

# Python



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## Introduction to Python

What is Python and history of Python?  
Unique features of Python  
Python-2 and Python-3 differences  
Install Python and Environment Setup  
First Python Program  
Python Identifiers, Keywords and Indentation  
Comments and document interlude in Python  
Command line arguments  
Getting User Input  
Python Data Types  
What are variables?  
Python Core objects and Functions  
Number and Maths  
Week 1 Assignments

## Control Statements

if-else  
if-elif-else  
while loop  
for loop  
break  
continue  
assert  
pass  
return



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## List, Ranges & Tuples in Python

Introduction

Lists in Python

More about Lists

Understanding Iterators

Generators, Comprehensions and Lambda Expressions

Introductio

Generators and Yield

Next and Ranges

Understanding and using Ranges

More About Ranges

Ordered Sets with tuples

## Python Dictionaries and Sets

Introduction to the section

Python Dictionaries

More on Dictionaries

Sets

Python Sets Examples

## Input and Output in Python

Reading and writing text files

Writing Text Files

Appending to Files and Challenge

Writing Binary Files Manually

Using Pickle to Write Binary Files



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## Exceptions

- Errors in Python
  - Compile-Time Errors
  - Runtime Errors
  - Logical Errors
- What is Exception?
- Handling an exception
  - try....except...else
  - try-finally clause
- Argument of an Exception
- Python Standard Exceptions
- Raising an exceptions
- User-Defined Exceptions

## Python Regular Expressions

- What are regular expressions?
- The match Function
- The search Function
- Matching vs searching
- Search and Replace
- Extended Regular Expressions
- Wildcard

## Python Multithreaded Programming

- What is multithreading?
- Difference between a Process and Thread
- Concurrent Programming and GIL
- Uses of Thread
- Starting a New Thread
- The Threading Module
- Thread Synchronization
- Locks
- Semaphore
- Deadlock of Threads
- Avoiding Deadlocks
- Daemon Threads



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## Using Databases in Python

Python MySQL Database Access  
Install the MySQLdb and other Packages  
Create Database Connection  
CREATE, INSERT, READ Operation  
DML and DDL Oepration with Database

## Graphical User Interface

GUI in Python  
Button Widget  
Label Widget  
Text Widget

## Django Web Framework in Python

Introduction to MVC and MVT architecture on web development.  
Django folder structure flow of control.

## Web scraping in python.

## Introduction to Data Science.



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# SOFTWARE TESTING



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## MANUAL TESTING SYLLABUS

### 1. INTRODUCTION OF SOFTWARE TESTING

What is software testing?  
Why is testing necessary?  
Testing Principles  
Best Practices in Testing  
Skills for Testing  
Various Task Involved In Testing  
Difference between Verification & Validation  
Difference between QA & QC

### 2. DEVELOPMENT OF SOFTWARE APPLICATION

Introduction of Software Process  
Phases in SDLC  
Waterfall Model  
Phases of Waterfall Model  
Advantages & Disadvantages  
Spiral Model  
Phases of Spiral Model  
Spiral Model Strengths & Weaknesses  
When should you use Spiral Model  
Prototype Model  
Phases  
Advantages & Disadvantages  
Agile Model  
Scrum methodology  
Sprints in Scrum  
Scrum Roles  
Scrum Artifacts & Ceremonies  
V-shaped Model  
Steps in the V-shaped Model  
V-shaped Strengths & Weaknesses  
Challenges Regarding To Each Development Phases



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### 3. LEVELS OF SOFTWARE TESTING

Unit Testing  
Integration Testing  
Various Approaches Of Integration Testing  
System Testing  
Acceptance Testing

### 4. TESTING METHODOLOGIES

Black Box Testing  
Advantages & Disadvantages  
White Box Testing  
Statement Coverage  
Decision Coverage

### 5. TYPES OF NON FUNCTIONAL TESTS

Security Testing  
Recovery Testing  
Configuration testing  
Compatibility Testing  
Installation Testing  
Performance Testing  
Parallel Testing  
Volume Testing  
Internationalization Testing  
Localization Testing

### 6. TYPES OF FUNCTIONAL TESTS

Other Types Of Testing

### 7. PROCESS OF TESTING

Test Planning  
Test Analysis  
Test Design  
Construction and verification  
Testing Cycles  
Final Testing and Implementation  
Post Implementation



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## 8. TEST DESIGN FOR FUNCTIONAL TESTING

- Introduction To Test Design
- Inputs For Test Design Activity
- Test scenarios
- Test Cases
- Test Case Management
- Best Practices Of Test Cases
- Test Data
- Black Box Test Technique
- Requirement Traceability Matrix(RTM)

