Suggested link of video lectures for Diploma (Computer Science) Students

Subject Name : Computer Architecture
Subject Code : CS 301

Topic	Details	Video URL Link
COMPUTER ARCHITECTURE	Register Transfer and Micro operations, Register Transfer: Bus and Memory Transfers.	https://youtu.be/X9meoMkWtcM
	Three-State Bus Buffers, Memory Transfer.	https://youtu.be/cwSz3gY8ssE
	Arithmetic Micro operations: Binary Adder, Binary Adder Subtractor, Half Adder and Full Adder Binary Incrementer.	https://youtu.be/a_j9JYEPNcY
	Arithmetic Circuit, Logic Micro operations: List of Logic Micro operations, Hardware, Implementation.	https://www.youtube.com/watch?v=fNGRu-rC1mY
	Shift Micro-operations: Hardware Implementation	https://www.youtube.com/watch?v=zKHaFV3RNvI
BASIC COMPUTER ORGANIZATION AND DESIGN	Instruction Codes: Stored Program Organization, Indirect Address Computer Registers: Common Bus System, Computer Instruction: Instruction	https://www.youtube.com/watch?v=aq3L-A8RYPI&list=PLrP-pAdcAQnsD0ppSClSNzwpS7ECtjLjv&index=10
	Instruction Cycle: Fetch and Decode, Type of Instruction, Register- Reference Instructions Memory-Reference Instructions: AND to AC, ADD	https://www.youtube.com/watch?v=aq3L-A8RYPI&list=PLrP-pAdcAQnsD0ppSClSNzwpS7ECtjLjv&index=10
	Branch Unconditionally, Branch and Save Return Address, ISZ, Control Flowchart Input-Output Configuration, Input-Output Instructions, Program	https://www.youtube.com/watch?v=k2Z7EsUe7o0
	Complete Computer Description, Design of Basic Computer: Control Logic Gates, Control of Registers and Memory, Control of Single flip-	https://www.youtube.com/watch?v=4ATKiivq0m4
	Design of Accumulator Logic: Control of AC Register, Adder and Logic Circuit, Character Manipulation, Program Interrupt.	https://www.youtube.com/watch?v=JFaThRTwVks

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CENTRAL PROCESSING UNIT	Introduction	https://www.youtube.com/watch?v=WuQWOOUlS8Q&
	General Register Organization: Control Word	https://www.youtube.com/watch?v=dwy1H1qFkzs
	Stack Organization: Register Stack, Memory Stack, Reverse Polish Notation, Evaluation of Arithmetic Expressions	https://www.youtube.com/watch?v=5t_BIROKkLw
	Instruction Formats: Three Address Instructions, Two Address Instructions, One Address Instructions, Zero Address Instructions, RISC Instructions	https://www.youtube.com/watch?v=aq3L-A8RYPI&list=PLrP-pAdcAQnsD0ppSClSNzwpS7ECtjLjv&index=10
	Addressing Modes	https://www.youtube.com/watch?v=hjGC19X4M0Q&li
	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=TmBmywnC9sQ
	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=k7pWfbRdp14
	Characteristics, Overlapped Register Windows	https://www.youtube.com/watch?v=k7pWfbRdp14
INPUT OUTPUT ORGANIZATION	Peripheral Devices: ASCII Alphanumeric Characters	https://www.youtube.com/watch?v=FcAuej_2bY4
	Input-Output Interface: I/O Bus and Interface Modules, I/O Versus Memory Bus, Isolated versus Memory-Mapped I/O	https://www.youtube.com/watch?v=1cqdt5RJGWo
	Asynchronous Data Transfer: Strobe Control, Handshaking, Asynchronous Serial Transfer, Asynchronous Communication Interface First-In, First-Out, Buffer	https://www.youtube.com/watch?v=7NDAwKW2hF8
	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=phnM0VVdKls

