



Programme Outline

CS 101

This programme of workshops focuses on the visualisation of algorithms as a foundation to strengthen knowledge of a variety of programming types. Using flowcharts to break down processes enables students to better understand programming in Python, Object Oriented languages such as Java - through Greenfoot, as well as assembly language programming in Little Man Computer.

Outcomes

- Improved ability to use decomposition and abstraction.
- Greater experience of designing, writing and using Algorithms.
- Improved confidence in implementing Algorithms such as sort and search using Python.
- Improved understanding of object-oriented languages and use of Greenfoot.
- Greater expertise in using mark-up languages to present webpage using HTML.
- Improved confidence with programming in assembly languages.

Curriculum Links

- Implementation of Algorithms to solve Numeracy GCSE questions.
- Use of flow diagrams to strengthen knowledge of Animal Classification in Biology GCSE
- Using algorithms to simulate Radioactive Decay and Half-Life as seen in Physics GCSE.
- Creating a Welsh revision guide using HTML.
- Developing assembly language algorithms to create numerical sequences similar to those seen in Mathematics GCSE.

Getting Involved

How does the programme work?

The program consists of 5 workshops that we will deliver to a class of students throughout the academic year. Each workshop lasts approximately one whole school day, with delivery either in your school or at one of our partner university campuses.

Why should I get involved?

The workshops help enhance your students knowledge and understanding of key topics which are also part of the new WJEC GCSE in Computer Science. The workshops also link to topics from various other subjects such as physics, mathematics, welsh, etc.

Who should get involved?

The workshops are aimed at KS4 students who are studying Computer Science or wish to pursue a career in Computer Science.

What is provided in the workshop?

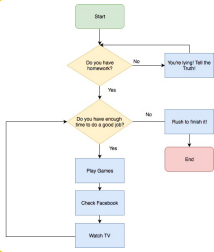
Each workshop includes a wide range of resources including presentation slides, a session plan, student workbook and solutions as well as example programs that can be demonstrated if necessary.

How can I get involved?

You can request a Technocamps Delivery Officer to deliver the programme to your students by emailing us at: info@technocamps.com.

You can also download the resources from our website: <http://technocamps.com/en>

Algorithms



This workshop develops students' ability to decompose complex processes through the use of flowcharts and step-by-step instructions. These skills are then applied to solve a Numeracy GCSE-style question and examples of commonly used algorithms are explored.

Algorithms II

This workshop builds on the first whilst focusing on implementing the various algorithms using Python. Students will learn how to create and utilise algorithms including sort and search algorithms, whilst reinforcing their programming knowledge.



Greenfoot

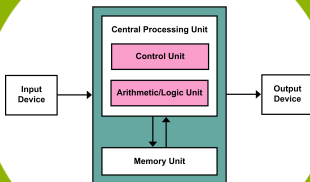
This workshop develops students' knowledge of object oriented programming, focusing on the Java-based Greenfoot environment. Through creating a series of games, students will strengthen their understanding of how object orientated programs are structured.

HTML

This workshop introduces students to HTML. It provides them with the necessary skill to create their own HTML web page(s) to be used as a tool for revision.



Assembly Language



This aim of this workshop is to develop students' confidence with assembly language programming in Little Man Computer. Students will use their ability to decompose processes before solving complex problems, including sequences as seen in GCSE Mathematics.