw
	Features of NOS : Multiuser , multitasking , time sharing, Distributed Operating System	
	Types of Client / Server Operating System. Open	
	Sources And Windows Operating System	
	Networking Components:	
	Networking Media – Coaxial, UTP, Shielded Twisted Pair, Fiber Optical	

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5	Networking Devices – NIC, Modem , Hub, Repeater, Switches, Bridge, Router Structured cabling- Concept, advantages, racks, patch panel, crimping Types of Connectivity – Dial up, Digital Subscriber Link (DSL), Asynchronous Digital Subscriber Link (ADSL), Leased line (Non	18https://www.youtube.com/watch?v=AqIRBEG5PNk&list=PLI3lK-f29XjzWiXuP1Ae6zuoD1CPQSTJ1

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Subject Name : Data Structures
Subject Code : IT 304

Sr. No.	Course Content	Video URL Link
1	**INTRODUCTION**	https://www.youtube.com/watch?v=yE7c2WvJOr0
	Introduction to algorithm design and data structure	
	Top-down and bottom-up approaches to algorithm design	
	Analysis of Algorithm, complexity measures in terms of time and space	
	Concept of Pointer Variable	
2	**ARRAYS**	https://www.youtube.com/watch?v=lc3RtR_345g
	2.1: Representation of arrays : single and multidimensional arrays **2.2:** Address calculation using column and row major ordering.	
3	**SYMBOL TABLES**	https://www.youtube.com/watch?v=TbS2Cli57C4
	Static symbol table.	
	Hash tables, Hashing Techniques. **3.3:** Collision Handling Techniques	
4	**STACKS AND QUEUES**	https://youtu.be/GfS4nTE32A8
	: Representation of stacks and queues using arrays	
	: Type of queues-Linear queue, circular queue, De-queue	
	: Applications of stacks: Conversion form infix to postfix and prefix expressions, Evaluation of postfix expression using stacks.	
5	**LINKED LISTS**	https://www.youtube.com/watch?v=zjUlSAR9YmY
	5.1: Singly linked list : operations on list **5.2:** Linked stacks and queues.	
	5.3: Polynomial representation and manipulation using linked lists **5.4:** Circular linked lists.	
	: Doubly linked lists.	
	: Generalized lists.	
6	**SEARCHING AND SORTING ALGORITHMS**	
	: Searching Algorithm: Sequential search, binary searches, Indexed search.	
	: Sorting Algorithm: Insertion sort, selection sort, bubble sort, Quick	

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	sort, merge sort, Heap sort, Radix sort, Sorting on multiple keys.	
7	**TREES**	https://www.youtube.com/watch?v=jpK5TwdIfSs&list=PLsFNQxKNzefK_DAUwnQwBizOmcY7aDLoY
	: Basics of Trees: Binary tree traversal methods, Preorder traversal, In-order traversal, Post-order traversal,	
	: Representation of trees and its applications: Binary tree. **7.3:** Threaded binary trees.	
	: Binary Search Tree, Heap	
	: Height Balanced (AVL) Tree, B-Trees	
8	**GRAPHS**	https://www.youtube.com/watch?v=5XURaTTu1CI
	Basics of Graphs	
	Graph representation: Adjacency matrix, Adjacency lists. **8.3:** Minimum Spanning Trees, Prim's and Kruskal's Algorithm **8.4:** Traversal schemes: Depth first search, Breadth first search.	
	8.5: Shortest path Algorithms: Single source shortest path, all pair shortest path.	
9	**STORAGE MANAGEMENT**	https://www.youtube.com/watch?v=X73gBsskKi4
	9.1: Automatic List Management. **9.2:** Reference Count Method.	https://www.youtube.com/watch?v=7i4HMnR28I0
	Garbage Collection.	
	Automatic List Management.	
	Concept of Dynamic Memory Management	

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Subject Name : Object Oriented Programming
Subject Code : IT 305

Sr. No.	Course Content	Video URL Link
1	Overview of C++ : Object oriented programming, Concepts, Advantages, Usage. C++ Environment: Program development environment, C versus C++, the C++ language standards. Introduction to various C++ compilers, C++ standard libraries, C++	https://www.youtube.com/channel/UCD-scAE
	basics , loops and decisions, structures and functions	https://www.youtube.com/watch?v=I2LRuehV
2	Classes & Objects : Classes versus Structure & Union, Scope resolution operator, Inline function, Passing objects to function, Returning objects, Object assignment, Friend function, Friend classes, , Static class members, Static data member, Static member function	https://www.youtube.com/watch?v=EHlS220
3	Constructor & Destructor: Introduction, simple Constructor, Parameterized constructor, Multiple constructor in a class, Constructor with default argument, Destructor ,Default Argument ,array, Pointers References & C++ 's Dynamic Allocation operators, Array of objects, Pointers to object, This pointer, Pointer to class members, References: Reference parameter, Passing references to objects, Returning reference, Independent reference, Dynamic Constructor, Copy	https://www.youtube.com/watch?v=r3O9bvu

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4	Function & operator overloading : Function overloading, Overloading constructor function finding the address of an overloaded function, Operator Overloading: Creating a member operator function, Creating Prefix & Postfix forms of the increment & decrement operation, Overloading the shorthand operation (i.e. +=,-= etc), Operator overloading restrictions, Operator overloading using friend function, Overloading New & Delete, Overloading some special operators, Overloading [ ], ( ),	https://www.youtube.com/watch?v=bxSFAmz
	-, comma operator, Overloading.	https://www.youtube.com/watch?v=F3XjwlOt
5	Inheritance : Types of Inheritances, Access control specifiers : public, private, protected members, Protected, private and public base class inheritance, Inheriting multiple base classes, Constructors and destructors in Inheritance, Passing parameters to base class constructors, Granting access, Virtual base classes . Virtual functions & Polymorphism : Virtual function, Pure Virtual functions, abstract classes, Early Vs. late binding	https://www.youtube.com/watch?v=K62XuFH
6	The C++ I/O system basics : C++ streams, The basic stream classes: C++ predefined streams, Formatted I/O: Formatting using the ios members, Setting the format flags, Clearing format flags, An overloaded form of setf ( ), Examining the formatted flags, Setting all flags, Using width() precision() and fill(), Using manipulators to format I/O, Creating your own manipulators., creating inserters	https://www.youtube.com/watch?v=CpFx-5J7
	and extractors.	https://www.youtube.com/channel/UCD-scAE
7	Exception handling : try, catch and throw, File I/O basics, fstream classes, creating	https://www.youtube.com/watch?v=asekOytv

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