



GCSE Computing

Download

Use

Browse

Version 1

CONTENTS

Arduino	Page 3
Audacity	Page 3
Cambridge GCSE Computing Online	Page 4
Code Academy	Page 4
Computing At School	Page 5
IrfanView	Page 5
LibreOffice	Page 6
Logicly	Page 6
NotePad++	Page 7
Raspberry Pi	Page 7
Ubuntu	Page 8
VirtualBox	Page 8
XAMPP	Page 9

This guide contains ideas for hardware and software that may be used in the teaching of GCSE Computing. It should be noted that no item on this list is explicitly required for the qualification. This guide includes a selection of resources teachers may wish to use when delivering parts of the specification. Should teachers come across further ideas for resources that they feel would be of value they are encouraged to send them to: resourcesfeedback@ocr.org.uk

ARDUINO

Resource Type: Hardware
Price: Prices vary according to board but start at around £35
URL: <http://arduino.cc>

Arduino microcontrollers can be programmed to interact with their environment. Plug in simple inputs and output (switches, LEDs etc) or use a variety of shields (sold separately) including joysticks and screens to add more advanced functionality.

RELATES TO

- 2.1.1 (a) define a computer system
- 2.1.2 (o) understand the need for input and output devices
- 2.1.2 (p) describe suitable input devices for a wide range of computer controlled situations
- 2.1.2 (q) describe suitable output devices for a wide range of computer controlled situations



The Arduino website features a teal header with the Arduino logo and navigation links for Home, Buy, Download, Products, Learning, Reference, Support, Blog, Log In, and Sign Up. A search bar is located in the top right. The main content area includes a large banner with the text "DIY", "OPEN SOURCE", and "ARDUINO". Below the banner, there are sections for "What Arduino can do" and "Community". The "What Arduino can do" section describes how Arduino can sense the environment, take action, and interact with various sensors and actuators. The "Community" section highlights the active Arduino community, including regional groups and a forum.

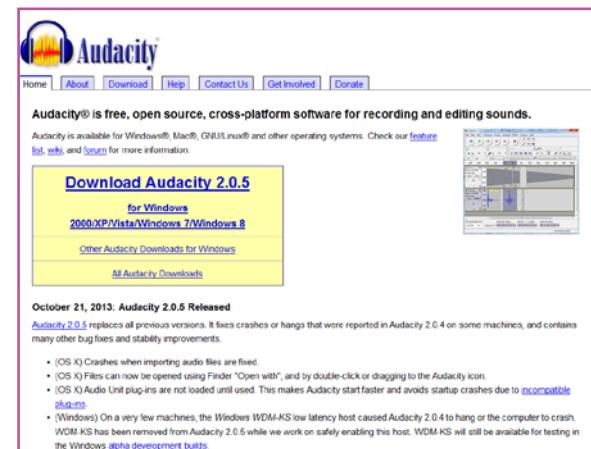
AUDACITY

Resource Type: Software
Price: Free
URL: <http://audacity.sourceforge.net>

Open source sound editing software. Students can experiment with the effects of saving sound in different formats and with different sampling qualities. (NB requires LAME MP3 encoder to export to MP3. This is free and Audacity will prompt you to download it when first required.)

RELATES TO

- 2.1.4 (n) explain how sound can be sampled and stored in digital form
- 2.1.4 (o) explain how sampling intervals and other considerations affect the size of a sound file and the quality of its playback.
- 2.1.6 (m) describe common file standards associated with the Internet such as JPG, GIF, PDF, MP3, MPEG
- 2.1.3 (c) discuss the relative merits of custom written, off the shelf, open source and proprietary software.



The Audacity website features a white header with the Audacity logo and navigation links for Home, About, Download, Help, Contact Us, Get Involved, and Donate. The main content area includes a prominent "Download Audacity 2.0.5" button for Windows, with links for Mac OS X, Linux, and Other Audacity Downloads for Windows. A note indicates that October 21, 2013, marks the release of Audacity 2.0.5, which replaces previous versions and fixes crashes. The page also shows a screenshot of the Audacity software interface.

CAMBRIDGE GCSE COMPUTING ONLINE

Resource Type: Website

Price: Free

URL: CambridgeGCSEComputing.org

This free online resource contains Video mini-lessons and teaching notes covering the OCR GCSE Computing syllabus. Could be used as a resource in the classroom, a homework support or to allow a flipped teaching approach.

Welcome to Cambridge GCSE Computing Online

This MOOC (Massive Open Online Course) has been created by the Cambridge-based partnership of exam board OCR, Cambridge University Press (CUP) and the Royal Society of Medicine (RSM). The course is based on OCR's GCSE Computing curriculum and gives participants an excellent opportunity to investigate how computers work, how they are used, and to develop computer programming and problem-solving skills. The course has been designed for 14-16 year olds, but is free and open to all, and can be used either as a course or a resource to support teachers.

