

KSHSSA Key Stage 3 Computing Grade Descriptors



Strand: Algorithms and Programming			
Grade	Year 7	Year 8	Year 9
Foundation	<p>Understands what an algorithm is and is able to express simple linear algorithms symbolically.</p> <p>Develops their own simple sequential programs using a drag and drop environment.</p> <p>Produces a partially working game in Scratch.</p>	<p>Understands what an algorithm is and is able to express simple linear algorithms symbolically.</p> <p>Creates and executes sequential code in a text-based language.</p> <p>Codes some of the given tasks in Small Basic.</p>	<p>Understands how to trace and code a simple algorithm using basic arithmetic operators, if statements, and basic loops.</p> <p>Can correct issues with support.</p> <p>Codes some of the given tasks in Python.</p>
Core	<p>Understands what an algorithm is and is able to express simple linear algorithms symbolically.</p> <p>Demonstrates some care and precision to avoid obvious errors when coding.</p> <p>Uses arithmetic operators and simple IF ELSE statements.</p> <p>Detects and corrects simple errors with support.</p> <p>Understands and makes some use of variables.</p> <p>Produces a working game in Scratch.</p>	<p>Understands what an algorithm is and is able to express more complex branching algorithms symbolically.</p> <p>Creates, checks and improves code in a text-based language.</p> <p>Understands that programs execute by following instructions and the role of Selection and Iteration.</p> <p>Uses arithmetic operators and IF/ELSE statements.</p> <p>Detects and corrects simple errors & uses variables.</p> <p>Codes all of the given tasks in Small Basic.</p>	<p>Understands how to trace and code a simple algorithm using basic arithmetic operators, selection statements, and loops</p> <p>Uses logical reasoning to predict the behaviour of programs.</p> <p>Detects and corrects simple semantic errors i.e. debugging, in programs.</p> <p>Declares and uses variables.</p> <p>Can use decomposition and abstraction with support.</p> <p>Codes all of the given tasks in Python.</p>
Proficient	<p>Understands that programs execute by following precise instructions.</p> <p>Uses arithmetic operators, IF statements and loops appropriately within programs.</p> <p>Detects and corrects syntax and logic errors</p> <p>Develops working code to achieve given goals.</p> <p>Uses variables appropriately in their code</p> <p>Uses IF, ELSE IF and ELSE in their code.</p> <p>Produces a working game in Scratch that goes beyond the provided skeleton code.</p>	<p>Understands what an algorithm is and is able to express complex branching algorithms symbolically.</p> <p>Creates, debugs and refines code in a text-based language.</p> <p>Understands that programs execute by following sequential instructions and the role of Selection and Iteration.</p> <p>Uses arithmetic and conditional operators, IF/ELSE IF/ELSE and SELECT CASE statements and Definite/Indefinite loops</p> <p>Detects and corrects logic errors</p> <p>Uses variables effectively in their code.</p> <p>Can use Divide and Conquer to find a solution.</p> <p>Codes all of the given tasks in Small Basic with some extension work.</p>	<p>Understands how to trace and code a simple algorithm using basic arithmetic operators, selection statements, iteration and variables.</p> <p>Understands the basic principles of decomposition and abstraction to turn a large/complex problem into manageable chunks</p> <p>Uses logical reasoning to predict the behaviour of programs and debugs code efficiently</p> <p>Designs, writes and debugs modular programs using procedures and knows that procedures can be used to hide the detail with sub-solution (procedural abstraction).</p> <p>Codes all of the given tasks in Python with some extension work and appropriate use of decomposition.</p>



