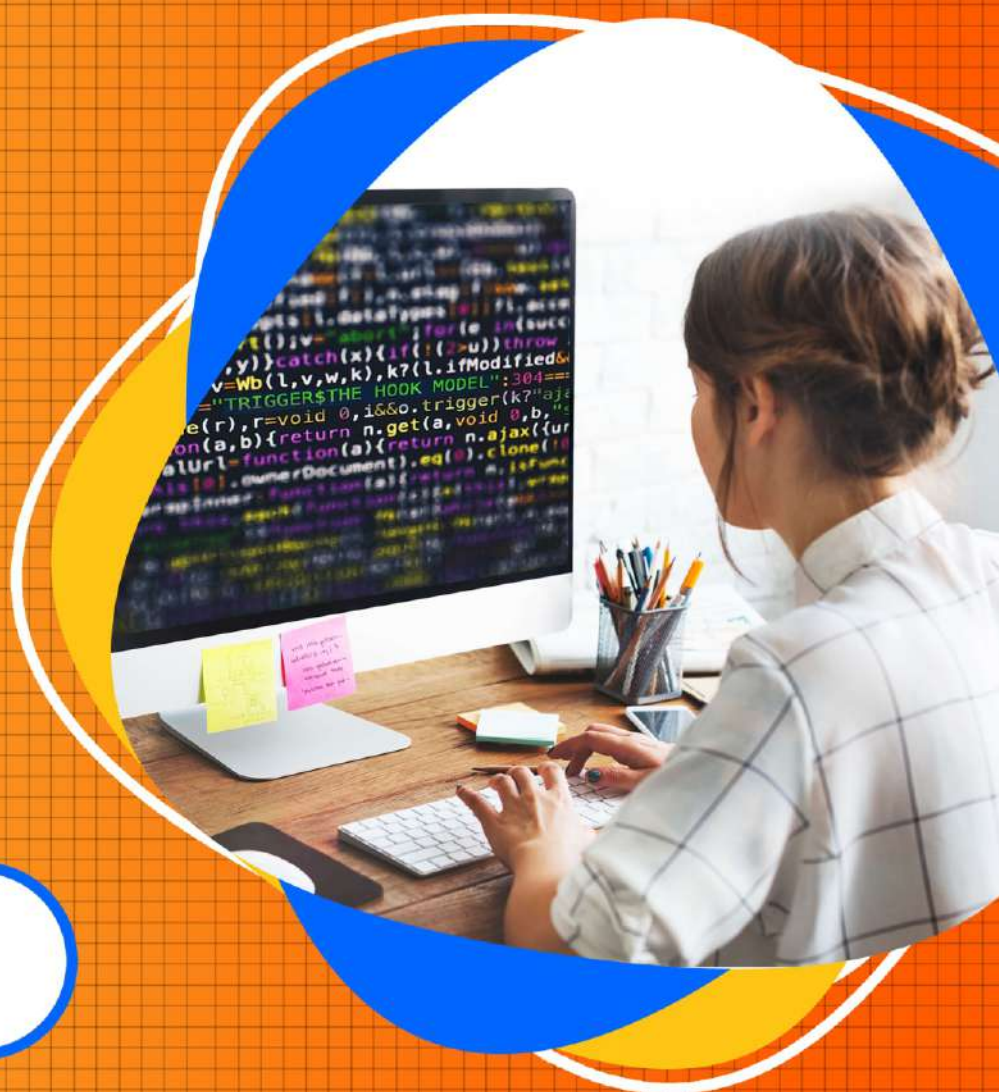




TINKERCODERS
BEYOND CODING

TEXTUAL **PYTHON**

GRADE 9-12



COURSE HIGHLIGHTS !

- Live 48 Hours of Sessions
- Detailed Coverage of fundamentals of Python Programming language
- Insides of Algorithms
- File handling with Python
- Exception handling & Debugging
- Object-Oriented Programming
- SQL Database Management
- GUI development using Tkinter
- Game Development using PyGame
- **BUILD 8 REAL-APPLICATION BASED PROJECTS IN THE COURSE**
- LMS Access - Pre-recorded videos, Documents, Assignments, Codes



Book your
FREE Demo now!

www.tinkercoders.com



COURSE REQUIREMENTS



- Basic Understanding Of Block Based Programming
- No textual programming experience needed. We will cover everything in this course
- A Mac or Windows Computer
- Access to the internet



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WHAT YOU'LL LEARN IN THE COURSE



How to use professional
tools for programming



Build GUIs & Desktop
Applications with Python



Manage Database
with Python



Learn to use Python modules like
Tkinter, Pygame, SQLite,
Threading, Pandas etc.