## 9. TEST EXECUTION

- Test Execution Cycle
- Entry Criteria For Test Execution
- Smoke /Sanity Testing
- Test Execution
- Retesting And Regression Testing
- Ending The Test Execution Activity
- Test Closure Activities

## 10. DEFECT MANAGEMENT

- Defect /Bug
- Causes For Defect
- Defect Reporting
- Defect Attributes
- Severity And Priority
- Defect Life Cycle
- Advantages Of Defect Tracking

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## 11. QUALITY AND PROCESS IMPROVEMENT

Define What Is Quality

Application Of Concept Of Quality To Software Application

Quality Assurance

Quality Control

Testers Contribution To Quality Of Software Application

Software Testing Metrics

## 12. GETTING EQUIPPED TO START

Challenges In Testing

Best Practices In Test

Skills Required For A Tester

Career Path Of A Tester

How To Keep Updated

## 13. CASE STUDY

## 14. INTERVIEW PREPARATION.



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## AUTOMATION TESTING SYLLABUS

1. Benefits Of Automation Testing
2. What And When To Automate
3. Introduction To Automation Tools
4. Comparison with other tools like QTP/ UFT , RFT

## SELENIUM

### 1. Introduction Of Selenium

Explanation of selenium and its advantages  
Differences between selenium and QTP

### 2. Components Of Selenium

Selenium IDE  
Selenium RC  
Selenium Grid  
Selenium WebDriver

### 3. Selenium JAVA language

Introduction  
Data types  
JAVA Variables  
JAVA Modifier.  
Comments in JAVA  
JAVA Basis  
Execution of JAVA

### 4. Introduction Of Selenium IDE

Main Features of Selenium IDE  
Installing Selenium IDE  
Test with Selenium IDE



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## 5. Selenium Webdriver

Introduction to selenium webdriver

Setting up eclipse

Downloading and configuring webdriver in eclipse

## 6. Selenium WebDriver Commands

Get Commands

Navigate Commands

Element Visibility Commands

Other Commands

## 7. Locators Of Selenium (Webdriver)

Tools to identify elements and object

Google Chrome Developer Tools

Locating elements by ID, Name, LinkText, ClassName etc.

XPath , Types in X-path

## 8. Advanced Features IN Selenium

Handling Pop Up / Alert Window

Drop Down Operation

Scroll Down/up

Right Click Operation

## 9. Concept of framework

Introduction to framework

Use of framework

Different types of framework

Different types of packages in framework

## 10. TestNG Framework

Introduction to TestNG

Setting up eclipse

Downloading and configuring TestNG in webdriver

Functionality provided by TestNG

Parallel Testing

Report Generation



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## 11. Data Driven Framework

Data driven testing

Apache poi library and installation

Advantages of using Data Driven Framework



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# SQL



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## Module 1:

Introduction to MySQL. Installation of MySQL server. Download sample database .Load sample database to work.

## Module 2:

Writing Basic SQL

Topic:

Basic SELECT Statement

Selecting All Columns

Selecting Specific Columns

Writing SQL Statements

Column Heading Defaults

Arithmetic Expressions

Using Arithmetic Operators

Operator Precedence

Using Parentheses

Defining a Null

Defining a Column Alias

Using Column Aliases

Concatenation Operator

Using the Concatenation Operator

Literal Character Strings

Using Literal Character Strings

Duplicate Rows

Eliminating Duplicate Rows



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## Module 3:

Restricting and Sorting Data

**Topic :**

Limiting Rows Using a Selection

Limiting the Rows Selected

Using the WHERE Clause

Character Strings and Dates

Comparison Conditions

Using Comparison Conditions

Other Comparison Conditions

Using the BETWEEN Condition

Using the IN Condition

Using the LIKE Condition

Using the NULL Conditions

Logical Conditions

Using the AND Operator

Using the OR Operator

Using the NOT Operator

Rules of Precedence

ORDER BY Clause

Sorting in Descending Order

Sorting by Column Alias

Sorting by Multiple Columns

## Module 4:

Working on DDL Commands

**Topic:**

Relational Database Management System (RDBMS)

Normalization

Create Database objects

Data Types in SQL

Alter Table Statements

Drop Table Statements

Various Constraints

Creating Views



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## Module 5:

Working on DML statements

### **Topic:**

Data Manipulation Language

Adding a New Row to a Table

The INSERT Statement Syntax 8-5

Inserting New Rows

Inserting Rows with Null Values

Inserting Special Values

Inserting Specific Date Values

Creating a Script

Copying Rows from Another Table

Changing Data in a Table

The UPDATE Statement Syntax

Updating Rows in a Table

Updating Two Columns with a Subquery

Updating Rows Based on Another Table

Updating Rows: Integrity Constraint Error

Removing a Row from a Table

The DELETE Statement

Deleting Rows from a Table

Deleting Rows Based on Another Table

Deleting Rows: Integrity Constraint Error

Using a Subquery in an INSERT Statement

## Module 6:

Working on multiple tables and Retrieve records from multiple tables

### **Topic :**

Self-Join

Inner Join

Left Join

Right Join

Cross Join



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## Module 7:

Working on subqueries

**Topic :**

Using a Subquery to Solve a Problem

Subquery Syntax

Using a Subquery

Guidelines for Using Subqueries

Types of Subqueries

Single-Row Subqueries

Executing Single-Row Subqueries

Using Group Functions in a Subquery

The HAVING Clause with Subqueries

Multiple-Row Subqueries

Using the ANY Operator in Multiple-Row Subqueries

Using the ALL Operator in Multiple-Row Subqueries

Null Values in a Subquery

## Module 8:

Use of built-in function in SQL

**Topics:**

Conversion Function

Logical Functions

Math Function

Aggregate Functions

String Functions

Date Functions

## Module 9:

Advance functions in SQL

**Topics:**

Sql Server Trigger

Sql Server Procedure

Sql Server Functions

Sql Server Index

Sql Server Views

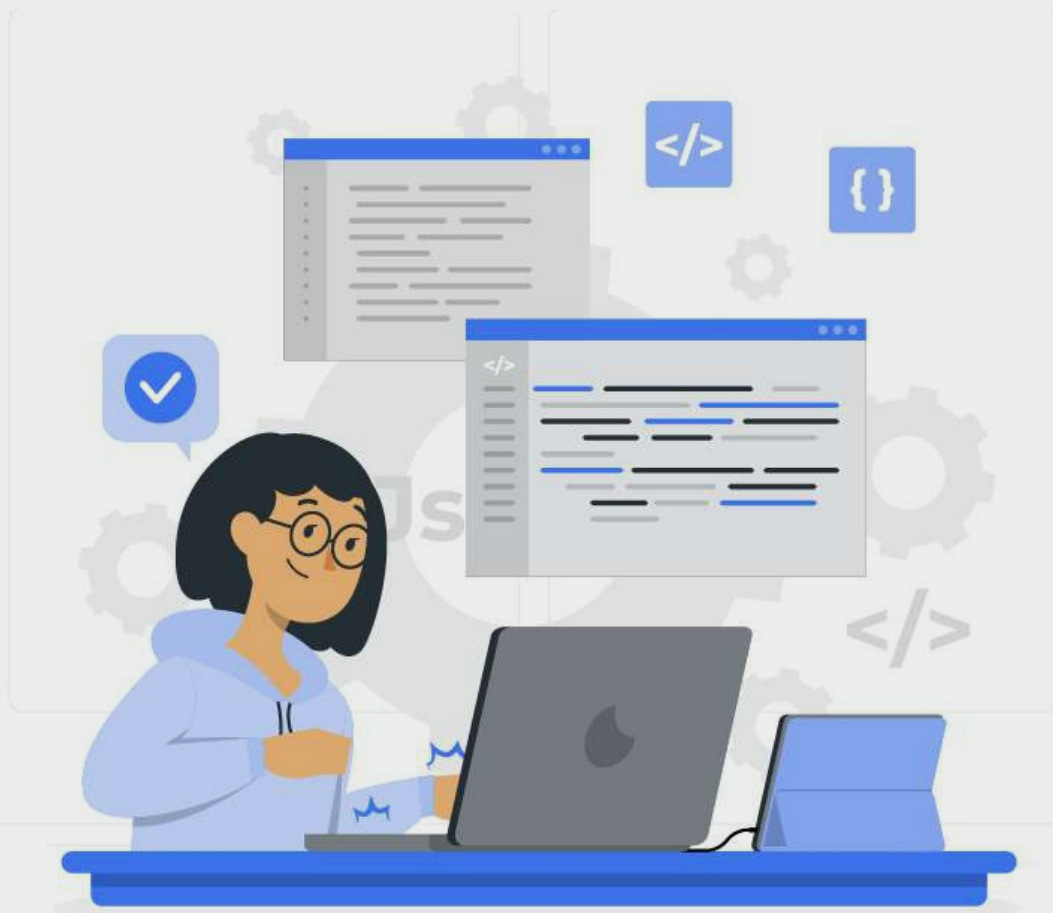
Manage and secure a database

Monitor and optimize performance



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# JAVA



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## Core Java Syllabus

- Java Fundamentals
- Java Applications
- JVM Architecture
- How java is platform Independent
- Difference between JDK,JVM and JRE
- Data Types and Variables in Java
- Operators and Expressions
- Control Statements
- Loops in Java
- Arrays
- Command Line Arguments
- Java 8 and Java 9 Features
- OOP'S Concepts
- Overloading and Overriding
- Inheritance with Interface and Abstract Class
- Exception Handling
- Wrapper Classes
- Garbage Collections
- Inner Classes
- Packages
- String Class
- String Buffer and StringBuilder Class in Java
- Multithreading
- Collection and Generics
- File I/O
- Socket Programming
- AWT and Event Handling
- GUI Designing Swing
