

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
(Based on Cambridge IGCSE specification for exams June 2011 onwards)

<b>Subject content</b>	<b>Boardworks presentations</b>
<b>Section 1: Types and components of computer systems</b>	
(a) define hardware, giving examples	<b>Introduction to Computer Systems:</b> A Basic Computer System; Processing; Introduction to Hardware; Input Devices; Output Devices; Storing Data
(b) define software, giving examples	<b>Introduction to Computer Systems:</b> Introduction to Software; Applications Software; Operating Systems; User Interfaces
(c) describe the difference between hardware and software	<b>Introduction to Computer Systems:</b> A Basic Computer System; Introduction to Hardware; Introduction to Software
(d) identify the main components of a general-purpose computer: central processing unit, main/internal memory (including ROM and RAM), input devices, output devices and secondary/backing storage	<b>Introduction to Computer Systems:</b> A Basic Computer System; Processing; Introduction to Hardware; Input Devices; Output Devices; Storing Data
(e) identify operating systems, including those which contain a graphical user interface, a command line interface	<b>Introduction to Computer Systems:</b> Introduction to Software; Applications Software; Operating Systems; User Interfaces
(f) identify different types of computer including Personal Computer or desktop, mainframe, laptop, palmtop and Personal Digital Assistant	<b>Current and Emerging Technologies:</b> Digital Devices; Mobile Communications
(g) describe recent developments in ICT	<b>Current and Emerging Technologies:</b> Current and Emerging Uses of ICT; Digital Devices; Mobile Communications; ICT and Modern Living

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
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<b>Section 2: Input and output devices</b>	
(a) identify the following input devices: keyboards, numeric keypads, pointing devices (including mouse, touch pad and tracker ball), remote controls, joysticks, touch screens, magnetic stripe readers, chip readers, PIN pads, scanners, digital cameras, microphones, sensors, graphics tablet, MICR, OMR, OCR, barcode readers, video cameras, web cams, light pens	<b>Introduction to Computer Systems:</b> Introduction to Hardware; Input Devices;
(b) identify suitable uses of the input devices stating the advantages and disadvantages of each	<b>Introduction to Computer Systems:</b> Introduction to Hardware; Input Devices
(c) identify the following output devices: monitors (CRT, TFT), projectors, printers (laser, ink jet and dot matrix), plotters, speakers, control devices – motors, buzzers, lights, heaters	<b>Introduction to Computer Systems:</b> Output Devices
(d) identify suitable uses of the output devices stating the advantages and disadvantages of each	<b>Introduction to Computer Systems:</b> Output Devices
<b>Section 3: Storage devices and media</b>	
(a) describe common backing storage media (including magnetic tapes, hard discs, all forms of CD and DVD, memory sticks, flash memory) and their associated devices	<b>Introduction to Computer Systems:</b> Storing Data
(b) identify typical uses of the storage media, including types of access (e.g. serial/sequential, direct/random) and access speeds	<b>Introduction to Computer Systems:</b> Storing Data
(c) describe the comparative advantages and disadvantages of using different backing storage media	<b>Introduction to Computer Systems:</b> Storing Data
(d) define the term backup and describe the need for taking backups	<b>Introduction to Computer Systems:</b> Storing Data <b>Working Safely and Efficiently:</b> Keeping Data Safe

