



Course Contents:

1. Introduction to RASPBERRY PI

- Introduction to Open Source Hardware
- About Raspberry PI
- Brief Introduction to Hardware
- Parts & Usability

2. Raspberry PI: Architecture & Hardware Specifications

- Introduction to ARM 11 microcontroller

3. Before You Start... Linux Commands

- Installing Linux
- Getting Familiar to Linux Terminal
- Practicing Linux Commands
- Some shell script with Linux

4. Python

- Knowing Python
- Installing the Environment
- Getting familiar to Python IDE
- Why prefer python over others!

5. Before Startoff: Expressions & Operators

- Python Syntax
- Including Comments , Indentation
- Python Variables
- Operators & python Keywords

6. Python Data Types

- Data : Numeric - int, float, long, complex
- Strings types(raw, Unicode), properties, methods, indexing, sequencing slicing, finding string in strings, finding string in string with numbers . . .
- Lists, Tuples, Sets, Range, Xrange & List
- Dictionary and Maps

7. Strings, Lists, Dictionary

- Structured Data: List & its properties



- List properties, indexing, slicing
- Strings are special kinds of lists
- Nested Lists
- Mutation (of strings and lists)
- Aliasing
- List Operations (append, plus, len, extent)
- Union procedure for list
- Dictionary Operations
- Using Dictionary in Index

8. Data Flow Control

- Introduction to control flow
- *Conditional statements*: if-elif-else
- *Loops*: FOR and WHILE loop
- Factorial using while loop
- In operator, index operator
- *Statements*: Break, continue and pass

9. Function & Packages

- Def Function
- Logical, Boolean Expressions
- Function with and without parameters
- Functions reusability and recursive functions
- Creating modules and packages
- Importing Modules

11. Beginners' End: Error & Exception Handling

- Introduction to errors and exceptions
- Exception hierarchy
- try-except block
- finally and else

12. Raspberry PI: Getting Started

- Setting UP the Board
- Booting the Linux OS
- Displaying on Monitor working as CPU
- Getting familiar to GUI & Terminal Commands
- Connecting Internet and installing modules.
- Updating packages



13. Raspberry Pi: Stepping UP

- Introduction to GPIO
- Enabling GPIO
- Working on GPIO
- Coding: Python Programming over Raspberry
- Say *Hello World!* to Raspberry Pi

14. Adding sense to PI

- What are sensors!
- Interfacing PIR Sensor
- Interfacing Ultrasonic Sensor

15. PWM

- Generating PWM using Python & GPIO
- Controlling LED Brightness
- Controlling Servo motor

16. Making Pi-Bot with Ultrasonic & DC

Projects

- LED Glow & Toggle
- Pattern generation on LED
- Generating LED Patterns
- Bash Scripting on LINUX
- Distance Calculator
- Human Detection using PIR
- **Human Detection Monitor**
- Controlling Brightness of LED
- RGB Led Control using Raspberry Pi & Python
- Setting up **SSH** connection

Kit Contents:

- Raspberry Pi B+ Model
- HDMI to VGA Cable
- USB Cable (for Power Supply)
- LED Packet
- BreadBoard

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ThankYou!!!

We ensure that you will find our initiative extremely beneficial for you students, if you have any query kindly get back to us. We are looking forward to a quick and positive response from you and a long term association with your organization

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