Learning Python

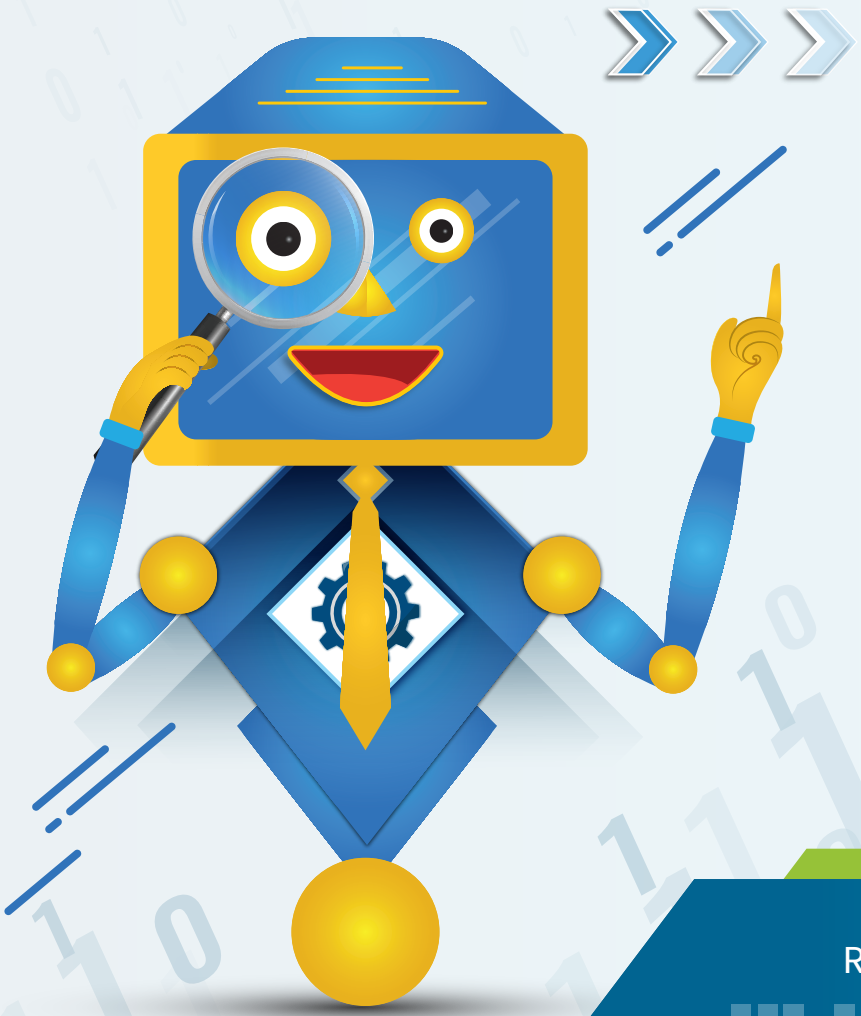
Beginner Level

Python Run

Teacher's Book

Level

1



Rana Dajani

LKD EDUCATIONAL RESOURCES

PythonRun - Beginner Level

Published by **LKD Educational Resources 2022**

Amman - Jordan
Tel: +962 6 5374141
Fax: +962 6 5516404
P.O.Box: 851346
Email: info@lkd.com.jo
Website: www.lkd.com.jo

