Python Development with Raspberry-Pi

Course Overview

Raspberry Pi is a low-cost computing platform that provides a way to building interesting applications using common programming languages. It also opens up the possibility of interesting hardware scenarios as well. This course will cover the basics of what you need to get up and running with the Raspberry Pi.

This course will teach candidate the Python programming skills they need to help make your Raspberry Pi project ideas a reality. Candidate will learn how to set up your Pi and then program it using Python. This course includes various sources of the sort of areas likely to be of interest to the Pi programmer, including physical computing, audio and video, 3D graphics and games.

The course will builds on knowledge gained from the Programming in Python: Introduction course using the Python Programming integrated development environment.

Who Should Attend

This course is meant for those who are interested in exploring the Raspberry Pi. While a knowledge of Linux operating system and Python programming language will be helpful.

Pre-requisites

Delegates should have attended our Python Programming course or have equivalent Python coding experience.

Learning Objectives

After completing this course, students will have a fundamental understanding of how to:

- What Raspberry Pi is, and what it can do
- What components are included in Raspberry Pi, and how they work together
- How to install and use Raspbian, Raspberry Pi's Linux-based operating system
- How to get started programming your Raspberry Pi with Scratch and Python
- How to use the Pi as a dedicated graphics and imaging workstation
- How to start building electronic circuits with your Raspberry Pi
- How to transform your Raspberry Pi into a portable, low-cost media server
- How to use your Pi with webcams to create exciting new projects

Python Development with Raspberry-Pi

Course Duration: 30 Hours

Course Outline

- **Introduction to Raspberry - Pi**
  - What is SOC?
  - Versions of Raspberry Pi & Their Difference
  - Raspberry Pi B+
  - Basics of Electronics
  - Hardware Description
  - Pin Configuration

- **Preparing SD Card for OS Installation**
  - Downloading Image
  - Various Operating Systems Available
  - Making SD Card:
  - Fedora ARM Installer
  - Raspberry Pi SD Installer

- **First time configuration**
  - Using Whole SD Card
  - Using Whole Screen
  - Changing Timezone
  - Booting Into Desktop
  - Raspi-Config
  - Test

- **Network Setup**
  - Setting Up Using GUI
  - Setting Up Using Command Line
  - Finding Pi's IP Address

- **GPIO Setup**
  - The GPIO Connector
  - Libraries Using GIT
  - Configuring GPIO
  - Test and Configure

- **Pi using Secure Shell (SSH)**
  - Enabling SSH
  - Putty
  - Test and Configure

- **Pi over VNC**
  - Installing VNC
  - Configuring VNC
  - Running VNC at Startup
  - Test and Configure

- **LINUX**
  - Understanding Linux
  - File Structure
  - Linux Commands
  - Permissions

- **Python: Essentials**
  - Understanding Python
  - Interpreted Languages
  - Variables, Keywords, Operators and Operands
  - Data Types in Python
  - Flow Control
  - Condition Statement
  - Loops
  - Importing Libraries
  - Functions
  - Classes
  - Accessing SMTP Inbox Using Python
  - Manipulating GPIO Pins Using Python

- **Making Raspberry – Pi a Web Server**
  - Apache Installation
  - Configuring and Deploying Apache
  - Hosting a Website

- **Hosting a blog on Raspberry – Pi**
- **Interfacing Electronic Components on Raspberry - Pi**
- **Home Automation using Raspberry - PI**