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Computer Hardware

Tools and Technique

For Everyone

Duration: 2 Months

Saturday and Sunday

Timing: 3pm to 5pm

Total Fees: Rs.6000

For AIT Student: Rs.3000

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Course Outline

- 1: Personal Computer Components
- 2: Operating System Fundamentals
- 3: PC Technician Professional Best Practices
- 4: Installing and Configuring Peripheral Components
- 5: Installing and Configuring System Components
- 6: Maintaining and Troubleshooting Peripheral Components
- 7: Troubleshooting System Components
- 8: Installing and Configuring Operating Systems
- 9: Maintaining and Troubleshooting Micro- soft Windows
- 10: Network Technologies
- 11: Installing and Managing Network Connections
- 12: Supporting Laptops and Portable Computing Devices
- 13: Supporting Printers and Scanners.
- 14: Personal Computer Security Concepts.
- 15: Supporting Personal Computer Security

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Manual

for

Android Development

Duration 2 Months (Saturday and Sunday)

Timing: 3pm to 5pm

Total Fees: Rs.8000

For AIT Student: Rs.4000

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Course Outline

Session 1 – Introduction to Application Development in Java

- Explain the structured programming paradigm
- Explain the features of Java as a OOP language
- Describe Java platform and its components
- List the different editions of Java, explain Java Standard Edition (Java SE)
- Describe the steps for downloading and installing Java Development Kit (JDK)
- Explain the structure of a Java class
- List and explain steps to develop, compile, and execute Java program
- Explain the various components of JVM
- Describe comments in Java

Session 2 – Variables and Operators

- Explain variables and their purpose, and syntax of variable declaration
- Explain the rules and conventions for naming variables
- Explain data types
- Describe primitive and reference data types
- Describe escape sequence, and format specifiers
- Identify and explain different type of operators
- Explain the concept of casting
- Explain implicit and explicit conversion

Session 3 – Decision-Making Constructs and Looping Constructs

- List the different types of decision-making statements
- Explain the various forms of if statement
- Explain the switch-case statement
- Explain the use of strings and enumeration in the switch-case statement
- Compare the if-else and switch-case statement
- List the different types of loops
- Explain the while statement and the associated rules
- Identify the purpose of the dowhile statement
- State the need of for statement
- Describe nested loops
- State the purpose of jump (break, continue) statement

Session 4 – Classes and Objects, Methods and Access Specifiers

- Explain creation of classes in Java
- Explain the instantiation of objects in Java
- Explain the purpose of instance variables and instance methods
- Explain constructors in Java
- Explain the memory management in Java
- Explain object initializers
- Describe methods
- Explain the process of creation and invocation of methods

- Explain passing and returning values from methods
- Explain variable argument methods
- Describe the use of Javadoc to lookup methods
- Describe access specifiers and the types of access specifiers
- Explain the use of access specifiers with methods
- Explain the concept of method overloading
- Explain the use of this keyword

Session 5 – Arrays and Strings, Modifiers and Packages

- Describe an array
- Explain declaration, initialization, and instantiation of a single-dimensional array, and multi-dimensional array
- Explain the use of loops to process an array
- Describe ArrayList and accessing values from an ArrayList
- Describe String and StringBuilder classes
- Explain command line arguments
- Describe Wrapper classes, autoboxing, and unboxing
- Describe field and method modifiers
- Explain the different types of modifiers
- Explain the rules and best practices for using field modifiers
- Describe class variables
- Explain the creation of static variables and methods
- Describe package and its advantages
- Explain the creation of userdefined package
- Explain the creation of .jar files for deployment

Session 6 – Inheritance and Polymorphism

- Describe inheritance, and types of inheritance
- Explain super class and subclass
- Explain the use of super keyword
- Explain method overriding
- Describe Polymorphism
- Differentiate type of reference and type of objects
- Explain static and dynamic binding
- Explain virtual method invocation
- Explain the use of abstract keyword

Session 7 – Interfaces and Nested Classes, and Exceptions

- Describe Interface, and purpose of interfaces
- Explain implementation of multiple interfaces
- Describe Abstraction
- Explain Nested class
- Explain Member class
- Explain Local class
- Explain Anonymous class
- Describe Static nested class
- Describe exceptions
- Explain types of errors and exceptions
- Describe the Exception class
- Describe exception handling (try-catch and finally block)
- Explain execution flow of exceptions, and guidelines to exception handling

Session 8 – Android App Architecture

- Describe the features and versions of Android operating system
- How to setup the development environment for creating Android applications
- Explain the architecture of Android applications
- Describe the importance of Java for Android applications
- Explain the important concepts of Java for developing Android applications
- Explain how to use XML in developing Android UI interfaces

