



COMPUTER SCIENCE 12TH



POSITIVE QUADRANT
TECHNOLOGIES
SERVING INFORMATION WORLDWIDE

Programming & development

Course Curriculum



COMPUTER SCIENCE 12TH

Module 1 : Computational Thinking and Programming – 2

- Revision of Python topics covered in Class XI.
- Functions:
 - types of function (built-in functions, functions defined in module, user defined functions)
 - creating user defined function
 - arguments and parameters
 - default parameters
 - positional parameters
 - function returning value(s)
 - flow of execution
 - scope of a variable (global scope, local scope)
- Exception Handling:
 - Introduction
 - handling exceptions using try-except-finally blocks
 - Introduction to files
 - types of files (Text file, Binary file, CSV file)
 - relative and absolute paths
- Text file:
 - opening a text file
 - text file open modes (r, r+, w, w+, a, a+)
 - closing a text file
 - opening a file using with clause
 - writing/append data to a text file using write() and writelines()
 - reading from a text file using read()
 - readline() and readlines()
 - seek and tell methods
 - manipulation of data in a text file
- Binary file:
 - basic operations on a binary file:
 - open using file open modes (rb, rb+, wb, wb+, ab, ab+)
 - close a binary file
 - import pickle module
 - dump() and load() method
 - read
 - write/create
 - search



- append and update operations in a binary file
- CSV file:
 - import csv module
 - open / close csv file
 - write into a csv file using writer()
 - writerow()
 - writerows() and read from a csv file using reader()
- Data Structure:
 - Stack
 - operations on stack (push & pop)
 - implementation of stack using list

Module 2: Computer Networks

- Evolution of networking:
 - introduction to computer networks
 - evolution of networking (ARPANET, NSFNET, INTERNET)
- Data communication terminologies:
 - concept of communication
 - components of data communication (sender, receiver, message, communication media, protocols)
 - measuring capacity of communication media (bandwidth, data transfer rate)
 - IP address
 - switching techniques (Circuit switching, Packet switching)
- Transmission media:
 - Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable)
 - Wireless media (Radio waves, Micro waves, Infrared waves)
 - Network devices (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card)
 - Network topologies and Network types:
 - types of networks (PAN, LAN, MAN, WAN)
 - networking topologies (Bus, Star, Tree)
- Network protocol:
 - HTTP
 - FTP
 - PPP
 - SMTP
 - TCP/IP
 - POP3
 - HTTPS



- TELNET
- VoIP
- Introduction to web services:
 - WWW
 - Hyper Text Markup Language (HTML)
 - Extensible Markup Language (XML)
 - domain names
 - URL
 - Website
 - web browser
 - web servers
 - web hosting

Module 3: Database Management

- Database concepts:
 - introduction to database concepts and its need
 - Relational data model:
 - Relation
 - attribute
 - tuple
 - domain
 - degree
 - cardinality
 - keys (candidate key, primary key, alternate key, foreign key)
- Structured Query Language:
 - Introduction
 - Data Definition Language and Data Manipulation Language
 - data type (char(n), varchar(n), int, float, date)
 - constraints (not null, unique, primary key)
 - create database
 - use database
 - show databases
 - drop database
 - show tables
 - create table
 - describe table
 - alter table (add and remove an attribute, add and remove primary key)
 - drop table
 - insert





- delete
- select
- operators (mathematical, relational and logical)
- aliasing
- distinct clause
- where clause
- in
- between
- order by
- meaning of null
- is null
- is not null
- like
- update command
- delete command
- aggregate functions (max, min, avg, sum, count)
- group by
- having clause
- joins:
 - cartesian product on two tables
 - equi-join and natural join
- Interface of python with an SQL database:
 - connecting SQL with Python
 - performing insert
 - update
 - delete queries using cursor
 - display data by using connect()
 - cursor()
 - execute()
 - commit()
 - fetchone()
 - fetchall()
 - rowcount
 - creating database connectivity applications
 - use of %s format specifier or format() to perform queries