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
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(e) describe the difference between main/internal memory and backing storage, stating the relative benefits of each in terms of speed and permanence	<b>Introduction to Computer Systems:</b> Storing Data
<b>Section 4: Computer networks</b>	
(a) describe a router and its purpose	<b>Networks and Communications:</b> Introduction to Networks; Types of Network; Setting up a Network
(b) describe the use of WIFI and Bluetooth in networks	<b>Networks and Communications:</b> Introduction to Networks; Types of Network; Setting up a Network <b>Current and Emerging Technologies:</b> Mobile Communication
(c) describe how to set up a small network involving access to the internet, understanding the need to set up the use of a browser, email and an ISP	<b>Networks and Communications:</b> Introduction to Networks; Types of Network; Setting up a Network
(d) identify the advantages and disadvantages of using common network environments such as the internet	<b>Networks and Communications:</b> Introduction to Networks; Types of Network; Setting up a Network
(e) describe what is meant by the terms user id and password, stating their purpose and use	<b>Networks and Communications:</b> Introduction to Networks; Types of Network; Setting up a Network <b>Working Safely and Efficiently:</b> Keeping Data Safe; Standard Ways of Working
(f) identify a variety of methods of communication such as fax, email, and tele/video conferencing	<b>Current and Emerging Technologies:</b> Digital Devices; Mobile Communications <b>ICT in Context:</b> The Modern Workplace
(g) define the terms Local Area Network (LAN), Wireless Local Area Network and Wide Area Network (WAN)	<b>Networks and Communications:</b> Introduction to Networks; Types of Network; Setting up a Network
(h) describe the difference between LANs, WLANs and WANs, identifying their main characteristic	<b>Networks and Communications:</b> Introduction to Networks; Types of Network; Setting up a Network

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
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(i) describe the characteristics and purpose of common network environments, such as intranets and the internet	<b>Networks and Communications:</b> Introduction to Networks; Types of Network; Setting up a Network <b>ICT in Context:</b> The Modern Workplace
(j) describe other common network devices (including hubs, bridges, switches and proxy servers)	<b>Networks and Communications:</b> Introduction to Networks; Types of Network; Setting up a Network
(k) discuss the problems of confidentiality and security of data, including problems surrounding common network environments	<b>Networks and Communications:</b> Introduction to Networks; Types of Network; Setting up a Network <b>Working Safely and Efficiently:</b> Keeping Data Safe; Standard Ways of Working; Online Safety
(l) identify the need for encryption, authentication techniques, including the use of user identification and passwords, when using common network environments such as the internet	<b>Working Safely and Efficiently:</b> Keeping Data Safe; Standard Ways of Working; Online Safety
<b>Section 5: Data types</b>	
(a) identify different data types: logical/Boolean, alphanumeric/text, numeric (real and integer) and date	<b>Databases:</b> Data Handling; Database Structure; Editing Records; Validation
(b) select appropriate data types for a given set of data: logical/Boolean, alphanumeric/text, numeric and date	<b>Databases:</b> Data Handling; Database Structure; Editing Records; Validation
(c) describe what is meant by the terms file, record, field and key field	<b>Databases:</b> Data Handling; Database Structure; Editing Records; Validation
(d) describe different database structures such as flat files and relational tables including the use of relationships, primary keys and foreign keys	<b>Databases:</b> Data Handling; Database Structure; Editing Records; Validation
(e) state the difference between analogue data and digital data	<b>Creating Multimedia Products:</b> Sound
(f) explain the need for conversion between analogue and digital data	<b>Creating Multimedia Products:</b> Sound

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
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<b>Section 6: The effects of using ICT</b>	
(a) explain what is meant by software copyright	<b>Legal, Social and Environmental Issues:</b> Copyright
(b) describe what a computer virus is, what hacking is and explain the measures that must be taken in order to protect against hacking and viruses	<b>Working Safely and Efficiently:</b> Keeping Data Safe; Standard Ways of Working; Online Safety
(c) describe the effects of information and communication technology on patterns of employment, including areas of work where there is increased unemployment	<b>ICT in Context:</b> The Modern Workplace
(d) describe the effects of microprocessor-controlled devices in the home, including their effects on leisure time, social interaction and the need to leave the home	<b>Introduction to Computer Systems:</b> Processing <b>Current and Emerging Technologies:</b> Digital Devices; Mobile Communications; ICT and Modern Living
(e) describe the capabilities and limitations of ICT	<b>Legal, Social and Environmental Issues:</b> ICT: Good or Bad?
(f) describe the use of internet developments such as Web 2.0, blogs, wikis, digital media uploading websites, and new types of social networking websites	<b>Personal Use of ICT:</b> ICT and Entertainment; Blogs and Social Networking
(g) discuss issues relating to information found on the internet, including unreliability, undesirability and the security of data transfer including phishing, pharming and SPAM	<b>Research and Information Handling:</b> Searching the Web; Evaluating Information <b>Personal Use of ICT:</b> E-mail <b>Working Safely and Efficiently:</b> Keeping Data Safe; Standard Ways of Working; Online Safety