- JDBC



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# Advance Java

## 1. Basics of Web Application

- What is Web Application
- Client and Server Architecture
- HTTP Protocol
- J2EEWeb Container and Web Server

## 2. Web Server Setup

- Tomcat Introduction
- Overview, Installation and Configuring Tomcat
- Setup Servlet Project in Eclipse
- Configure Servlet API

## 3. Servlets

- Introduction
- HTTP Protocol and HTTP Methods
- Servlet Interface
- GenericServlet Interface
- HTTPServlet Interface
- Servlet Life Cycle
- Servlet Config
- Servlet Context
- Session Tracking Mechanisms
- RequestDispatcher Forward and Include method
- Forwarding and Redirection of requests

## 4. Jsp

- Introduction to JSP
- JSP LifeCycle
- JSP Implicit Objects
- JSP Directives
- JSP Scripting Elements
- JSP Action Tags
- Custom Tags
- JSP with JDBC
- JSTL and Tag Library



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# Frameworks

## 1. Hibernate Framework

- Introduction
- ORM Principle
- Hibernate Architecture
- Persistent Classes
- Setting up Hibernate project
- Configuring JAR and XML file
- Hibernate CRUD
- HQL
- Using SQL with Hibernate
- Mapping Collections
- Hibernate Caching
- Types of Caching mechanisms
- Criteria Queries

## 2. Spring Framework

- What is Spring
- Setting up Spring Project
- Core Spring
- Dependency Injection
- Spring Bean Factory
- Spring Application Context
- Spring MVC
- Spring ORM
- Spring DAO

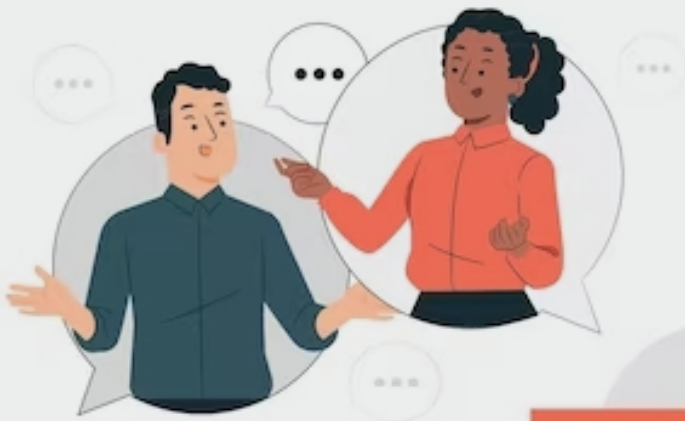
## 3. Spring Boot Framework

- Spring Boot Introduction
- Spring Boot Architecture
- Spring Initializr
- Download and Install STS IDE
- Spring Boot CLI
- Spring Tool Suite
- Annotations
- Spring Boot View
- Spring Boot with Database
- Spring Boot Caching
- Web Services : Rest Api



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# BUSINESS SOFT SKILLS



Soft Skills



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## SPOKEN ENGLISH-

- Basic Introduction of oneself
- Parts of speech (Noun/pronoun/verb/adjective/adverbs/conjunctions, etc.)
- Types of speech (active-passive/direct-indirect)
- Homophones/articles/punctuation/conjunctive adverbs
- Synonyms/ antonyms/similes
- Idioms/proverbs/phrases

## PERSONALITY DEVELOPMENT-

- Group discussion
- Extempore
- Picture composition
- Sense of dressing up
- Basic body language attributes
- Pronunciation/Enunciation
- Email writing
- Report writing

## Other benefits-

- FAQs- HR Round
- Vocabulary building
- Live activities to enhance confidence
- Self-explanatory notes



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