Session 9 – Android UI and Layouts

- Define different types of Android UI Layouts
- Describe Android UI Layouts
- Explain the use of different Android UI Layouts
- Explain how to use UI Controls
- Explain what are UI Widgets
- Describe the use of fragments in an Android app
- Describe how to include animation and timer widget in an Android app

Session 10 – Working with Media in Android, and Android Services

- Describe the types of media elements
- Explain how to add audio and video in an app
- Define Android Services
- Describe types of Android Services
- Explain how to add notifications

Session 11 – Saving Data

- Describe operations performed with SQLite database
- Explain Webservice and Firebase Cloud Messaging

Session 12 – Working with Background Services, Maps and GeoLocation

- Describe networking in Android
- Describe WebView and AsyncTask
- Explain how to download files and images
- Explain JSON and XML data parsing
- Describe networking in Android
- Describe WebView and AsyncTask
- Explain how to download files and images
- Explain JSON and XML data parsing

Session 13 – Third-Party Interfaces, notification, Application Deployment

- Describe how to integrate third-party applications in an Android app
- Describe how to use the Web API in an Android app
- Explain various features of Android notifications and how to implement them
- Explain notification channels and group settings
- Explain application deployment process
- Describe how to submit an application to Play Store
- Explain the types of shortcuts

Session 14 – Beginning Your Kotlin Adventure

- Explain what is Kotlin
- Describe types of variables in Kotlin
- Describe primitive data types and strings
- Describe conditional statements, arrays, and lists

Course Outcome

- Develop classes and how declare classes
- Create a Java class
- Declare and initialize variables
- List and understand the different data types
- Understand the major operators
- Understand the use of decision making and loop constructs
- Work with Arrays and String classes
- Understand the use of packages and access specifiers
- Use inheritance to declare and define a subclass for a superclass
- Understand nested class
- Describe error handling in a Java program
- New Features of Java

- Identify different techniques to plan, design and prototype your mobile apps before writing any code
- Understand the App life cycle and its main components
- Learn to create a graphical user interface (GUI)
- Learn to implement a custom application theme
- Implement menu-based navigation
- Design and build a functional Android application
- Set up and understand your Android Development Environment
- Learn to program with Android and Notifications
- Implement display cutouts

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Presenter's Manual

for

Programming with Python

Duration: 2 Months (Saturday & Sunday)

Timing: 1:00 pm to 3:00 pm

Total Fees: Rs 8000/-

For AIT Student :Rs 4000/-

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Course Outline

Session 1: Basics of Python Programming

- Describe the advantages of Python programming
- List the steps to install Python on Windows, Mac, and Linux
- Describe Integrated Development and Learning Environment (IDLE)
- List the steps to create and run Python code in PyCharm
- Identify the different Python vocabulary terms
- Explain the concept of dynamic typing in Python

Session 2: Data Types of Python

- Describe the hierarchy of a Python program
- Identify the built-in data types in Python
- List the functions and methods of different built-in data types

Session 3: Statement and Syntax

- Explain the different statements that are used in Python
- Describe the different branching and looping statements
- Explain how to use the import statement to access libraries and other functions

Session 4: Functions, Packages, Modules, Classes, and Methods in Python

- Define functions
- Explain how to create user-defined functions
- Explain packages and modules
- Explain namespaces, instance methods, and static methods
- Define class and class methods

Session 5: File Input and Output

- Explain how to access, read, and write files in Python
- Describe pickle and the process to store the objects of Python in files

Session 6: Comprehensions

- Describe list comprehensions
- Explain how to use list comprehensions, such as Lambda, Map, Reduce, and Filter on files

Session 7: Generators and Decorators

- Describe iterators and iterables
- Explain custom and infinite iterators
- Outline the significance of generators
- List the benefits and uses of generators
- Explain generator expressions
- Explain function and class decorators

Session 8: GUI for Python

- Identify the different Python packages for creating GUIs
- Describe the significance of Tkinter module in Python
- Explain the different Tkinter widgets and geometry managers
- Explain how to manage events in Python

Session 9: Multiple Function Arguments and Regular Expressions

- Explain the mechanism of passing arguments to Python functions
- Describe the use of *args and **kwargs
- Describe the significance of Regular Expressions
- Identify the different special characters used in Regular Expressions
- Explain how to extract and match using Regular Expressions

Session 10: Serialization and Closure

- Describe the concept of serialization in Python
- Describe the uses of pickle module
- Outline the procedure of pickling Python objects
- Describe how to implement closures in Python
- Describe the concept of sets in Python
- Identify the different operations on sets in Python