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
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(h) describe the potential health problems related to the prolonged use of ICT equipment, for example repetitive strain injury (RSI), back problems, eye problems and some simple strategies for preventing these problems	<b>Legal, Social and Environmental Issues:</b> Health and Safety Act
(i) describe a range of safety issues related to using computers and measures for preventing accidents	<b>Legal, Social and Environmental Issues:</b> Health and Safety Act
<b>Section 7: The ways in which ICT is used</b>	
<b>7.1</b>	
(a) communication applications (such as newsletters, websites, multimedia presentations, music scores, cartoons, flyers and posters)	<b>Creating Multimedia Products:</b> Planning a Creative Product; Graphics; Sound; Presentation Software; Paper Publications; Word Processing
(b) interactive communication applications (such as blogs, wikis and social networking websites)	<b>Personal Use of ICT:</b> Blogs and Social Networking
(c) data handling applications (such as surveys, address lists, tuck shop records, clubs and society records, school reports and school libraries)	<b>Databases:</b> Data Handling; Uses of Databases
(d) measurement applications (such as scientific experiments, electronic timing and environmental monitoring)	<b>ICT in Context:</b> Monitoring and Control
(e) control applications (such as turtle graphics, control of lights, buzzers and motors, automatic washing machines, automatic cookers, central heating controllers, burglar alarms, video recorders/players, microwave ovens and computer controlled greenhouse)	<b>ICT in Context:</b> Monitoring and Control
(f) modelling applications (such as 3D modelling, simulation (e.g. flight, driving and queue management) and use of spreadsheets for personal finance and tuck shop finances)	<b>Spreadsheets and Modelling:</b> Solving Problems with Spreadsheet Models

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
(Based on Cambridge IGCSE specification for exams June 2011 onwards)

<b>7.2</b>	
(a) communication applications (such as the internet, email, fax, electronic conferencing, mobile telephones and internet telephony services)	<b>ICT in Context:</b> The Modern Workplace
(b) applications for publicity and corporate image publications (such as business cards, letterheads, flyers and brochures)	
(c) applications in manufacturing industries (such as robotics in manufacture and production line control)	
(d) applications for finance departments (such as billing systems, stock control and payroll)	<b>Spreadsheets and Modelling:</b> Solving Problems with Spreadsheet Models
(e) school management systems (including registration, records and reports)	<b>ICT in Context:</b> ICT and Education
(f) booking systems (such as those in the travel industry, the theatre and cinemas)	<b>Personal Use of ICT:</b> ICT and Entertainment
(g) applications in banking (including Electronic Funds Transfer (EFT), ATMs for cash withdrawals and bill paying, credit/debit cards, cheque clearing, phone banking, internet banking)	<b>ICT in Context:</b> Finance; Retail and E-commerce
(h) applications in medicine (including doctors' information systems, hospital and pharmacy records, monitoring and expert systems for diagnosis)	<b>Current and Emerging Technologies:</b> ICT and Modern Living
(i) applications in libraries (such as records of books and borrowers and the issue of books)	<b>Databases:</b> Data Handling; Uses of Databases
(j) the use of expert systems (for example in mineral prospecting, car engine fault diagnosis, medical diagnosis, chess games)	<b>Current and Emerging Technologies:</b> ICT and Modern Living
(k) applications in the retail industry (stock control, POS, EFTPOS, internet shopping, automatic reordering)	<b>ICT in Context:</b> Retail and E-commerce