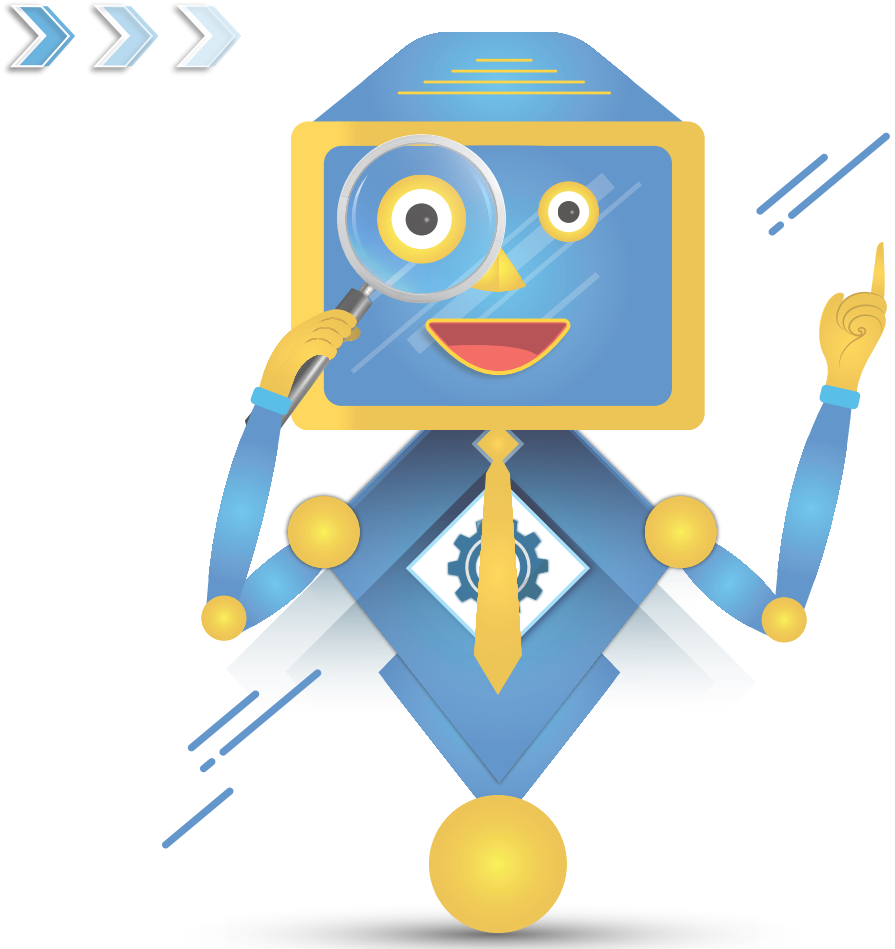
Author

Rana Dajani

ISBN: 978-9923-781-06-7

Learning Python
Beginner Level
Python Run

Level
1



LKD
EDUCATIONAL RESOURCES

A guide to learning Python programming language

Table of Contents

Table of Contents

Introduction

This is the beginner level book in the ***PythonRun*** series that provides an introduction to Python programming language that starts with **understanding the basics.**