KSHSSA Key Stage 3 Computing Grade Descriptors

Exceptional	<p>Understands that programs execute by following precise instructions.</p> <p>Uses arithmetic operators, IF/ELSE IF/ELSE statements and Definite/Indefinite loops appropriately within programs.</p> <p>Detects and corrects syntax and logic errors independently</p> <p>Develops efficient and well-presented code to achieve given goals.</p> <p>Uses variables appropriately and efficiently in their code</p> <p>Produces a complete and working game in Scratch using a range of programming tools and techniques.</p>	<p>Understands what an algorithm is and is able to express complex branching algorithms symbolically and in pseudocode/structured English.</p> <p>Creates, debugs and refines code in a text-based language, considering memory and performance issues.</p> <p>Independently uses Sequence, Selection and Iteration effectively in their code</p> <p>Uses arithmetic and conditional operators, including Modulus, != and ^</p> <p>Detects and corrects syntax, logic and runtime errors</p> <p>Uses variables efficiently in their code.</p> <p>Understands how Divide and Conquer can be used to efficiently find a solution.</p> <p>Codes all of the given tasks in Small Basic and several extensions tasks.</p>	<p>Understands that programming bridges the gap between algorithmic solutions and computers. Has practical experience of a high-level textual language, including using standard libraries when programming. Uses a range of operators and expressions e.g. Boolean, and applies them in the context of program control. Selects the appropriate data types.</p> <p>Uses nested selection statements. Appreciates the need for, and writes, custom functions including use of parameters. Knows the difference between, and uses appropriately, procedures and functions. Understands and uses negation with operators. Uses and manipulates one dimensional data structures. Detects and corrects syntactical errors.</p> <p>Appreciates the effect of the scope of a variable e.g. a local variable cannot be accessed from outside its function. Understands and applies parameter passing. Understands the difference between, and uses, both pre-tested e.g. while, and post-tested e.g. until loops. Applies a modular approach to error detection and correction.</p> <p>Codes all of the given tasks in Python and several extensions tasks, demonstrating a good grasp of the languages structure and syntax and including the use of procedures/functions to aid decomposition.</p>
-------------	---	--	---

KSHSSA Key Stage 3 Computing Grade Descriptors



Strand: Data, Encoding and Encryption			
Grade	Year 7	Year 8	Year 9
Foundation	<p>Recognises that digital content can be represented in many forms and distinguishes between some of these forms & how they communicate information.</p>	<p>Recognises different types of data: text, number, image, sound.</p> <p>Uses spreadsheets to store basic data and produce limited information.</p>	<p>Appreciates that programs can work with different types of data and can find the required information using basic searching.</p> <p>Understands that decimal is not the only number system.</p> <p>Understands the difference between hardware & software and input, output and storage devices.</p>
Core	<p>Recognises different types of data: text, number.</p> <p>Appreciates that programs can work with different types of data.</p> <p>Recognises that data can be structured in tables to make it useful and uses spreadsheets to store and perform basic analysis of numeric data.</p> <p>Understands the difference between data and information.</p> <p>Uses filters or perform single criteria searches to find appropriate information.</p>	<p>Appreciates that programs can work with different types of data.</p> <p>Recognises that data can be structured in tables to make it useful.</p> <p>Understands the difference between data and information and can use charts/graphs to present their findings</p> <p>Uses filters or can perform single criteria searches for information.</p> <p>Performs more complex searches for information e.g. using Boolean and relational operators.</p> <p>Uses spreadsheets to store and perform some data analysis using formulae and simple functions.</p>	<p>Performs more complex searches for information e.g. using Boolean and relational operators, domain name filters and other settings.</p> <p>Presents findings clearly using well formatted tables, charts and graphs appropriately.</p> <p>Understands that all digital devices are based on the use of ON/OFF states represented using Binary.</p> <p>Can convert between Binary and Denary and perform basic binary calculations.</p> <p>Understands that images, sound and text are encoded into Binary for processing and storage.</p> <p>Understands the role of encryption and can apply basic ciphers.</p> <p>Understands the role of the main components and peripherals in a desktop computer.</p>
Proficient	<p>Performs more complex searches for information e.g. using Boolean and relational operators.</p> <p>Analyses and evaluates data and information, and recognises that poor quality data leads to unreliable results and inaccurate conclusions.</p> <p>Uses spreadsheets to store, analyse and present numeric information clearly using formatted tables and charts.</p> <p>Uses single search criteria and filtering to narrow down results effectively.</p>	<p>Analyses and evaluates data and information, and summarises and presents information clearly using well-formatted tables, charts and graphs.</p> <p>Performs more complex searches for information e.g. using Boolean and relational operators, domain name filters and other settings.</p> <p>Uses effective sorting and filtering to narrow down search results.</p> <p>Uses spreadsheets to store and perform data analysis using formulae and a range of functions.</p>	<p>Performs complex searches for information e.g. using composite Boolean and relational operators, domain name filters and other settings.</p> <p>Presents findings clearly using suitable tables, charts & graphs.</p> <p>Understands that a CPU's transistors rely on ON/OFF states and that these are represented using Binary.</p> <p>Can convert between Binary, Hexadecimal and Denary and perform binary addition and subtraction.</p> <p>Understands how images, sound and text are encoded into Binary for processing and storage.</p> <p>Understands the role of encryption and can apply a range of common ciphers.</p>

