

# Code, Design and Build with PYTHON

**100** Hours  
Sessions

**03** Levels to Mastery  
over Python

The joy of coding Python should be in seeing short, concise, readable classes that express a lot of action in a small amount of clear code -- not in reams of trivial code that bores the reader to death.

-Guido van Rossum

This course focussed on Programming in Python is curated for complete beginners who have never programmed before, as well as those who want to strengthen their skills in Python. With the right skills which you will learn in this course, you will become an expert in the core fundamentals of programming - Data Structures, Algorithms and its functioning with one of the most popular programming languages, Python. The involvement of the practical technique of problem-solving will give learners a better understanding of the concepts of the course.

Learn to design efficient algorithms in this course and become ready for future.



**Level 01** **BEGINNER**

# PYTHON

The Beginning!!



Course Duration  
**08 Hours**



Session  
**01 - 08**



## Learning Outcome

- Understanding of concept of Programming
- Understanding of Python as our Programming language
- Development of Logical skills to solve real life problems
- Creation of a calculator using Python

Session

Curriculum

Outcome

01

Introduction of Program-  
ming and Python

• Awareness of Program-  
ming and Python

02

Playing with Numbers -  
Number Data Type

• Number Game -  
Operations of Numbers

03

Strings

• Playing with Names -  
String Operations

04

List, Dictionary

• Identify Same Objects -  
Finding Data Types



05

## Introduction to Logics

$$y=2x$$
$$\alpha$$



- Solve for Fun - Working with Logical Operators

06

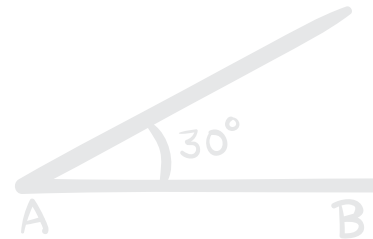
## Introduction to Flow Statements

- Playing with Loops - If - Else, while, do while

07

## Deeper understanding of Loops

- Playing with Loops - Changing Parameters of Loops



08

## Building your own Calculator

- Calculator



## Skill Benefits

- Boosted logical skills
- Increased mental maths calculation skills



$$B = \left( \frac{a-b}{a} \right)$$

$$x = y$$
$$a + b = c$$

$$284$$
$$-15$$

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Level 02

INTERMEDIATE

Computer

# Apps & GUIs



Course Duration  
**42 Hours**



Session  
**09 - 50**



## Learning Outcome

- Understanding of Advanced Python using OOP
- Ability to connect real life situations and games to Programming
- Creation of cool Interface for users to access Python Program
- Creation of cool Games and basic User-friendly Applications that can be used in daily life
- Ability to create Card Games played in real life