Build Applications like Student
Management dashboard, Weather
Info, Currency Converter and
Math Calculator



Build Real-time game like
Guessing Game, Snake Game &
Rock Paper Scissor Game

Introduction to Python

- Coding and Programming Language
- Python and its uses



START



TINKERCODERS
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Textual Python Beginner Level



Datatypes -The Basic

- Variables and Datatypes
- Taking input from user and print output

</>

Python Operators

- Different way to declare variable
- Types of operators



Breaking Down the process flowchart

- Flowchart and its use
- Basic symbol and its representation

Additional symbols

- Symbol use for Conditional statement



If Else Condtion

- Checking conditions
- Adding Multiple Conditional Statement



Nested If Else Condition

- Use of elif condition.
- Working with OR and AND operator



For Loop

- Use of Iterations.
- Working with For loop



While Loop

- While loop and its use
- Declaring and updating value of Variable

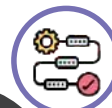
Break,continue and pass

- Difference in Break and Continue
- Use of Pass



Pattern Designing

- Working with multiple for loop
- Use of end



String Manipulation

- String and its Index position
- Different methods of string

Advanced Data Types- List & Tuples

- Holding Multiples values in single variables
- Operation with List and Tuple



Advanced Data Types-Sets And Dictionary

- Creating sets & dictionary
- Operation with Set & Dictionary

Methods and Functions

- Creating & Calling functions
- Function parameters and arguments



Function with different datatypes

- Accessing loop using Function
- Args and Kwrgrs



Textual Python

Intermediate Level

Lambda Function

- Declaring Lambda Function
- Return type in function



Graphic Design 1

- Create turtle
- Different shapes of turtle



Graphic Design 2

- Changing background and speed
- Use of mathematical operation



User defined Modules

- Create and add function in module
- Import function and variable from module



Inbuilt Modules

- Implementing functions of Inbuilt module
- Datetime, random, OS, time module etc.



Guessing Game

- Introduction to math.log.
- Concept of lower bound & upper bound



Rock, paper Scissors Game

- Concept of Score
- Condition of player and computer wins



Python Exception Handling

- Types of errors
- Handling different errors



File Input/Output

- Create text file.
- Doing CRUD operation



Inheritance

- Introduction to inheritance
- Types of Inheritance



Classes & Objects

- Overview of Oop
- Create Class and Object
- Use of __init__() function
- Object Method
- Self Parameters



ATM Management System

- Input user pin for authentication
- Deposit and Withdrawling fund



Tkinter Window & geometry Managers

- Changing size of window
- Creating first tkinter window



Tkinter Widgets & Styling

- Handle button and Its Command
- Working with images



Currency Convertor

- Variable for Entry box
- Use of Config



Math Calculator

- Placing multiple button
- Clearing and Removing the last value





Multithreading

- Introduction to threading and multithreading
- Difference in execution time without threading



Introduction to DBMS

- Sqlite downloading
- Different types of data base



CRUD operations

- Creating and reading of table
- Update and delete table



API Call & Request

- Creating API key
- Quering API

Student Management

- Adding and deleting a record
- Add many records function



Weather App

- Building Interface
- Calling API & Display weather info



Data & Algorithm - I

- Importance to Algorithm
- Linear and Binary search



Data & Algorithm - II

- Arranging the element in order
- Bubble and insert sort

Numpy

- Use of Numpy over list
- Creating array using zeros & ones



Introduction to Computer Vision

- Difference in Human & Computer analysing image
- Application of CV in different industrial domain



Basic of Images

- Reading and opening of image
- Concept of colour and grey images



Image Processing

- Resize, flip, cropping and merging of image
- Generating grayscale image

Pygame

- Introduction to pygame
- Basic movement & key press



Snake Game

- Create screen and snake sprite
- Changing speed, height, size of snake
- Adding food for snake
- End game with collision of wall



END





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HOW THIS COURSE WILL HELP YOUR CHILD



● **CIC approach**

Consumer to innovator to the creator

This course aims to turn the student from a consumer of technology to the creator of technology.

● **Activity-Based learning**

Learn the required programming concepts by performing activities

● **Project - Based Learning**

Learn the required programming concepts by performing activities

Instead of a theoretical and traditional way of learning, students will build projects during the course.