Suggested link of video lectures for Diploma (Computer Science) Students

	Direct Memory Access (DMA): DMA Controller, DMA Transfer Input-Output Processor: CPU-IOP Communication	https://www.youtube.com/watch?v=S6h0bo9_Q7Y
	Serial Communication: Character-Oriented Protocol, Data Transparency	https://www.youtube.com/watch?v=0zLPp87aO3o
	Bit-Oriented Protocol	https://www.youtube.com/watch?v=0zLPp87aO3o
MEMORY ORGANIZATION	Memory Hierarchy	https://www.youtube.com/watch?v=LI7gAVkxjAs
	Main Memory: RAM and ROM Chips, Memory Address Map, Memory Connection to CPU	https://www.youtube.com/watch?v=PxTv_R2k_B0
	Auxiliary Memory: Magnetic Disks, Magnetic Tape, CD, DVD Associative Memory: Hardware Organization, Read Operation, Write Operation	https://www.youtube.com/watch?v=zQPr-IYhFDA
	Cache Memory: Associative Mapping, Direct Mapping, Set-Associative Mapping, Writing into Cache, Cache Initialization	https://www.youtube.com/watch?v=eObN3u3eAnU
	Virtual Memory: Address Space and Memory Space, Address Mapping	https://www.youtube.com/watch?v=o2_iCzS9-ZQ
Advance Processor Architectures	Instruction Pipelining, Arithmetic Pipelining,	https://www.youtube.com/watch?v=-Bwiv5EGucs
	Super Scalar Processors,VLIW Processors,	https://www.youtube.com/watch?v=Ro4w0W0l9Hk
	Parallel Processing, Flynn's Classification of Parallel Processing,	https://www.youtube.com/watch?v=GpqXB7zuNVM
	Vector Computers, Array Processors, Distributed Shared Memory Parallel Computers.	https://www.youtube.com/watch?v=pbgH7fjfSf8 https://youtu.be/3m9g-Bv1tkk

Suggested link of video lectures for Diploma (Computer Science) Students

Suggested link of video lectures for Diploma (Computer Science) Students

Subject Name : Operating System
Subject Code : CS 302

Topic	Details	Video URL Link
INTRODUCTION TO OPERATING SYSTEM	Basics of Operating System, its functions, Objectives and Types of operating System	https://www.youtube.com/watch?v=WJ-UaAaumNA&list=PLxCzCOWd7aiGz9donHRrE9I3Mwn6XdP8p&index=2
	Introduction of time sharing, real time, Parallel and Distributed Multiprocessor embedded O.S.	https://www.youtube.com/watch?v=SGZE4bhfMy8
	Structure of Operating System:- System components, Operating System services, System calls and Programs, System Structure.	https://www.youtube.com/watch?v=tWPa-rZiGM8 https://www.youtube.com/watch?v=0cOW10bPNyA
PROCESS MANGEMENT	Concepts of Processes; Process state (state diagram), Process Scheduling & Process control block (PCB), Operation on Processes, Threads multiprocessor scheduler.	https://www.youtube.com/watch?v=7TyzYwrZ_fY
	Process Scheduling & Algorithms- Basic Concepts, Scheduling criteria, Scheduling Algorithms- FCFS, SJF, Priority, RR, Multiple queues, Multiple processor Scheduling, Real time Scheduling	https://www.youtube.com/watch?v=-QZYQvUMwKM
	Dead Locks - Basic Concept of deadlock, deadlock detection, deadlock prevention,	https://www.youtube.com/watch?v=vKwR_p5igII
MEMORY MANAGEMENT	Concept of Memory Management- Logical v/s Physical address, Cache Memory, Swapping, Allocation Techniques (contiguous and Non-contiguous), Fragmentation & Compaction.	https://youtu.be/9lQs4VwYcaQ?list=PLV8vIYTIdSnZ67NQObdXE0gFjrzPrNKHp
	Concepts of paging and segmentation - Paged Segmentation & Segmented Paging.	https://www.youtube.com/watch?v=4Dun9xK7Mnk&list=PLV8vIYTIdSnZ67NQObdXE0gFjrzPrNKHp&index=7