Session

Curriculum

Outcome

09

Different kinds of Loops -  
Combination of different  
Loops

- Loops in Loops

10

Introduction to Functions

- Building our own  
Functions

11

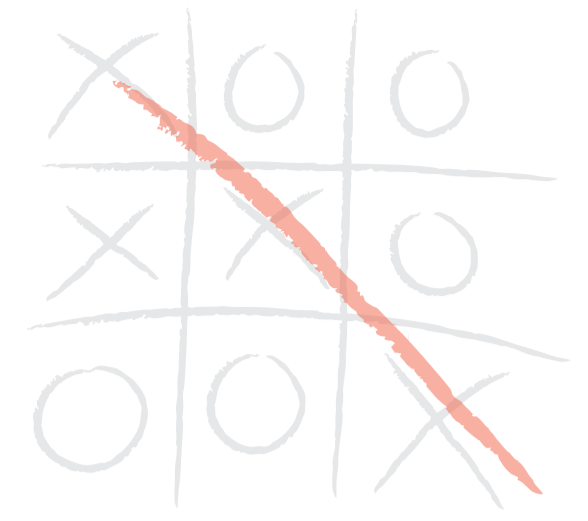
Nesting of Functions

- Functions in Functions

12

Starting with Tic-tac-toe  
- Making Grid

• Tic-tac-toe



13

Adding more features to  
our game - Taking Inputs

14

Introduction to Object  
Oriented Programming

• Employee in Office -  
Making Employee  
Object

15

Importing / Making new  
Packages

• Importing Functions  
from Python Libraries

16

Importing Date-time,  
random, Maths Modules etc

• Shuffle IT -Shuffling a  
List

17

Importing User Defined  
Modules

• Importing Functions  
from User Defined  
Libraries

18

Starting with Card Games -  
Making Card Object

• Patte Pe  
Patta

19

Adding more features to  
our game - Introducing  
Logics



20

Introduction to Graphic  
User Interface

• Our First GUI - Making  
a Window

21

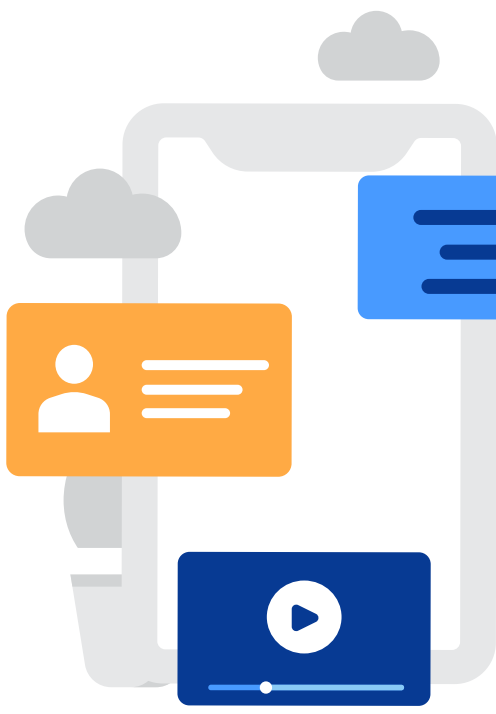

Creating GUI / Grid System /  
Buttons / Input Fields

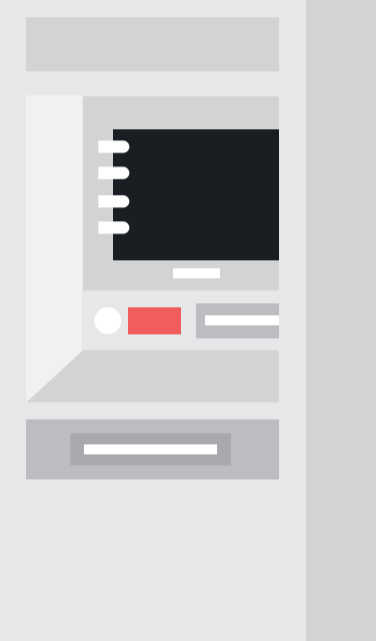

• Our First GUI - Adding  
Buttons

22

Giving Interface to our  
Calculator

• Calculator

23	Radio Buttons / Status Bar / Icons	• Our First GUI - Adding Icons	
24	Creating New Windows Message Box / Sliders / Dialog Boxes	• Our First GUI - Adding Sliders	
25	Add Dropdown Menus/ Check Boxes / Intro to Databases	• Our First GUI - Working with Databases	
26	Building a Database GUI	• Our First GUI - Working with Databases	
27	Updating Record Using SQLite	• Our First GUI - Working with SQLite	
28	Building our own Weather App	• Weather App	
29	Introducing CRM / Database and Tables / Input Boxes	• Our Second GUI - Taking user Inputs	
30	Lookup and Export	• Our Second GUI - Exporting Data in Excel	
31	Adding Drop Down	• Our Second GUI - Adding Drop Down Menu	
32	Updating SQL record and resize	• Our Second GUI - Changing Data Column	
33	Removing Labels / Grid Labels	• Our Second GUI - Adding Labels	

34	Keyboard Event Binding and Menu Bars	• Our Second GUI - Adding Menu Bars
35	Frames and planed Windows	• Our Second GUI - Making a New Window
36	Changing the Color of Frame and Deleting Frame	• Our Second GUI - Deleting a Table
37	Building Mini Project	• Automated Teller Machine 
38	Building Mini Project	
39	Adding List Boxes	• Our Third GUI
40	Creating Tabs in GUI Windows	• Our Third GUI - Creating New Tabs in Main Window
41	Drawing Lines and Shapes with Canvas	• Our Third GUI
42	Image Handling	• Our Third GUI - Adding Images
43	Animating Images	• Our Third GUI - Adding Animations
44	Word Game / Building a Paint App	• Word Game 

45

Building Major Project -  
Making Windows / Adding  
Buttons

- User Friendly Interface

46

Building Major Project -  
Adding Sliders / Icons

- User Friendly Interface

47

Building Major Project -  
Adding Database

- User Friendly Interface

48

Building Major Project -  
Taking User Inputs

- User Friendly Interface

49

Building Major Project -  
Adding Labels / Menu Bars

- User Friendly Interface

50

Building Major Project -  
Deleting Records and  
Answering User Queries

- User Friendly Interface



## Skill Benefits

- Increased Abstract Skills
- Increased Creative Skills
- Increased Imaginative Skills
- Increased Thinking Skills
- Improved Presentation Skills





**Level 03**

**ADVANCED**

# Game Development and Entrepreneurship



Course Duration  
**50 Hours**



Session  
**51 - 100**



## Learning Outcome

- Complete Understanding of Python
- Ability to use Advanced Python libraries to develop state of art Games and Softwares
- Ability to make, understand and recreate Games you play on your Gaming Console : MARIO , ANGRY BIRDS and MANY MORE...
- Ability to Automate anything