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
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<b>Section 8: Systems analysis and design</b>	
<b>8.1 Analysis</b>	
(a) describe different methods of researching a situation	<b>Research and Information Handling:</b> Researching Using ICT; Searching the Web; Evaluating Information
(b) state the need for recording and analysing information about the current system	<b>The Systems Life Cycle:</b> The Systems Life Cycle
(c) state the need for identifying features of the existing system	<b>The Systems Life Cycle:</b> The Systems Life Cycle
<b>8.2 Design</b>	
(a) state the need for producing designs	<b>The Systems Life Cycle:</b> The Systems Life Cycle
(b) produce designs to solve a given problem	<b>The Systems Life Cycle:</b> The Systems Life Cycle
(c) choose the method of verification	
<b>8.3 Development and testing</b>	
(a) understand that the system is created from the designs and then tested	<b>The Systems Life Cycle:</b> The Systems Life Cycle
(b) describe testing strategies	<b>The Systems Life Cycle:</b> The Systems Life Cycle
(c) understand that improvements could be needed as a result of testing	<b>The Systems Life Cycle:</b> The Systems Life Cycle
<b>8.4 Implementation</b>	
(a) describe the different methods of system implementation	<b>The Systems Life Cycle:</b> The Systems Life Cycle

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
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(b) identify suitable situations for the use of different methods of system implementation, giving advantages and disadvantages of each	<b>The Systems Life Cycle:</b> The Systems Life Cycle
<b>8.5 Documentation</b>	
(a) identify the components of technical documentation for an information system	<b>The Systems Life Cycle:</b> The Systems Life Cycle
(b) identify the components of user documentation for an information system	<b>The Systems Life Cycle:</b> The Systems Life Cycle
<b>8.6 Evaluation</b>	
(a) explain the need for evaluating a new system	<b>The Systems Life Cycle:</b> The Systems Life Cycle
(b) state the need for a variety of evaluation strategies	<b>The Systems Life Cycle:</b> The Systems Life Cycle
<b>Section 9: Communication</b>	
<b>9.1 Communicate with other ICT users using email</b>	
(a) send and receive documents and other files electronically	<b>Personal Use of ICT:</b> E-mail; Advanced E-mail Options
(b) manage contact lists effectively	<b>Personal Use of ICT:</b> E-mail; Advanced E-mail Options
<b>9.2 Make effective use of the internet as a source of information</b>	
(a) locate specified information from a given website URL	<b>Research and Information Handling:</b> Researching Using ICT; Searching the Web; Evaluating Information
(b) find specified information using a search engine	<b>Research and Information Handling:</b> Researching Using ICT; Searching the Web; Evaluating Information

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Communication Technology (0417)**  
(Based on Cambridge IGCSE specification for exams June 2011 onwards)

(c) download and save information as specified	<b>Research and Information Handling:</b> Researching Using ICT; Searching the Web; Evaluating Information
<b>Section 10: Document production</b>	
<b>10.1 Enter and edit data from different sources</b>	
(a) create and open documents using information from different sources	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
(b) enter and edit text	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
(c) import, place and manipulate images and different forms of information, from a variety of external sources	<b>Creating Multimedia Products:</b> Planning a Creative Product; Graphics; Presentation Software; Paper Publications; Word Processing
<b>10.2 Organise the page layout</b>	
(a) format the page layout by setting the page size, orientation and margins	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
(b) appropriately use headers and footers	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
(c) use columns and breaks to adjust pagination and text flow	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
(d) set text alignment	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
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(e) set line spacing	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
(f) adjust the tabulation	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
(g) ensure the consistency of page layout	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
<b>10.3 Format the text</b>	
(a) set the font styles and emphasise text	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
(b) format a list as specified	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
(c) create/edit and format a table	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
<b>10.4 Ensure the accuracy of the text</b>	
(a) use software tools to ensure that the documents are error free	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing
(b) proof-read and correct the document	<b>Creating Multimedia Products:</b> Planning a Creative Product; Presentation Software; Paper Publications; Word Processing