KSHSSA Key Stage 3 Computing Grade Descriptors



			<p>Understands the role of the main components and peripherals in a desktop computer and can compare them.</p>
<p>Exceptional</p>	<p>Performs more complex searches for information e.g. using Boolean and relational operators, domain name filters and language settings.</p> <p>Analyses and evaluates data and information, and summarises and presents information clearly using well-formatted tables.</p> <p>Uses spreadsheets to accurately store, analyse and present numeric information clearly using formatted tables and charts.</p> <p>Uses complex search criteria and effective sorting and filtering to narrow down results.</p>	<p>Analyses, evaluates and summarises data effectively.</p> <p>Presents findings clearly using well formatted tables, charts and graphs appropriately.</p> <p>Performs more complex searches for information e.g. using Boolean and relational operators, domain name filters and other settings.</p> <p>Uses effective sorting and filtering to narrow down results and evaluates the accuracy of their findings, considering data validity and bias.</p> <p>Uses spreadsheets to store and perform data analysis using formulae and wide a range of functions and tools.</p>	<p>Understands why and how numbers, images, sounds and characters are encoded into Binary.</p> <p>Can convert between Binary, Hexadecimal and Denary and perform binary shifting, addition and subtraction including the two's complement method.</p> <p>Understands the relationship between resolution and colour depth, including the effect on file size.</p> <p>Understands the relationship between bit depth, sample rate and bit rate in sound files, including the effect on quality and file size.</p> <p>Knows the relationship between data representation and data quality. Understands the relationship between binary and electrical circuits, including Boolean logic. Understands how and why values are data typed in many different languages when manipulated within programs.</p> <p>Understands and can explain the need for data compression, and performs simple compression methods.</p> <p>Understands the role of encryption and can apply a range of common and more complex ciphers, and identify strengths and weaknesses of different approaches.</p> <p>Understands the role of the main components in a PC and can accurately compare and choose components using technical specifications and appropriate performance indicators.</p>