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	Concepts of Virtual Memory- Demand Paging, Page Fault, Page replacement and its Algorithms, Allocation of frames, Thrashing.	https://www.youtube.com/watch?v=e9F1VmVgFFQ&list=PLV8vIYTIdSnZ67NQObdXE0gFjrzPrNKHp&index=10
FILE MANAGEMENT SYSTEM	File System interface: File Concepts, Types of Files, Access Methods, Directory Structure, File System mounting , Protection.	https://www.youtube.com/watch?v=vqdTDdHyU5U
	File System Implementation: File System Structure, Allocation Methods (Contiguous, Non Contiguous, index allocations), Free space Management (Fragmentation & compaction), Directory implementation, File- sharing, recovery, network file system, (NFS), Efficiency and performance	https://www.youtube.com/watch?v=pDMonZ4TbwA https://www.youtube.com/watch?v=-KKj3WF1MFM https://www.youtube.com/watch?v=hDBFSQRHPAU
DEVICE MANAGEMENT	Input Output System : I/O Hardware & Interface, Kernel I/O Sub System, I/O request streams.	https://www.youtube.com/watch?v=50R9fuUJf0w
	Disk Management- Disk Structure, Disk Scheduling and its algorithms, RAID TECHNOLOGY.	https://www.youtube.com/watch?v=ZjMwUhapSEM https://www.youtube.com/watch?v=V1uUvoQLYc0
PROTECTION AND SECURITY	Goal of Protection, Domain of Protection, Security Problems Authentication.	https://www.youtube.com/watch?v=uFIzD1k5S5U
OTHER OPERATING SYSTEM	Introduction to Network Operation System (Only Brief Concept).	https://www.youtube.com/watch?v=txINpzNRLbw
	Introduction to Distributed Operation System (Only Brief Concept).	

Suggested link of video lectures for Diploma (Computer Science) Students

Subject Name : Data Communication
Subject Code : CS 303

Topic	Details	Video URL Link
DATA COMMUNICATION CONCEPT & TECHNOLOGY	Data Representation, Data Transmission.	https://www.youtube.com/watch?v=96XUDSLO7lQ
	Modes of Data Transmission- Analog Data, Digital Data,	https://www.youtube.com/watch?v=WW8bqHJxV5k
	Communication Channels, Synchronous & Asynchronous	https://www.youtube.com/watch?v=sU9RJDaSbRM
	Data & Communication, Series & Parallel data Communication, Bit rate and Baud rate,	https://www.youtube.com/watch?v=11mtP153Xg8
	Bandwidth & Channel Capacity, Nyquists and Shannon's theorems.	https://www.youtube.com/watch?v=0O6jxk5i_Lc
TRANSMISSION MEDIA	Transmission Line Characteristic, Liner Distortions, Crosstalk, Twisted Pairs Cable, Coaxial Cable, UTP, STP	https://www.youtube.com/watch?v=2wXOHPxhUgc
	Optical Fibre – Multimode Fibres, Modal Dispersion, Mono Mode Fibre, Graded Index Fibres, Total Dispersion, Fibre Attenuation, Radio Media, UHF & Microwaves, Satellite Link, Equalization.	https://www.youtube.com/watch?v=fxZTGLd98wI https://www.youtube.com/watch?v=HZ7hyNP83LE
MODULATION AND DATA MODEMS	Concept of modulation and demodulation,	https://www.youtube.com/watch?v=5BBTsjdsIKk
	Digital modulation methods: PCM, Amplitude,	https://www.youtube.com/watch?v=WHcQ2mcJ9so&list=PLL1
	Shift-keying, Frequency Shift-keying,	https://www.youtube.com/watch?v=rrgon8Qne_E
	Quadrature PSK (QPSK), Differential PSK (DPSK), Simplex, Half Duplex, Full Duplex	https://www.youtube.com/watch?v=68_7US8wv8I
	MULTIPLEXING: Frequency-Division Multiplexing, Wavelength- Division Multiplexing, Synchronous Time-Division Multiplexing, Statistical Time- Division Multiplexing	https://www.youtube.com/watch?v=zMn1IeEMk8E
	SPREAD SPECTRUM: Frequency Hopping Spread Spectrum (FHSS), Direct Sequence Spread Spectrum.	https://www.youtube.com/watch?v=PUQMKrtUYz8