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<b>Section 11: Data manipulation</b>	
<b>11.1 Create a database structure</b>	
(a) define an appropriate database record structure	<b>Databases:</b> Database Structure
(b) enter and amend data in a database	<b>Databases:</b> Editing Records
<b>11.2 Manipulate data</b>	
(a) use arithmetic operations or numeric functions to perform calculations	<b>Databases:</b> Uses of Databases
(b) sort data	<b>Databases:</b> Sorting and Queries
(c) search to select subsets of data	<b>Databases:</b> Sorting and Queries
<b>11.3 Present data</b>	
(a) produce reports to display fields and other data for a user	<b>Databases:</b> Printing Reports
<b>Section 12: Integration</b>	
<b>12.1 Combine text, image(s) and numeric data</b>	
(a) combine text, images, database extracts and graphs and charts	<b>Databases:</b> Printing Reports
<b>Section 13: Output data</b>	
<b>13.1 Save and print documents and data</b>	

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
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(a) save and print documents, data and objects	<b>Working Safely and Efficiently:</b> Standard Ways of Working
<b>Section 14: Data analysis</b>	
<b>14.1 Create a data model</b>	
(a) enter the layout of the model	<b>Spreadsheets and Modelling:</b> Introduction to Spreadsheets; Formatting Spreadsheets; Formulae; Functions; Cell References and Sorting; Advanced Functions and Charts; Solving Problems with Spreadsheet Models
(b) enter and amend text, numerical data, functions and formulae with 100% accuracy	<b>Spreadsheets and Modelling:</b> Introduction to Spreadsheets; Formatting Spreadsheets; Formulae; Functions; Cell References and Sorting; Advanced Functions and Charts; Solving Problems with Spreadsheet Models
<b>14.2 Test the data model</b>	
(a) demonstrate that the model works	<b>Spreadsheets and Modelling:</b> Introduction to Spreadsheets; Formatting Spreadsheets; Formulae; Functions; Cell References and Sorting; Advanced Functions and Charts; Solving Problems with Spreadsheet Models
<b>14.3 Manipulate data</b>	
(a) search to select subsets of data	<b>Spreadsheets and Modelling:</b> Introduction to Spreadsheets; Formulae; Functions; Cell References and Sorting
(b) sort data	<b>Spreadsheets and Modelling:</b> Introduction to Spreadsheets; Formatting Spreadsheets; Cell References and Sorting
<b>14.4 Present data</b>	
(a) adjust the display features in a spreadsheet	<b>Spreadsheets and Modelling:</b> Introduction to Spreadsheets; Formatting Spreadsheets

**Mapping to Cambridge IGCSE Information and  
Communication Technology (0417)**  
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(b) produce a graph or chart from the spreadsheet model	<b>Spreadsheets and Modelling:</b> Advanced Functions and Charts
<b>Section 15: Website authoring</b>	
<b>15.1 Use stylesheets</b>	
(a) create and attach an external stylesheet	
<b>15.2 Create web pages</b>	
(a) create web page(s) including features like: menu options, text hyperlink, graphics hyperlink, setting the foreground, background and text colours	<b>Creating Multimedia Products:</b> Web Design Software
(b) create links from a web page	<b>Creating Multimedia Products:</b> Web Design Software
(c) use tables to organise a web page	<b>Creating Multimedia Products:</b> Web Design Software
<b>15.3 Use images</b>	
(a) insert an image in a web page, place the image relative to text and other objects	<b>Creating Multimedia Products:</b> Web Design Software
<b>Section 16: Presentation authoring</b>	
<b>16.1 Create a presentation</b>	
(a) use a master slide to place objects and set styles	<b>Creating Multimedia Products:</b> Presentations Software
(b) create presentation slides, including text, images, charts, animations and transitions	<b>Creating Multimedia Products:</b> Presentations Software
(c) create notes for the presenter and audience	<b>Creating Multimedia Products:</b> Presentations Software