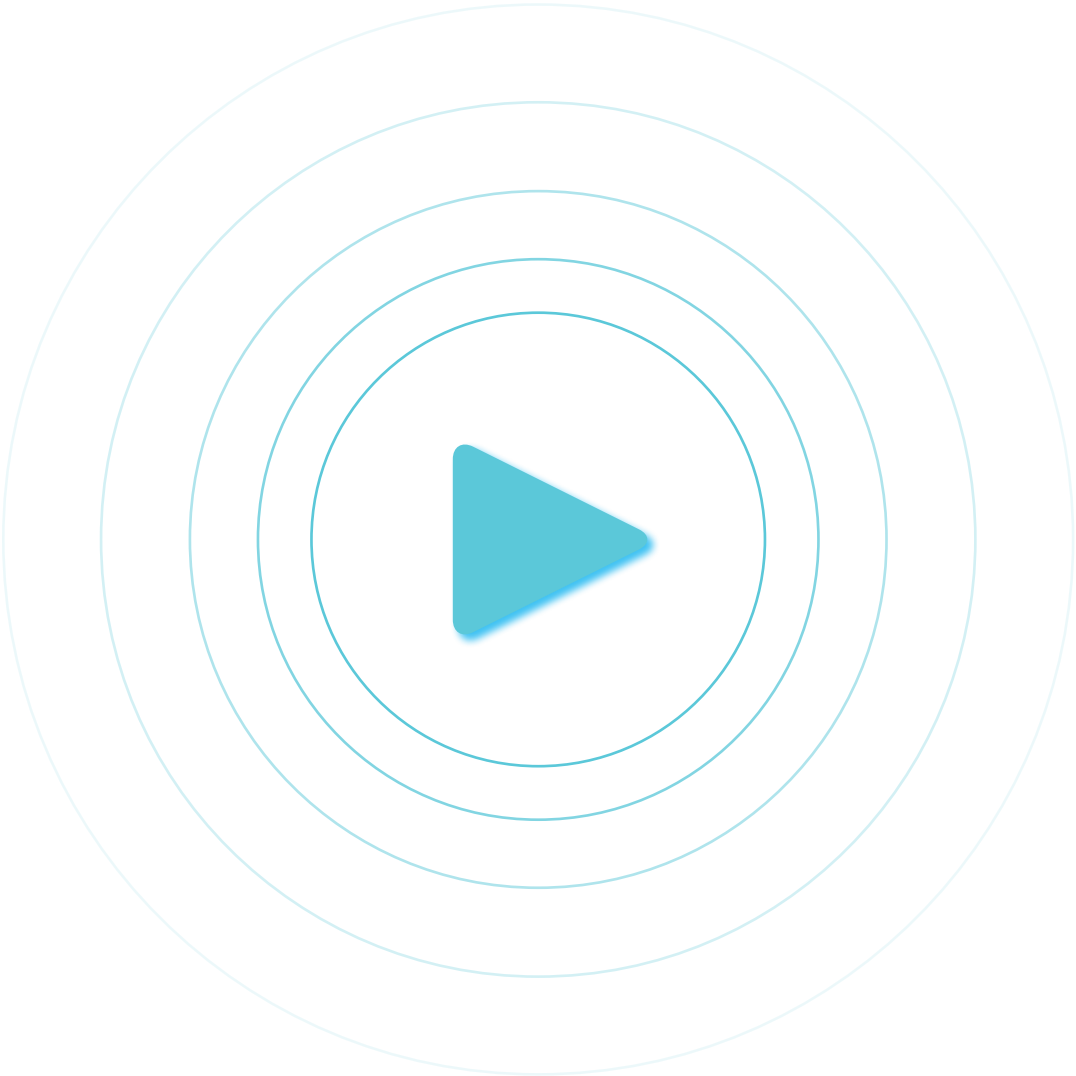
This teacher's guide serves as a comprehensive guide to equip teachers for project based learning. During the application process, teachers take the role of facilitators. They spark curiosity, cultivate the skills needed for inquiry and guide students along the way.

In addition to introduction chapters that introduce general programming terminology, the text is divided into; tutorials, provided to give a detailed guide to programming concepts, alongside with practice exercises for hands on application. There are also quick test projects, at the end of most units which will help evaluate the students understanding and improve their programming and computational skills.The end of the book provides project based assessments for the students to implement all they have learnt.

Students are encouraged to work in groups of two when working on the quick test at the end of units as well as the end of book project based assessments.

Working in a team, gives students opportunities to learn from others. It leads to resource building and team members become better equipped to deal with challenges. New skills and knowledge always benefit and positively influence the individual growth of students.

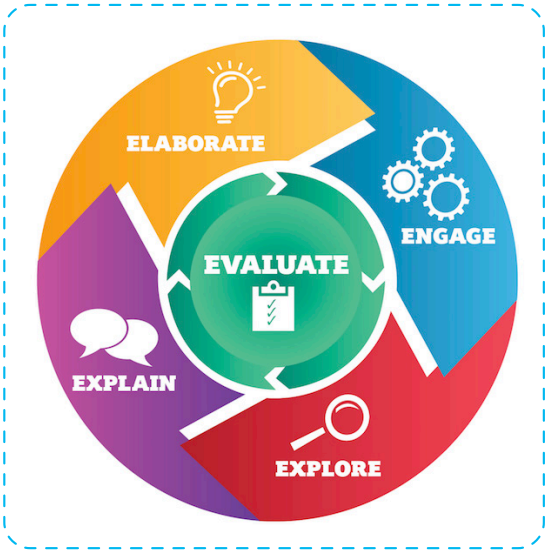
The material is divided into 12 lessons, each being 45 minutes long, along with project based assessments at the end of the book.



