Computing Programme of Study
Key Stage 1 and 2

Purpose of Study
A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims
The national curriculum for computing aims to ensure that all pupils: • can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation • can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems • can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems • are responsible, competent, confident and creative users of information and communication technology

Computing – KS1
Pupils should be taught to:

- understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

Computing lessons at Ivanhoe Primary Academy will be taught using the iCompute schemes of work. Assessment links to the CAS progression pathways.

Year 1	Year 2
Computer Science Children will be taught to: **understand what algorithms are** - read a set of instructions and usually predict the correct outcome - produce a set of instructions for other to follow *Digital Literacy* Children will be taught to: **use a website to find answers to simple questions** - navigate a website using buttons and image links - use drawing and text tools to impart information *Information Technology* Children will be taught to: **log on to a computer with assistance** **enter simple sentences using a keyboard** **use a mouse to point, click and drag objects around a screen** - print work - save work with assistance - discuss how they have created work using the computer *eSafety* Children will be taught to:	*Computer Science* Children will be taught to: **understand that computers follow algorithms and they are implemented as programs** - produce a sequence of instructions that result in planned outcomes - produce a short sequence of commands that results in a planned effect **program and test a simple program** - create algorithms to solve simple problems **debug simple programs by correcting mistakes when things do not go as planned** *Digital Literacy* Children will be taught to: **enter a url for a website with some support** **find answers to questions using information from a website with help** - identify some links within web content and navigate with purpose **begin to use a range of applications on computers and devices independently** - discuss how they found specific information in a website - recognise where and how technology is used beyond school *Information Technology*

understand that some information is personal (e.g. name, address, hobbies) - can identify characteristics of trustworthy/untrustworthy people and justify their reasons **know that personal information should only be given to trusted people**	Children will be taught to: **enter sentences using a keyboard or touch** - use a mouse or touch input to make selections and move objects **save, print and retrieve work** **use software, computers and other devices to make simple presentations and create things for a particular purpose** *eSafety* Children will be taught to: **understand the importance of staying safe online** **understand that a wider range of information is personal (e.g. attendance at a specific place)** - identify some ways to use computers safely **identify some ways of reporting inappropriate content and contact online**

Key Vocabulary
computer, technology, personal information, algorithm, program, debug, instructions, predict, outcome, sequence, command, tools, text, keyboard, mouse, buttons, point, click, drag, type, log on, save, retrieve, print, file, internet, web, search engine, website, reporting, e-safety

Computing – KS2

Pupils should be taught to:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

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Year 3	Year 4	Year 5	Year 6
Computer Science Children will be taught to: - plan a sequence of instructions **give a sequence of instructions, some of which are repeated (repetition) and some which are selected (selection) e.g. if….then, to make things happen)** - program a sequence of commands that results in a planned effect **program and test a simple program** - evaluate their own work and comment on improvements	*Computer Science* Children will be taught to: **use sequence, selection and repetition in computer programs** **predict the outcome of a given algorithm or program and correctly identify if repetition is involved** - understand the difference between the internet and internet services (e.g. the world wide web) - identify a number of computing devices inside and outside the classroom and identify some common forms of input and output	*Computer Science* Children will be taught to: - know that computer programs contain commands that achieve specific actions **write and amend computer programs** - program a number of algorithms that achieve a specific outcome **use repetition, variables and conditional statements in computer programs** - test computer programs and correct any errors	*Computer Science* Children will be taught to: **write and amend more complex computer programs to create a variety of outcomes** **decompose 'problems' by splitting them into smaller 'problems' and designing solutions for each part** - use iteration (repeats and loops), variables and conditional statements (if….then) in computer programs - test computer programs and correct most errors