● **Our PBL approach will help student in**

Allows students to acquire key knowledge & skills through the development of projects that respond to real-life problems

Develop critical thinking

Retain the concept

Integration of different concepts

COURSE OUTLINE

| Session Number | Activity name | Learning Outcome |
|----------------|---|---|
| 1. | Introduction to Python | Coding and Programming Language. Python and its uses. Python and other programming language. |
| 2. | Datatypes - The Basic | Variables and Datatypes Taking input from user and print output Error and its types |
| 3. | Python Operators | Different way to declare variable Types of operators |
| 4. | Breaking Down the process flowchart- The Basics | Flowchart and its use Importance of flowchart Basic symbol and its representation |
| 5. | Beyond the basics- Additional symbols | Symbol use for conditional statement Implementation of flowchart for different program |
| 6. | If Else Condtion | Checking conditions Use of conditional statement Adding multiple conditional statement |
| 7. | Nested If Else Condition | Use of elif condition. Working with OR and AND Operator |
| 8. | For Loop | Use of Iterations. Working with For Loop Accessing the Element of List and String |
| 9. | While Loop | While loop and its use Declaring and Updating value of Variable |
| 10. | Break,continue and pass | Difference in Break and Continue Use of Pass |
| 11. | Pattern Designing | Working with multiple for loop Use of end |
| 12. | String Manipulation | String and its Index position Differnent methods of String |
| 13. | Advanced Data Types- List & Tuples | Holding Multiples values in single variables Creating List and Tuples Operation with List and Tuple |
| 14. | Advanced Data Types- Sets And Dictionary | Creating Set & Dictionary Different bracket for creating Operation with Set & Dictionary |
| 15. | Methods and Functions | Creating & Calling functions Parameters and arguments Default Parameters value |
| 16. | Function with different datatypes | Accessing Loop using Function. Args and Kwrgs |

| Session Number | Activity name | Learning Outcome |
|----------------|------------------------------------|---|
| 17. | Lambda Function | Declaring anonymous function Return type in function Global and local variable |
| 18. | Graphic Design 1 | Create turtle. Different shapes of turtle. Adding motion in turtle Changing color and pen size |
| 19. | Graphic Design 2 | Changing background and speed Filling shapes with color Logic for different shapes & design |
| 20. | User defined Modules | Introduction to module Create and adding function in module Import function and variable from Module |
| 21. | Inbuilt Modules | Implementing functions of Inbuilt module. Datetime, random, OS, time module etc. |
| 22. | Guessing Game | Introduction to math.log. Concept of Lower bound & Upper bound Combination of random and math together |
| 23. | Rock, Paper, Scissors Game | Concept of Score. Increment of score in different condition. Condition of player and computer wins. Concept of Tie game. |
| 24. | Python Exception Handling | Types of Error Try and Except. Handling different errors |
| 25. | File Input/Output | Create text file. Doing CRUD operation |
| 26. | Classes & Objects | Overview of Oop Create Class and Object Use of __init__() function Object Method Self Parameters |
| 27. | Inheritance | Introduction to inheritance Parent class(Super Class) & Child class(Sub class). Types of Inheritance |
| 28. | ATM Management System | Input user pin for authentication Check account balance Deposit and Withdrawaling funds Monthly balance update |
| 29. | Tkinter Window & geometry Managers | Introduction to Tkinter GUI Main Component for window Creating first tkinter window |
| 30. | Tkinter Widgets & Styling | Handle button and Its Command Create entry widget, combo widget Working with images Different ways of placing widget |
| 31. | Currency Convertor | Variable for Entry box Use of Config Adding SpinBox |
| 32. | Math Calculator | Placing multiple button Doing mathematical operation Clearing and Removing the last value |