Suggested link of video lectures for Diploma (Computer Science) Students

MULTIPLEXING SPREADING & SWITCHING	CHANNELIZATION: Frequency-Division Multiple Access (FDMA), Time- Division Multiple Access (TDMA), Code-Division Multiple Access (CDMA)	https://www.youtube.com/watch?v=EfuK92TEwQY
	CIRCUIT-SWITCHED NETWORKS: Three Phases, Efficiency, Delay, Circuit- Switched Technology.	https://www.youtube.com/watch?v=1-8RZ8pPWF8
	DATAGRAM NETWORKS: Routing Table, Efficiency, Delay, Datagram Networks.	https://www.youtube.com/watch?v=-S-NThI_79o
	VIRTUAL-CIRCUIT NETWORKS: Addressing, Three Phases, Efficiency. Delay in Virtual-Circuit Networks, Circuit-Switched Technology	https://www.youtube.com/watch?v=-S-NThI_79o
	STRUCTURE OF A SWITCH: Circuit Switches, Packet Switches.	https://www.youtube.com/watch?v=1-8RZ8pPWF8
ERROR DETECTION & CORRECTION	INTRODUCTION: Types of Errors, Redundancy, Detection Versus Correction, Forward Error Correction Reverse Error Correction.	https://www.youtube.com/watch?v=pwPvgE56GhQ
	BLOCK CODING: Error Detection, Error Correction, Hamming Distance And Minimum Hamming Distance.	https://www.youtube.com/watch?v=bsvahXJoIgg
	Liner Block Code, CRC, Checksum	https://www.youtube.com/watch?v=5Q-Yv6_0Qcw
TELEPHONE & CABLE NETWORK	TELEPHONE NETWORK: Major Components, topology, Signalling, Services Provided by Telephone Networks, echo & noise in transmission system.	https://youtu.be/qGYc3DNCdAA
	DIAL-UP MODEMS: Modem Standards, type of modems	https://www.youtube.com/watch?v=mDvQcGVYmYw
	DIGITAL SUBSCRIBER LINE: DSL, ADSL Lite, HDSL, SDSL, VDSL.	https://www.youtube.com/watch?v=3E82G7uF4_Y
CELULLAR & SATELLITE NETWORK	SATELLITE NETWORKS: Orbits, Footprint, Three Categories of Satellites, GEO Satellites, MEO Satellites, LEO Satellites.	https://www.youtube.com/results?search_query=satellite+network+in+computer+network&sp=eAE%253D
	CABLE TV NETWORKS and DATA TRANSFER: Traditional Cable Networks, Hybrid Fibre-Coaxial (HFC) Network, Bandwidth, Sharing.	https://www.youtube.com/watch?v=7zMrM3wCPZU
	CELLULAR TELEPHONY: Frequency-Reuse Principle, Transmitting, Receiving, Roaming, First Generation, Second Generation, Third Generation.	https://www.youtube.com/watch?v=wqj2op3pFag
	BLUETOOTH: Architecture, Bluetooth Layers	

