

Python Pro

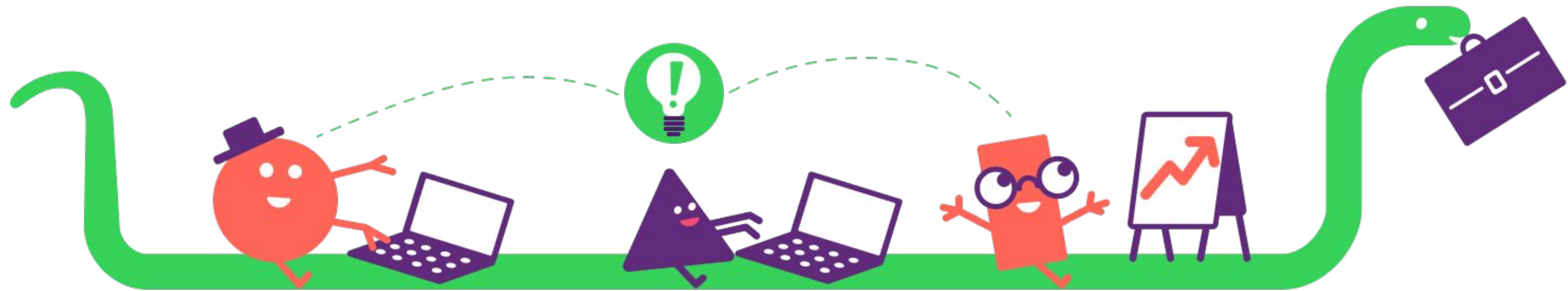
A course for kids aged 14-17

Prepare for sought-after professions and create an initial developer's portfolio



From beginners to professionals

Kids learn how to code in Python and test their skills in the most sought-after IT fields, from game development to machine learning expertise



Everyone will enjoy it!



A deep dive into the process

A storyline about growing an IT startup helps us retain the attention of students who find concentrating difficult



We nurture mathematical thinking

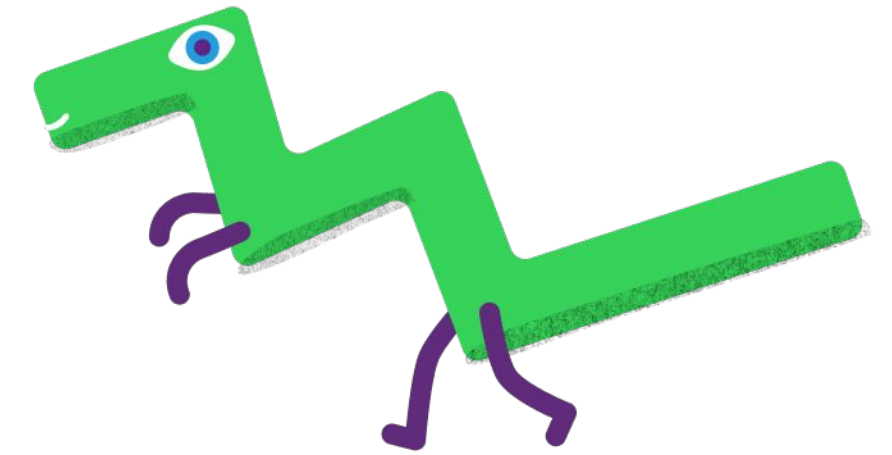
By studying the basic principles of programming, we deepen students's knowledge of math, even if they've never done well in the subject before



We find their motivation

We don't do tests, instead we apply what we've learned in practice straight away, by creating projects and bringing our own little dreams to life

In their first year of studies, teens will learn to:



- ◆ Write code in Python using functions, classes and modules
- ◆ Create interactive graphical games and apps for PCs
- ◆ Apply an iterative approach, and test and present software
- ◆ Work with graphics and develop a user interface
- ◆ Work with databases, and use the PyGame and PyQt libraries

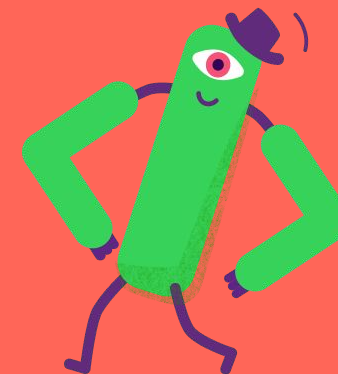
In their second year of studies, teens will learn to:

- ◆ Program 3D games: design scenes, animate characters, and add music to a project
- ◆ Create sites using HTML, CSS and the Django library
- ◆ Extract useful info from large data sets (Data Mining) and apply machine learning algorithms
- ◆ Develop mobile apps
- ◆ Apply Agile and Scrum principles
- ◆ Use the Flask, SQLite, Pandas, sklearn and Kivy libraries



Why Python?