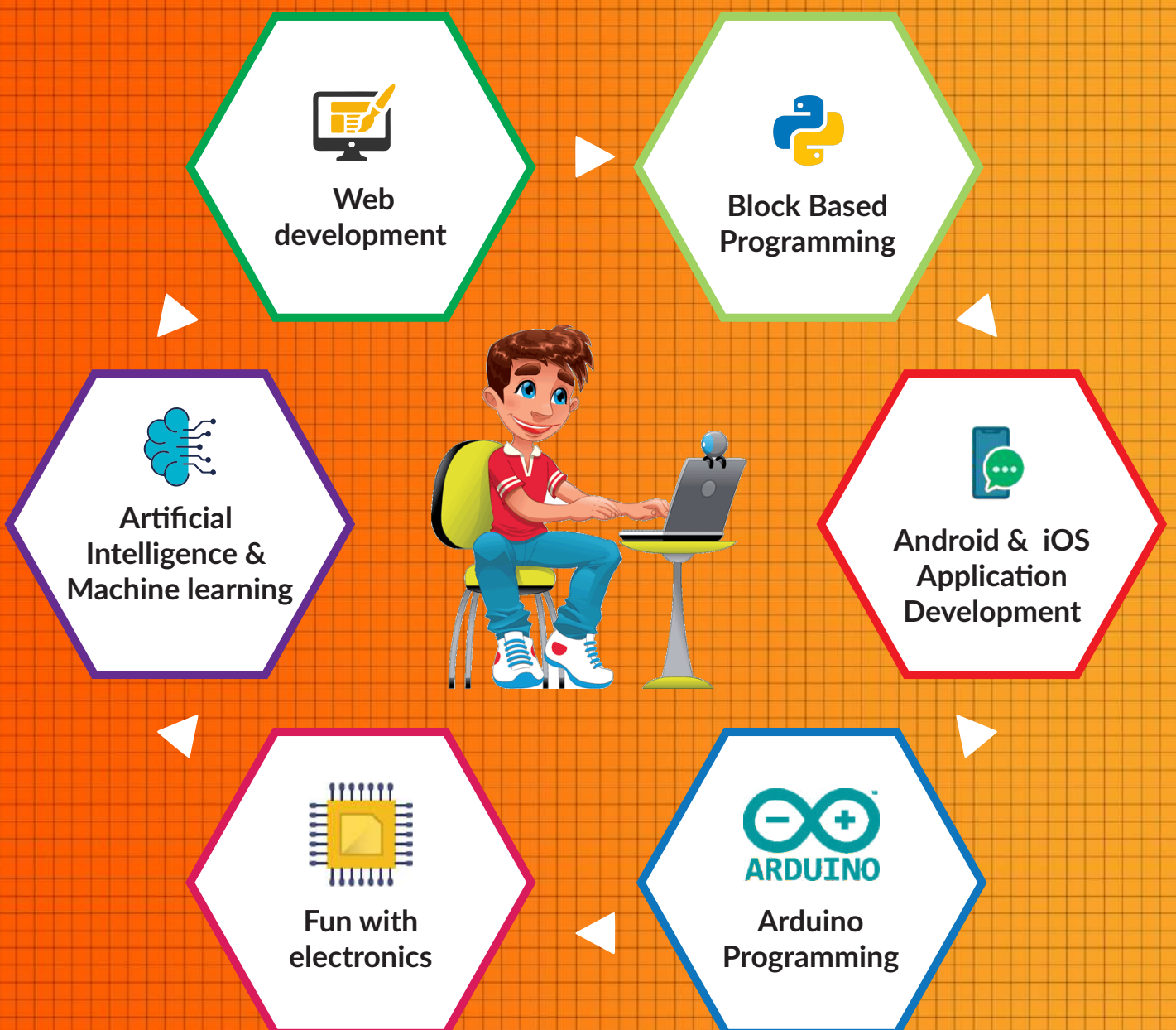
| Session Number | Activity name | Learning Outcome |
|----------------|---------------------------------|---|
| 33. | Multithreading | Introduction to threading and mutithreading. Generating Thread Calculating execution time. Difference in execution time using thread or without thread. |
| 34 | Introduction to DBMS | Data and its importance Different types of data base Sqlite downloading |
| 35 | CRUD operations | Creating and reading of table Update and delete table |
| 36 | Student Management | Show All Function Adding and deleting a record Add many records function Where clause function |
| 37 | API Call & Request | API & API key. Creating API key Quering API |
| 38 | Weather App | Building Interface Researching the API Calling the API Displaying weather info |
| 39 | Data & Algorithm | Importance of Algorithm Searching the element in list Linear Search Binary Search |
| 40 | Data & Algorithm | Arranging the element in order Bubble Sort Insertion Sort |
| 41 | Numpy | Import numpy and its use Use of Numpy over list Creating array using zeros & ones |
| 42 | Introduction to Computer Vision | Introduction to CV. Difference in human and computer analyzing image Concept of colored and black and white images Application of CV in real life |
| 43 | Basic of Images | Reading and opening of image. Working of wait and destroy function. Draw mutiple shapes on image. Writing text on image. |
| 44 | Image Processing | Resize, flip, cropping and merging of image Generating grayscale image |
| 45 | Pygame | Introduction to pygame. Basic Movement & Key press Character animations and sprite Opitimization and OOPs |
| 46 - 48 | Snake Game | Create screen and sprites Changing speed, height, size of snake and Score Move snake according to keys. Adding food for snake. End game with collision of wall. |



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