Digital Literacy Children will be taught to: • **find information by navigating around a website using hyperlinks and the back button** • confidently type web addresses in to a web browser • question credibility of online information • create internet 'favorites' and use them to access websites • **print web pages and copy and paste information in to other applications** • describe how they use IT at home and in school • evaluate their own work, and that of others, and comment on improvements *Information Technology* Children will be taught to: • **combine graphics with text and know how to manipulate them** • **use appropriate effects and resize graphics (including bold, italic and underline)** • **align text (left, right and centre)** • copy text from an internet page to a document	• understand that computers store data as numbers *Digital Literacy* Children will be taught to: • **understand that a computer network means connected computers** • know that a computer network consists of a number of computers and devices that are connected • understand that you can use the internet for activities other than web browsing • confidently enter URLs into an address bar of a browser • **know that not all information available online is reliable and needs to be checked** *Information Technology* Children will be taught to: • **use more advanced features of applications (e.g. word processing or presentation software) to help them match their work to their audience** • send an email • reply to an email • **use the search facility in a database to find the answer to questions**	*Digital Literacy* Children will be taught to: • **use search technology to find things out** • suggest a number of activities that you can use the internet for (e.g. online gaming, voice over internet, email etc.) • **cross-check information provided on one website against that provided on another** • **create digital content for specific purposes** • discuss opportunities for communication and collaboration online • improve their work based on feedback and can comment on the success of their work *Information Technology* Children will be taught to: • **understand that information in the form of text, sound and pictures can be combined to create digital content and communicate with an audience** • **create simple digital content (e.g. a webpage) incorporating text and graphics**	*Digital Literacy* Children will be taught to: • communicate and collaborate using technology and online services • **create simple web content using basic HTML** • know that internet search engines use algorithms to find web content (e.g. web crawling) • use search technology and clear search terms to view web pages and obtain data • use a number of internet services (e.g. voice over internet, emails etc.) • **create digital content for specific purposes and audiences** • **use feedback to improve digital content** *Information Technology* Children will be taught to: • **plan, design and create digital content that incorporates text, images and sound and communicates with an audience** • be able to discuss the rationale behind their designs • develop and refine digital content

• copy images from an internet page • **save and retrieve work to/from a network location** • know how to undo and redo *eSafety* Children will be taught to: • **identify some ways they can keep safe when using ICT** • use ICT to communicate, identify some of the risks and act to minimise them • **know the need for passwords and that they should be kept safe** • **follow e-safety guidelines** • recognise what is acceptable/unacceptable behavior when using technology and online	• carry out searches involving more than one condition to find answers to a variety of questions, sometimes with help • use the sort facility of a database to answer questions *eSafety* Children will be taught to: • **identify a number of ways they can keep safe when using ICT** • know the need to use secure passwords and keep them private • **use ICT to communicate and collaborate, identify some of the risks and act to minimise them** • know that not all information provided on the world wide web is correct and that it needs to be checked • use appropriate search criteria to find relevant information and check its plausibility and usefulness	• recognise and discuss the audience when designing and creating digital content *eSafety* Children will be taught to: • **identify a range of ways they can keep safe when using technology and online and know how to report any concerns** • **know that personal information should only be given to trusted sources** • know that some information on the internet may be misleading or inaccurate and that it needs to be checked • **use technology and online services to communicate and collaborate, identify some of the risks and act to minimise them**	• critically analyse digital content and makes judgements about its suitability for a specific audience *eSafety* Children will be taught to: • **identify a range of ways they can keep safe when using technology and online and know how to report any concerns** • **know that personal information should only be given to trusted sources** • communicate effectively and safely online • use digital tools to communicate and collaborate effectively online • identify some of the risks associated with work and leisure in a digital society and act to minimise them • find information online and check it for accuracy and reliability

Key Vocabulary
Children will continue to use the KS1 vocabulary, building on previously taught knowledge and further developing this.

sequence, repetition, selection, variables, input, output, conditional statements, decompose, analyse, interpret, evaluate, iteration, test, devices, errors, hyperlinks, credibility, favourites, network, realiable, purpose, feeback, HTML, digital content, graphics, bold, italic, underline, align, database, email, send, reply, guidelines, trusted sources,