Subject Name : Data Structure
Subject Code : CS 304

Unit No.	Topic	Details	Video URL Link
1	INTRODUCTION	Introduction to algorithm design and data structure	https://www.youtube.com/watch?v=yE7c2WvJOr0
		Top-down and bottom-up approaches to algorithm design	https://www.youtube.com/watch?v=pYY982_Mv50
		Analysis of Algorithm, complexity measures in terms of time and space	https://www.youtube.com/watch?v=eDNXKJRdunk&list=PLXpS9L5C5-kP-87DAnpYKcl1kNOQk_N5Z&index=4
2	ARRAYS	Representation of arrays : single and multidimensional arrays	https://www.youtube.com/watch?v=lc3RtR_345g
		Address calculation using column and row major ordering.	https://www.youtube.com/watch?v=LwvZQ3zWkPo
3	SYMBOL TABLES	Static symbol table.	https://www.youtube.com/watch?v=TbS2CIi57C4
		Hash tables, Hashing Techniques.	https://www.youtube.com/watch?v=xo9Vsfzfg8g
		Collision Handling Techniques	https://www.youtube.com/watch?v=o7hb03n3pw4
4	STACKS AND QUEUES	Representation of stacks and queues using arrays	https://www.youtube.com/watch?v=x8XIwmrZ9O4&list=PLXpS9L5C5-kP-87DAnpYKcl1kNOQk_N5Z&index=20
		Type of queues-Linear queue, circular queue, De-queue	https://www.youtube.com/watch?v=MfQHAVPkkTo&list=PLXpS9L5C5-kP-87DAnpYKcl1kNOQk_N5Z&index=21
		Applications of stacks: Conversion form infix to postfix and prefix expressions, Evaluation of postfix expression using stacks.	https://www.youtube.com/watch?v=9gpKZaEA2Bw
5	LINKED LISTS	Singly linked list : operations on list	https://www.youtube.com/watch?v=zjUlSAR9YmY&list=PLXpS9L5C5-kP-87DAnpYKcl1kNOQk_N5Z&index=31
		Linked stacks and queues.	https://youtu.be/rwrrGxH1jPs?list=PLDA2q3s0-n15cvT4Q6hUPJB_sxDOZu8Y3
		Polynomial representation and manipulation using linked lists	https://www.youtube.com/watch?v=3tDBX4-0Jt4
		Circular linked lists.	https://www.youtube.com/watch?v=8pLwfW9Gov8

		Doubly linked lists.	https://www.youtube.com/watch?v=DMjxFtU_N9s
		Generalized lists.	https://www.youtube.com/watch?v=DMjxFtU_N9s
6	SEARCHING AND SORTING ALGORITHMS	Searching Algorithm: Sequential search, binary searches, Indexed search.	https://www.youtube.com/watch?v=IiTdX1KTWcU
		Sorting Algorithm: Insertion sort, selection sort, bubble sort, Quick	https://www.youtube.com/watch?v=3grg9u-LtcM
		sort, merge sort, Heap sort, Radix sort, Sorting on multiple keys.	https://www.youtube.com/watch?v=Sl6PF4HDnNE
7	TREES	Basics of Trees: Binary tree traversal methods, Preorder traversal, In- order traversal, Post-order traversal,	https://www.youtube.com/watch?v=5XURaTTu1CI
		Representation of trees and its applications: Binary tree.	https://www.youtube.com/watch?v=tnrXbHeuYiA
		Threaded binary trees.	https://www.youtube.com/watch?v=0acUMN82RmU
		Binary Search Tree, Heap	https://www.youtube.com/watch?v=Dz2-NUQMNH8
		Height Balanced (AVL) Tree, B-Trees	https://www.youtube.com/watch?v=XHBJ7knEsT8
8	GRAPHS	Basics of Graphs	https://www.youtube.com/watch?v=X73gBsskKi4
		Graph representation: Adjacency matrix, Adjacency lists.	https://www.youtube.com/watch?v=-pe8pSazt84
		Minimum Spanning Trees, Prim's and Kruskal's Algorithm	https://www.youtube.com/watch?v=ttbHBbNRRYE
		Traversal schemes: Depth first search, Breadth first search.	https://www.youtube.com/watch?v=ALt3VXC2gtU
		Shortest path Algorithms: Single source shortest path, all pair shortest Path	https://www.youtube.com/watch?v=DAj7mtiAiQM
9	STORAGE MANAGEMENT	Automatic List Management.	https://www.youtube.com/watch?v=7i4HMnR28I0
		Reference Count Method.	
		Garbage Collection.	https://www.youtube.com/watch?v=CkaSDY2heT0
		Concept of Dynamic Memory Management	https://www.youtube.com/watch?v=ZSzzY3adfDM