The course is running now. It has no start or end date.

Content will be released on a phased basis with learning episodes available from April 2014. We want to focus as we go along and welcome your feedback. We see this phase as a shared experience and will take on learner and teacher feedback to adapt, tailor and refine the way for phases 2 and 3.



Register as a learner



Register as a teacher



Videos only

RELATES TO

Entire syllabus

CODE ACADEMY

Resource Type: Website

Price: Free

URL: codeacademy.com

Code Academy offers interactive tutorials in a variety of languages. Students can work at their own pace and collect virtual badges as they progress.

RELATES TO

- 2.1.7 (g) understand and use sequence in an algorithm
- 2.1.7 (h) understand and use selection in an algorithm (IF and CASE statements)
- 2.1.7 (i) understand and use iteration in an algorithm (FOR, WHILE and REPEAT loops)
- 2.1.7 (j) define the terms variable and constant as used in an imperative language
- 2.1.7 (k) use variables and constants
- 2.1.7 (l) describe the data types integer, real, Boolean, character and string
- 2.1.7 (m) select and justify appropriate data types for a given program
- 2.1.7 (n) perform common operations on numeric and Boolean data
- 2.1.7 (o) use one-dimensional arrays.

Also good preparation for A453

COMPUTING AT SCHOOL

Resource Type: Website

Price: Free

URL: community.computingatschool.org.uk

Active community of computing teachers, academics and professionals committed to the teaching of computing. The site has a thriving forum where help is always at hand and a large selection of user contributed resources.

RELATES TO

Resources available covering large parts of syllabus

The screenshot shows the homepage of the Computing At School website. The header features the text "COMPUTING AT SCHOOL" and "EDUCATE · ENGAGE · ENCOURAGE" along with a note about being in collaboration with BCS, The Chartered Institute for IT. Below the header is a navigation bar with links for "CAS Online", "Logout", "Forgot your password?", and "Log in". A sidebar on the right includes a "Not a member? Sign up!" button and fields for email, new password, current password, and a "Apply for membership" button. The main content area displays a news feed with several items, including "Presentations at Effect... Nov 21 at 9:00AM", "CAS Online First Hub... Nov 20 at 4:10PM", "Interactive Databases... Nov 20 at 6:00PM", and "Introducing Computer Science... Nov 21 at 10:00AM". Below the news feed is a section titled "Master Teacher training days" with a photo of a group of people in a room. A caption below the photo states: "Four Master Teacher training days took place at the University of Cambridge in October 2011, organised by CAS Online. Over 150 Master Teachers attended one or more of the four events. The session was entitled 'Leading and delivering effective Computing lessons' and was delivered by Dr Alan Barnes, Director of the Science Learning Centre, University of the Technology of the Royal Holloway, University of London. The session was organised by CAS Online, in partnership with the Computing Research Group in Science subjects that was resulted in a series of presentations and activities designed to support teachers in introducing the new Computing curriculum. It was very fortunate to have access to Alan's expertise and experience".

IRFANVIEW

Resource Type: Software

Price: Free

Platform: Windows

URL: irfanview.com

IrfanView is a free image viewer that supports a wide range of file types. Encourage students to compare the effects of different types of compression on images. This program is particularly useful as it supports PBM, PGM and PPM file types which can be used to demonstrate how bitmaps are created.

The screenshot shows the homepage of IrfanView. The top banner features the text "IRFANVIEW" and "...one of the most popular viewers worldwide!". Below the banner is a message from the author: "I would like to sincerely thank all you faithful IrfanView users who send me messages of good wishes, congratulations and appreciation. THANKS!". To the left is a sidebar with links for "What is IrfanView?", "Download", "IrfanView languages", "Plugins", "Toolbar skins", "History of changes", "Nice WWW links", "About the author", "Support IrfanView", and "FAQs". The main content area features a large image of a waterfall and lists various features: "view", "convert", "optimize", "scan & print", "create slideshows", "batch processing", "play movies & sounds", and "and many many more...". On the right side, there are download links for "download the current version" and "Plugins/AddOns", as well as links for "Other download sites" and "Other WWW mirrors". A note at the bottom indicates "Current version: 4.30".

RELATES TO

2.1.4 (k) explain the representation of an image as a series of pixels represented in binary

2.1.4 (m) discuss the effect of colour depth and resolution on the size of an image file.

2.1.4 (l) explain the need for metadata to be included in the file such as height, width and colour depth

2.1.6 (m) describe common file standards associated with the Internet such as JPG, GIF, PDF, MP3, MPEG

2.1.6 (o) describe the differences between lossy and lossless compression.