Session 11: Exception Handling

- Describe the importance of exception handling
- Identify the built-in exceptions in Python
- Explain the procedure of raising and catching exceptions in Python
- Explain the procedure of creating and raising user-defined exceptions in Python
- Describe the use of assertions in Python

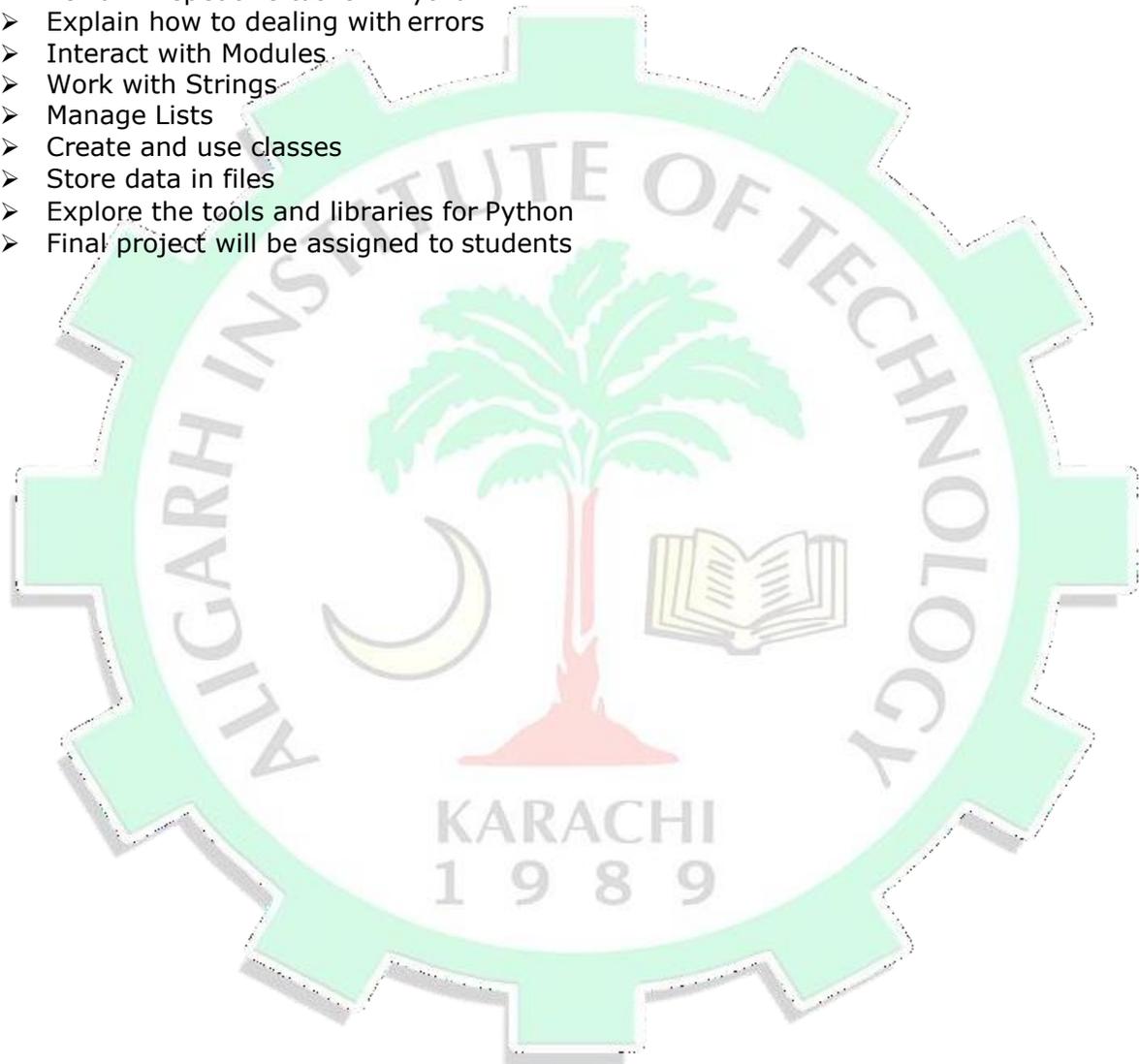
Session 12: Code Introspection and Testing

- Explain the significance of introspection
- Explain the use of help utility in Python
- Identify the functions and modules used for introspecting built-in Python code
- Identify the functions and attributes used for introspecting Python objects
- Explain Selenium Python bindings API

Course Outcome

At the end of this course, students will be able to:

- Describe how to install and configure Python
- Create simple Python programs
- Understand how to store and modify information
- Perform repetitive tasks in Python
- Explain how to dealing with errors
- Interact with Modules
- Work with Strings
- Manage Lists
- Create and use classes
- Store data in files
- Explore the tools and libraries for Python
- Final project will be assigned to students



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