Methodolgy

The 5Es methadology is an instructional model encompassing the phases Engage, Explore, Explain, Elaborate, and Evaluate steps which educators have traditionally taught students to move through in phases. However, the 5Es are not actually a linear progression. Engaging is not separate from exploring. Exploring is not necessarily separate from explaining. Part of exploring requires elaborating and all of these elements require evaluating.

The lessons of the *PythonRun* book are made up of tutorials, which will engage the students with new topics and within the tutorials are practice exercises to implement the new concepts, which allow the students to explore them.



The process of enhancing programs, and fixing errors will support students to explain their processes. Quick tests, at the end of the units, and project-based assessments will elaborate on the lessons of the unit which will help test and evaluate the students level of understanding the material.

	Traditionaly (I do)	STEM Learning (You do)
Engage	- I tell them... - I show them...	- Students reflect - Students question
Explore	- I give the... - I demonstrate... - They look at models....	- Student unpacks problem - Student develops model - Student gathers data
Explain	- Talk & Turn - Carousel “Discussion” - What did... - What was	- Have you answered the question? - Have you solved the problem? - Does the evidence support the claim?
Elaborate	- Read about - Watch - Introduce new idea	- Concept - self connections - Concept - concept connections - Concept - world connections - Anchor - Investigative - Phenomena
Evaluate	- Give vocab - assessments - Keep journals to grade	- Reflect on investigative process - Reflection hypothesis - New reflection on anchor phenomena

Unit 1 »

» Introduction to Programming

» Lesson 1 1.1 1.2 1.3 1.4

Unit 1: Introduction to Programming

Overview:

Many students, these days, want to opt for a Computer Science stream in order to get a job at their dream tech company - Google, Facebook, Microsoft, Apple, and what not. Therefore we will decipher the term “programming” and understand its usage and many other related terms.

Vocabulary:

- Programming
- Code
- Data Entry
- Compiler
- Console
- GUI (Graphical User Interface)

Before the Lessons:

- Set up a computer lab by checking software requirements for installing the required Python compiler software.

Lesson 1 Plan

Suggested Time: 45 minutes

Section 1.1: What is Programming? (10 mins)

- A programming language lets you express computational tasks in certain ways.
- "Instruct the computer": this basically means that you provide the computer with a set of instructions written in a language which the computer can understand. The instructions could be of various types. Just like we, humans, can understand a few languages (Arabic, English, Spanish, French, etc.), so is the case with computers. Computers understand instructions that are written in a specific syntactical form called a programming language.
- "Perform various tasks": the tasks could be simple ones or complex ones which may involve a sequence of multiple instructions.
- Understanding the benefits of learning programming languages. Over the past several years, coding has progressed from a hobby to a critical career skill.

  Employers have shown a willingness to pay a premium for the work of employees with coding and programming ability.
- Explaining the computational thinking process, the thought processes involved in problem solving, analysing the validity of solutions and spotting patterns in data, which are all essential skills for the workplace that reduce the skills gap between education and the workplace.

Section 1.2: Python vs Other Languages (10 mins)

- Understanding why many programming languages exist.
- Some languages are much better suited to certain tasks than others. Some programming languages are also much easier to learn than others.

Section 1.3: Basic Terms & Definitions (15 mins)

- Breaking down some basic programming terms in simple English, making them easier to understand. Learning the specialized language of a domain would give us the opportunity to comprehend specific topics and communicate with them.

Section 1.4: Python Compilers (10 mins)

- A compiler is a special program that processes statements written in a particular programming language and turns them into machine language or “code” that a computer’s processor uses. Typically, a programmer writes language statements in a language such as Python one line at a time using an editor. These software applications often consist of a source code editor, build automation tools, and a debugger.

LKD
EDUCATIONAL RESOURCES