

CETPA INFOTECH PVT. LTD.
CURRICULUM OF IOT

GETTING STARTED

- History & need of Python
- Application of Python
- Advantages of Python
- Disadvantages of Python
- Installing Python

PYTHON FUNDAMENTALS

- Working With Interactive Mode
- Working With Script Mode
- Python Character Set
- Python Tokens- Keywords, Identifiers, Literals, Operators
- Variables and Assignments
- Input and Output Functions in Python

DATA HANDLING

- **Data Types**
 - Numbers
 - Strings
 - Lists
 - Tuples
 - Dictionary
 - Mutable and Immutable Data Types

Operators

- Arithmetic Operators
- Relational Operators
- Logical Operators
- Operators Precedence
- Evaluating Expression
- Type Casting

CONDITIONAL AND LOOPING CONSTRUCTS

- **If Statements of Python**
 - The if Statement
 - The if-else Statement
 - The if-elif Statement
 - Nested if Statements

Looping and Iteration

- The For Loop
- The While Loop
- Loop Else Statement
- Nested Loops
- Break and Continue
- **The Range Function**

INTRODUCTION TO FUNCTIONS AND MODULES

- Using a Functions
- Python Function Types
- Structure of Python Modules
- Importing Modules in Python Programs
- Invoking Python's Built In Functions
- Working With Random Modules

User Defined Functions

- Structure of a Python Program w.r.t. UDF
- Invoking UDF
- Flow of Execution
- Arguments and Parameters
- Default Arguments, Named Arguments
- Scope of Variables
 - Connection to internet
 - Introduction to urllib2 package in python
 - Json decoding
 - Retrieving dictionary from json

RASPBERRY PI BASICS

- What is Raspberry PI
- Hardware
- Ingredients
- Preparing & Installing Raspberry PI
- Connecting The Raspberry PI
- Basic Networking
- Shutting Down

GETTING STARTED WITH GPIO PROGRAMMING

- Led Programming
- Switch and Led Programming
- Interfacing Relay
- Motor Interfacing

Internet Utils

- Introduction to PHP
- PHP script writing
- PHP database creation
- PHP database connection
- Json encoding

Connecting RPI to server

- Enable or disable pin using internet value

Project :

- Home automation using android
- Vehicle automation using Android
- Door automation using android

SERIAL COMMUNICATION

- History & need of serial comm.
- MAX 232 interfacing
- Serial comm. Using computer
- USART and UART protocols
- Interfacing of hardware modules.
 1. Bluetooth
 2. XBEE
 3. RFID
 4. GPS
 5. GSM

I2C INTERFACING

- Need of TWI
- Registers used in TWI
- DS -1307 interfacing
- Hardware implementation

SPI INTERFACING

- Need of SPI
- Master and Slave configuration
- Controller interfacing
- Hardware implementation

EMBEDDED HARDWARE

- Serial comm. Hardware
- I2C Hardware
- SPI Hardware

Pi camera interfacing

- Interfacing of PI cam.
- Image Enhancement
- Image shader

- Hardware implementation of PI camera
- TWITTER interfacing with PI camera.

Cloud computing

- Data handling Using cloud
- Amazon Web services interfacing
- Data integration.
- Data handling using .NET ASP

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