- It's one of the most popular and universal programming languages according to dozens of rating systems
- It's widely applied in various spheres of activity – from solving simple tasks to artificial intelligence and machine learning
- Knowledge of Python is in highly sought-after among job applicants to large IT companies, as well as other employers
- Programmers working in Python are some of the most highly paid specialists in the world



A project-based approach

- ◆ Our kids create mini-projects right from their first lessons, applying the knowledge they've gained in practice
- ◆ Kids share their projects with their classmates directly in the platform, and learn to give and receive feedback
- ◆ At the end of each module, they present a full individual or group project



What are our classes like?

- **Online** or **at the Algorithmics** school in your city
- In groups of **up to 10** online and up to **12** offline
- Classes last for **90 minutes** with a break in the middle
- **Once a week**,
2 academic years

The teacher explains the material in an interesting way and **gets the kids interested in the new topic**

Your kid won't ever fall behind in the program: **any classes they miss can be taken on the platform, 24/7**

You won't need to check any homework: at Algorithmics, **there are no obligatory homework tasks**

You'll be given **access to the platform** and will be able to follow your kid's progress

Course structure 1st year – 3 Levels

Beginner

Module 1. Types of data

- Introduction to the Python programming language
- Variables
- Strings
- Problem-solving workshop

Module 2. Algorithms

- Conditional statements
- Nested conditional statements
- Loops

Module 3. Methods of organizing code

- Functions
- Modules

Intermediate

Module 4. Data structure

- Lists and tuples
- Dictionaries and sets
- Nested data structures
- Problem-solving workshop

Module 5. Object-oriented programming

- Classes
- Inheritance
- The Fast Clicker game

Advance

Module 6. 2D games*

- Introduction to Pygame, Events
- Using classes
- Sprite groups. Handling collisions
- Creating an executable file
- Project presentation

Module 7. Desktop apps*

- Introduction to PyQt5. The interface of a desktop application
- Working with widgets. Handling events
- The control system of Git versions and the GitHub service. Planning a group project
- Team-based development in GitHub. The “Desktop App” project
- Project presentation

*Only in the full version of the course

Course structure 2nd year – 3 Levels

Beginner

Module 1. Recap

- Algorithms and data structures
- Functions and OOP

Module 2. Mobile applications

- Introduction to the Kivy library
- MVP development for mobile applications
- Creating a user-friendly interface. Animation
- Testing apps. Product presentation

Module 3. Data analysis

- Basics of working with Pandas. Filtering data
- Methods of grouping data
- Cleaning data. Feature engineering
- Visualizing data
- Defending projects

Intermediate

Module 4. Machine learning*

- Machine learning algorithms. Classification using the KNN method
- Strategy and tactics for teaching the model
- Machine learning competition
- Defending projects

Module 5. 3D games*

- Introduction to Panda3D
- The camera and map
- The map editor
- Game modes
- Results. Presenting the game

Advance

Module 6. Web development

- Basics of web technology. Introduction to HTML
- Introduction to Agile and Scrum. CSS
- Working with databases. Introduction to SQL
- Working with linked tables. Creating database scripts for websites
- Interaction with a site by several users. Sessions
- Creating forms
- Using templates
- Presenting projects

Module 7. My career in IT

- Career development option in IT (hired work in various areas, creating your own startup, working in a team of startup professionals)
- Professional development plans: “My career in IT: dream - goal - plan - action”

*Only in the full version of the course

Why do people choose Algorithmics?

- ◆ The curriculums for all our courses are developed by a team of professional **educators, pedagogues and psychologists**
- ◆ Algorithmics' **teachers** talk to the kids in understandable language, love their subject and know how to captivate children
- ◆ Our **IT learning platform** is 3 in 1: it's a smart task book, an environment for creating projects, and a community of shared interests



Algorithmics

International School of Programming
for children aged 6 to 17

😊 1 100 000 graduates


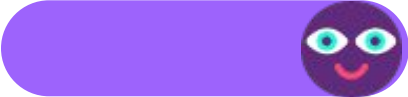




🚩 90+ countries

🏠 515 partners



Courses for kids aged 6-17

Kids can start studying at Algorithmics at any age. At the end of the course, students can move straight on to the next one to continue studying in the new academic year

Course name	Age:	5 – 6	7 – 9	10 – 11	12 – 13	14 – 15	16 – 17
Python Pro (2 years)							
Python Start (2 years)							
Game Development on Unity							
Game Design							
Visual Programming							
The Coding Knight							

Algorithmics

**Book a place in one
of our groups**

<http://algorithmicschool.nl/>