LIBREOFFICE

Resource Type: Software

Price: Free

Platform: Windows, OSX, Linux

URL: <https://www.libreoffice.org/>

Open source office package, Can be used to stimulate discussions about the difference between open source and proprietary software. Base the package's DBMS can be used for teaching databases.



RELATES TO

- 2.1.5 (a) describe a database as a persistent organised store of data
- 2.1.5 (b) explain the use of data handling software to create, maintain and interrogate a database.
- 2.1.5 (c) describe how a DBMS allows the separation of data from applications and why this is desirable
- 2.1.5 (d) describe the principal features of a DBMS and how they can be used to create customised data handling applications.
- 2.1.5 (e) understand the relationship between entities and tables
- 2.1.3 (c) discuss the relative merits of custom written, off the shelf, open source and proprietary software.

LOGICLY

Resource Type: Website/Software

Price: Free online version at <http://logic.ly/demo/>

Downloadable version which includes features such as printing and saving available for \$29 per user

Platform: Online version requires Flash Player,
Downloadable version requires Windows/OSX/Linux

URL: <http://logic.ly>



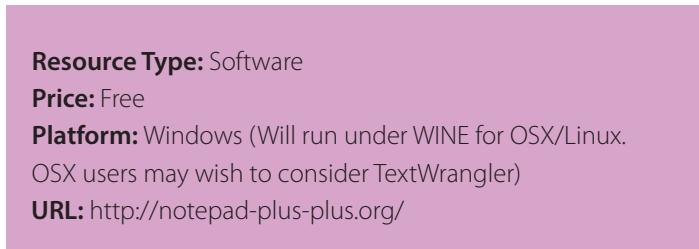
Logicly allows you to build and test 'virtual' logic gate circuits.

Get students to experiment and test their truth tables using this simulation.

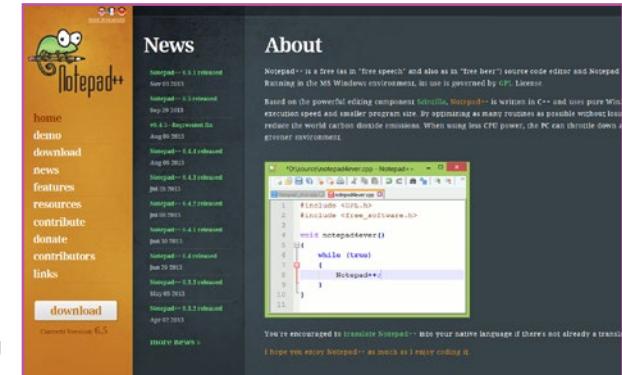
RELATES TO

- 2.1.2 (e) understand and produce simple logic diagrams using the operations NOT, AND and OR
- 2.1.2 (f) produce a truth table from a given logic diagram.

NOTE PAD++



Resource Type: Software
Price: Free
Platform: Windows (Will run under WINE for OSX/Linux.
 OSX users may wish to consider TextWrangler)
URL: <http://notepad-plus-plus.org/>



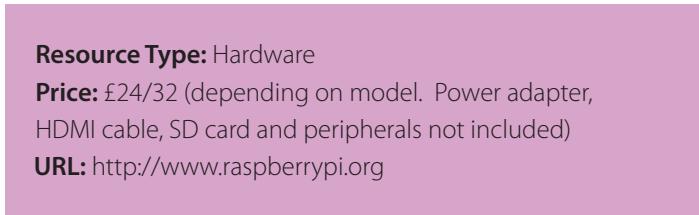
NotePad++ is a feature rich text editor that is 'aware' of a large number of file types including HTML and CSS (It will also recognise most programming languages).

RELATES TO

2.1.6 (l) explain the importance of HTML and its derivatives as a standard for the creation of web pages

May also be useful with A452/A453

RASPBERRY PI



This £30 computer allows is ideal for those studying computing. Students can experiment with installing different operating systems, using a variety of programming languages and connecting to inputs and outputs. OCR has produced a range of resources to be used with the Raspberry Pi. (insert link)



RELATES TO

Can be used across the syllabus.

UBUNTU

Resource Type: Software

Price: Free

URL: <http://www.ubuntu.com/>

One of the most popular distributions of the Linux operating system. Give chance to compare Ubuntu to their usual OS. This also gives the opportunity to compare open source and proprietary software. Works well when used with VirtualBox (see below)

RELATES TO

- 2.1.3 (a) explain the need for the following functions of an operating system: user interface, memory management, peripheral management, multi-tasking and security
- 2.1.3 (b) describe the purpose and use of common utility programs for computer security (antivirus, spyware protection and firewalls), disk organisation (formatting, file transfer, and defragmentation), and system maintenance (system information and diagnosis, system cleanup tools, automatic updating)
- 2.1.3 (c) discuss the relative merits of custom written, off the shelf, open source and proprietary software.