KSHSSA Key Stage 3 Computing Grade Descriptors



Strand: Communication and E-Safety

Grade	Year 7	Year 8	Year 9
Foundation	<p>Understands some of the risks associated with the online world and social media.</p> <p>Obtains content from the world wide web using a web browser.</p> <p>Uses basic HTML tags to produce webpages.</p>	<p>Understands the importance of communicating safely and respectfully online, and the need for keeping personal information private.</p> <p>Knows what to do when concerned about content or being contacted.</p> <p>Uses basic HTML to produce webpages.</p>	<p>Understands the importance of communicating safely and respectfully online, and the need for keeping personal information private.</p> <p>Understands some of the moral and ethical issues associated with technology.</p> <p>Understands some of the risks to IT systems.</p>
Core	<p>Understands the importance of communicating safely and respectfully online, and the need for keeping personal information private.</p> <p>Obtains suitable content from the world wide web using a web browser.</p> <p>Uses basic HTML and inline CSS styling to produce webpages.</p>	<p>Navigates the web and can carry out simple web searches to collect digital content.</p> <p>Demonstrates use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online.</p> <p>Recognises what is acceptable and unacceptable behaviour when using technologies and online services.</p> <p>Uses a range of HTML and inline CSS tags to produce webpages.</p>	<p>Recognises what is acceptable and unacceptable behaviour when using technologies and online services and demonstrates responsible use of technologies and online services.</p> <p>Understands some of the legal, moral and ethical issues associated with technology.</p> <p>Understands the main threats to an IT system and can suggest different methods to minimise these risks.</p>
Proficient	<p>Demonstrates responsible use of technologies and online services, and knows a range of ways to report concerns.</p> <p>Recognises what is acceptable and unacceptable behaviour when using technologies and online services.</p> <p>Efficiently obtains suitable content from the world wide web using a web browser.</p> <p>Uses a range of HTML and CSS tags to produce webpages.</p>	<p>Selects, combines and uses internet services.</p> <p>Demonstrates responsible use of technologies and online services, and knows a range of ways to report concerns.</p> <p>Understands how to effectively use search engines, and knows how search results are selected, including that search engines use web crawler programs.</p> <p>Uses a wide range of HTML and inline CSS tags to produce an effective and well-formatted website, including some use of 3rd party scripts.</p>	<p>Demonstrates use of computers safely and responsibly, including physical health and well-being.</p> <p>Recognises what is acceptable and unacceptable behaviour when using technologies and online services and demonstrates responsible use of technologies and online services.</p> <p>Understands the legal, moral and ethical issues associated with technology.</p> <p>Understands the potential threats to an IT system and can suggest different methods to mitigate these risks.</p>



KSHSSA Key Stage 3 Computing Grade Descriptors

Exceptional	<p>Demonstrates a clear awareness of the potential dangers of online services how to protect themselves and others using reporting and blocking tools.</p> <p>Understands how to effectively use search engines, and knows how search results are selected, including that search engines use web crawler programs and paid promotions.</p> <p>Uses a wide range of HTML and CSS tags to produce effective and well-formatted webpages.</p>	<p>Selects, combines and uses internet services efficiently.</p> <p>Demonstrates responsible use of technologies and online services, and knows a range of ways to report concerns.</p> <p>Understands how to effectively use search engines, and knows how search results are selected, including that search engines use web crawler programs and paid promotions.</p> <p>Uses more complex HTML and embedded CSS styling to produce an effective and well-formatted website, including effective use of 3rd party scripts.</p>	<p>Demonstrates use of computers safely and responsibly, including physical health and well-being.</p> <p>Recognises what is acceptable and unacceptable behaviour when using technologies and online services and demonstrates responsible use of technologies and online services.</p> <p>Understands the legal, moral and ethical issues associated with technology.</p> <p>Understands a wide range of potential threats to an IT system and can suggest appropriate methods to mitigate these risks and enable a speedy recovery.</p>
-------------	---	--	--