**Session**

**Curriculum**

**Outcome**

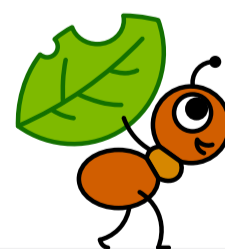
**51**

**Introduction to Gaming**

• **Introduction to Gaming**

**52**

**Building libraries for  
Mini Projects**



• **Ant Game - Complete  
Game**

**53**

**Building a Simple Game  
as an Example**

• **Cannon Ball - Complete  
Game**

**54**

**Building a Simple Game**

• **Bouncy Ball - Complete  
Game**



55

Snake Games

- Snakes - Complete Game

56

Starting with Pacman - Making Grids and Global Variables



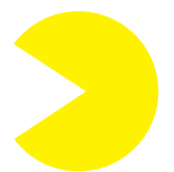
- Pacman - Designing Functions



57

Adding more Features to Game

- Pacman - Adding Function Details



58

Installation and Color Filling

59

Rect and Movements

60

Adding Boundaries and Objects

61

Adding Logic to Game

62

Editing and Aligning Objects

63

Designing Front-End

64

Designing Front-End continued

65

Alignment with Back-End

- Sample Game - Snake



66

Building Flappy bird -  
Overview

• Game Creation  
Overview

67

Building Flappy bird -  
Designing Sprite

• Flappy Bird - Creating  
Main Character

68

Building Flappy bird -  
Pipe Class



• Flappy Bird - Creating  
Pipes(Obstacle) in Game

69

Building Flappy bird - Event  
Handling and Collision

• Flappy Bird - Creating  
Environment after  
Collision Happens

70

Building Flappy bird

• Flappy Bird - Running  
Game and Adding Score

71

Overview and Designing

• Overview

72

Physics and Motion

• Angry Birds - Putting  
Newton Laws into Code

73

Main Loop



• Angry Birds - Basic Code  
Layout of the Game

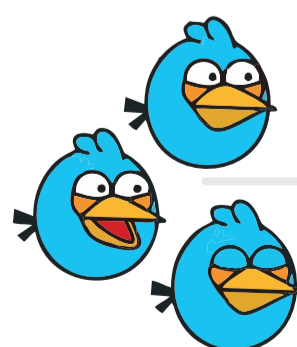
74

More  
Functionalities

• Angry Birds -  
Customizing and Adding  
Birds

75

Building More Levels



• Angry Birds - Creation  
of Other Levels

76

Finishing the Game

• Angry Birds - Joining  
Each Level



77

Developing Final Project -  
Overview

- Final Project Overview

78

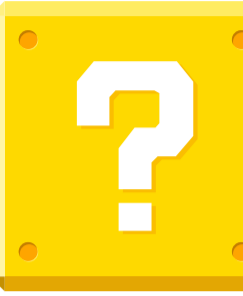
Developing Final Project -  
Event Handling and Controls

- Mario - Designing Basic  
Flow of Game

79

Developing Final Project -  
Collider and Mainloop

- Mario - Handling  
Collisions in Game



80

Developing Final Project -  
Defining Mario

- Mario - Designing the  
Mario Player

81

Developing Final Project -  
Functions

- Mario - Creating Mario's  
Functions

82

Developing Final Project -  
Movements

- Mario - Making the  
Player Move



83

Developing Final Project -  
Animation

- Mario - Creating  
Animation of the Game

84

Developing Final project -  
Making Enemy

- Mario - Design and  
Motion of Enemy

85

Developing Final Project -  
Powerups

- Mario - Creating Power  
Ups in the Game

86

Developing Final Project -  
Logic for Storing Score

- Mario - Creating a Score  
Panel

87

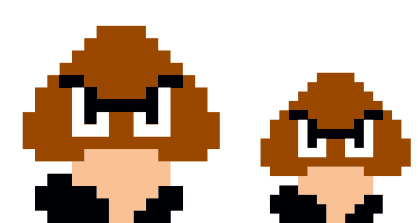
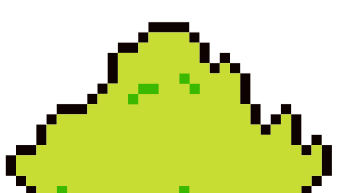
Developing Final Project -  
Rendering Everything

- Mario - Putting Game to  
Screen

88

Developing Final Project -  
Checking

- Mario - Playing Game  
for Checking the Code



**89**      **Developing Final Project - Updating**      • Mario - Updating if desired

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**90**      **Final Project Submission and review**

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**91**      **Entrepreneurship - Module 01**

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**92**      **Entrepreneurship - Module 02**

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**93**      **Entrepreneurship - Module 03**

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**94**      **Entrepreneurship - Module 04**

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**95**      **Entrepreneurship - Module 05**

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**96**      **Entrepreneurship - Module 06**

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**97**      **Entrepreneurship - Module 07**

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**98**      **Entrepreneurship - Module 08**

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**99**      **Entrepreneurship - Module 09**

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**100**      **Entrepreneurship - Module 10**



## Skill Benefits

- Connect to the world of Open-source
- Improved Problem Solving and Mental Skills
- Increased Abstract Skills
- Increased Creative Skills
- Increased Imaginative Skills
- Improved Presentation Skills
- Improved Organization and Automation Skills