Get Ubuntu

Ubuntu is completely free to download, use and share.



[Ubuntu Desktop >](#)

Download Ubuntu desktop and replace your current operating system whether it's Windows or Mac OS, or, run Ubuntu alongside it.



[Do you want to upgrade? Follow our simple guide >](#)



[Ubuntu Server >](#)

Whether you want to configure a simple file server or build a fifty thousand-node cloud, you can rely on Ubuntu Server and its five years of guaranteed free upgrades.



[Ubuntu Cloud >](#)

Ubuntu Cloud comprises installation options for the OpenStack-based Ubuntu Cloud Infrastructure and Ubuntu Cloud Guest, all from within the Ubuntu Server download.

VIRTUALBOX

Resource Type: Software

Price: Free

Platform: Windows, OSX, Linux

URL: <https://www.virtualbox.org/>

VirtualBox allows users to run a virtualised Operating System in a safe, sandboxed environment. Let students experiment with Operating Systems without upsetting network managers!

VirtualBox

Welcome to VirtualBox.org!

VirtualBox is a powerful x86 and AMD64/Intel64 virtualization product for enterprise as well as home customers; it is also the only professional solution that is freely available as Open Source Software. Presently, VirtualBox runs on Windows, Linux, Macintosh, and Solaris hosts and supports a large variety of guest operating systems including Windows 7, Vista, Windows 2003, DOS/Windows 3.x, Linux (2.4 and 2.6), Solaris and OpenSolaris. VirtualBox is being actively developed with frequent releases and has an ever growing list of features. It is a product of Oracle Corporation.

Hot picks:

- Pre-built virtual machines for developers over at [Oracle Tech Network](#)
- [phpVirtualBox AIXX web interface](#) [project site](#)
- [IQEmu automated Windows VM creation, application integration](#) [project site](#)

ORACLE
[Contact](#) - [Privacy policy](#) - [Terms](#)

RELATES TO

- 2.1.3 (a) explain the need for the following functions of an operating system: user interface, memory management, peripheral management, multi-tasking and security

XAMPP

Resource Type: Software

Price: Free

Platform: Windows, OSX, Linux

URL: <http://www.apachefriends.org/en/index.html>

XAMPP contains Apache, MySQL, PHP and Perl. It allows you to treat your computer as a webserver. Use MySQL for demonstrating a Database Management System.

RELATES TO

- 2.1.5 (a) describe a database as a persistent organised store of data
- 2.1.5 (b) explain the use of data handling software to create, maintain and interrogate a database.
- 2.1.5 (c) describe how a DBMS allows the separation of data from applications and why this is desirable
- 2.1.5 (d) describe the principal features of a DBMS and how they can be used to create customised data handling applications.
- 2.1.5 (e) understand the relationship between entities and tables
- 2.1.5 (f) understand the components of a relational database, such as tables, forms, queries, reports and modules
- 2.1.5 (g) understand the use of logical operators in framing database queries
- 2.1.5 (h) explain the use of key fields to connect tables and avoid data redundancy

Also useful for some A452 tasks.


b64ami.com/xampp



Welcome to Apache Friends!

Apache Friends is a non-profit project to promote the Apache web server. It was founded in the spring of 2002 by Kai 'Oswald' Seidler and Kay Voigtgesang. The following activities are our contribution towards promoting the web server and related technologies:

1. Easy to use software (see our Apache distribution XAMPP below).
2. Easy to read documentation (Sorry, all texts apart from the FAQ are only available in German, our Apache for Dummies book for example).
3. The creation of an online community for helping each other out should any questions or problems arise (see our forums or Chats for further resources).

If you want to know more about Apache Friends please take a look at our Apache Friends FAQ page.

Our most important project



Many people know from their own experience that it's not easy to install an Apache web server and it gets harder if you want to add MySQL, PHP and Perl. XAMPP is an easy to install Apache distribution containing MySQL, PHP and Perl. XAMPP is really very easy to install and to use - just download, extract and start.

At the moment there are four XAMPP versions:

- a version for Linux systems (tested for Ubuntu, SuSE, RedHat, Mandrake and Mandriva),
- a version for Windows 2000, 2003, XP and Vista,
- a beta version for Solaris SPARC (developed and tested under Solaris 8),
- and a beta version for Mac OS X.

These Mac OS X and Solaris versions of XAMPP are still in the first steps of development. Use at your own risk!

Contact us

Keep up to date on the latest news by registering to receive e-alerts at www.ocr.org.uk/updates

Telephone 01223 553998

Facsimile 01223 552627

Email generalqualifications@ocr.org.uk

