children from 12 years

NOVA it academy



Course

Python Programming

for children

The training program

Module 1

Getting acquainted with Python

- Introduction to Python-based programming
- Creating variables
- Data input and output

Module 2

Importing the code. Turtle graphics

- Ways to import code
- Getting acquainted the turtle graphics

Module 3

Getting acquainted with data types. Strings

- «Find the turtle» task
- Getting acquainted with data types
- Strings
- Their methods and indexing «Find the turtle» task

Module 4

Lists

- Creation of the game «Infinity War»
- Getting acquainted with lists, their methods and indexing
- The module «random»
- Creation of the game «Infinity War» based on the acquired knowledge

Module 5

Tuples and sets. The «Investor» task

- Tuples and sets
- Set methods
- Consideration of sets using the example of the «Investor» task

Module 6

Wordindexes. Creating a «User's Journal»

- Wordindexes and their methods
- Creating a «User's Journal»

Module 7

Getting acquainted with PyCharm and Debugger

- Getting acquainted with PyCharm
- Working with Debugger
- The progress of the program

Module 8

Writing the first function

- Creating the game «Coin toss»
- Creating the first function
- Functions with arguments
- Creating the game «Coin toss»

Module 9

Namespace and scopes of functions

- Creating «paper, scissors, stone» game
- We continue to review the function of the
- The concept of scope and namespace
- Paper, scissors, stone game

Module 10

A function with an arbitrary the number of parameters

- Creating a Truth or Dare Game
- Unpacking the parameters
- Default function parameters
- A function with an arbitrary number of parameters
- Creating the Truth or Dare multi-player Game

Module 11

String formatting

- Creation of the game «Combat robots»
- The concept of an object in programming and how to use it
- String formatting
- Creating a simple mini-game «Combat robots»

Module 12

Files in the operation system and working with them

- Creating the application «Camouflage and spycraft»
- Working with the os library
- The with operator
- Positioning in the file
- Creating the application «Camouflage and spycraft» (goes through files and records their titles)

Module 13

Creating a jokey virus in Python

- Computer Viruses
- Writing Code
- Build and create a runable .exe file in PyInstaller

Module 14

Hacking the archive using the bruteforce method

- Bruteforce-attack
- Developing your own programs for brute force password-protected .zip archives, writing code
- Classes in object-oriented programming
- An object-oriented program for bruteforce archives in Python

Module 15

Google's Dinosaur Game Bot

- Bruteforce-attack
- Development of our own program for the brute force of the infected .zip archives, writing code
- Classes in object-oriented programming
- An object-oriented program for bruteforce archives in Python

Module 16

Voice assistant in Python

- Voice assistants
- Voice recognition
- Program development
- Voicing Search results
- Command processing
- Google and YouTube search

Module 17

Artificial intelligence for the game «Connect four»

- Artificial Intelligence
- Algorithm AlphaZero
- Development of AI for the game «Connect four», the rules of the game
- AI in games

Module 18

Private neural network from scratch in Python

- Neural networks
- Creating a neural network, writing code

Programs and online resources used: Repl.it, PyCharm



Course result:

- introduce to Python programming;
- to study the methods of input and output of information;
- to study the main types of data and their methods;
- to teach how to convert data of one type into another;
- learn conditional, logical and arithmetic operations;
- to study conditional constructions; to study cycles;
- explore ways to import libraries, modules, and data;
- repeat and consolidate the basic syntax, data types, operators and Python loops;
- come to understand the graphical interface, the scope of Python functions;
- come to understand the basics of working with graphical components in PyCharm;
- connect and use Tkinter, Turtle libraries;
- come to understand the principles of correct code writing;
- develop author's applications and games;
- create and launch a Telegram bot;
- to understand the logic of neural networks and artificial intelligence;
- to understand of the internal structure of the neural network;
- come to understand how to program functions and loops for a bot;
- create your own neural network;
- create a bot with artificial intelligence for games;
- come to understand how to create a voice assistant;
- create an application with face recognition in a photo;
- to realize your cryptocurrency in the Python programming language;
- come to understand how to create artificial intelligence with self-learning and Deep Learning.

Course result:

- The student is able to enter and output data; has an idea of all the main types of data, works with them directly and using cycles.
- The student is able to work with files, write his own functions that allow him to create desktop games and applications, telegram bots in the PyCharm IDE. Has a general understanding of the object-oriented approach in programming.
- The student is able to use the Python programming language to create artificial intelligence and work with big data.

Course objectives:

- to explain what programming is; to teach how to work with variables;
- to teach how to import and create data of all major types, convert them into other data types;
- to teach how to import libraries, modules;
- to learn how to work with cycles;
- to teach conditional, logical and arithmetic operations;
- to teach conditional constructions. to teach you how to write your own functions; to teach you how to work with files;
- to teach you how to work with libraries, graphics-based environment and code in the IDE PyCharm;
- to create a Telegram bot;
- to teach how to use the Python programming language to create artificial intelligence and work with big data;
- to teach you how to create an artificial virus, a voice assistant, bots for games, your own neural network.

9 months

81 classes per course

23
years on the market

200+
branches

4,8
average rating

2 800
lectures

72 000+
students

1 000+
reviews

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Bursa, Fethiye neighbourhood,
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*data is valid
as of the beginning of 2024