KSHSSA Key Stage 3 Computing Grade Descriptors



Strand: Information Technology

Grade	Year 7	Year 8	Year 9
Foundation	<p>Uses software under the control of the teacher to create, store and edit digital content using appropriate file and folder names.</p> <p>Knows common uses of information technology beyond the classroom.</p> <p>Talks about their work and makes some changes to improve it.</p>	<p>Uses technology with increasing independence to purposefully organise digital content.</p> <p>Shows some awareness of audience, purpose and quality.</p>	<p>Uses a variety of software to manipulate and present digital content.</p> <p>Shares their experiences of technology in school and beyond the classroom.</p> <p>Talks about their work and makes improvements to solutions based on feedback received.</p>
Core	<p>Uses technology with increasing independence to purposefully organise digital content.</p> <p>Shows some awareness for the audience and purpose when producing digital content.</p> <p>Uses a variety of software to manipulate and present digital content:</p> <p>Creates digital content to achieve a given goal through combining software packages.</p> <p>Makes appropriate improvements to solutions based on feedback received, and can comment on the success of the solution.</p> <p>Manages their files effectively.</p>	<p>Uses a variety of software to manipulate and present digital content.</p> <p>Demonstrates awareness of quality, audience or purpose in their work.</p> <p>Talks about their work and makes improvements to solutions based on feedback received.</p> <p>Creates digital content to achieve a given goal through combining software packages</p> <p>Makes appropriate improvements to solutions based on feedback received, and can comment on the success of the solution.</p> <p>Demonstrates some ability to manage their time and resources.</p>	<p>Collects, organises and presents data and information in digital content.</p> <p>Creates digital content to achieve a given goal through combining software packages.</p> <p>Makes appropriate improvements to solutions based on feedback received, and can comment on the success of their work.</p> <p>Makes judgements about digital content when evaluating and repurposing it for a given audience.</p> <p>Demonstrates a clear awareness of quality, audience and purpose in their work.</p> <p>Understands the potential of information technology for collaboration when computers are networked.</p> <p>Uses criteria to evaluate the quality of solutions and can identify improvements, making some refinements to the solution and future solutions.</p>
Proficient	<p>Makes judgements about digital content when evaluating and repurposing it for a given audience.</p> <p>Recognises the audience and purpose when designing and creating digital content.</p> <p>Uses criteria to evaluate the quality of solutions, can identify improvements making some refinements to the solution, and future solutions.</p> <p>Organises and manages their files.</p>	<p>Uses a wide variety of software to manipulate and present digital content independently.</p> <p>Demonstrates a clear awareness of quality, audience and purpose in their work.</p> <p>Uses criteria to evaluate the quality of solutions and can identify improvements, making some refinements to the solution.</p> <p>Manages their time and resources effectively.</p>	<p>Evaluates the appropriateness of digital devices, internet services and application software to achieve given goals.</p> <p>Demonstrates a clear awareness of quality, audience and purpose in their work and uses appropriate tools to check their work independently.</p> <p>Designs criteria to critically evaluate the quality of solutions, uses the criteria to identify improvements and can make appropriate refinements to the solution.</p>

KSHSSA Key Stage 3 Computing Grade Descriptors



Exceptional	<p>Designs criteria to critically evaluate the quality of solutions, uses the criteria to identify improvements and can make appropriate refinements to the solution.</p> <p>Justifies the choice of and independently combines and uses multiple digital devices, internet services and application software to achieve given goals.</p> <p>Uses the feedback from the users to identify improvements and can make appropriate refinements to the solution.</p> <p>Organises and manages their files efficiently.</p>	<p>Independently uses a wide variety of software to manipulate and present digital content independently, using tools and features efficiently.</p> <p>Demonstrates a clear awareness of quality, audience and purpose in their work.</p> <p>Uses criteria to evaluate the quality of solutions and can identify improvements, making some refinements to it.</p> <p>Evaluates the appropriateness of digital devices, internet services and application software to achieve given goals.</p> <p>Manages their time and resources effectively.</p>	<p>Justifies the choice of and independently combines and uses multiple digital devices, internet services and application software to achieve given goals.</p> <p>Evaluates the trustworthiness of digital content and considers the usability of visual design features when designing and creating digital artefacts for a known audience.</p> <p>Designs criteria for users to evaluate the quality of solutions, uses the feedback from the users to identify improvements and can make appropriate refinements to the solution.</p> <p>Considers the properties of media when importing them into digital artefacts.</p> <p>Documents user feedback, the improvements identified and the refinements made to the solution.</p> <p>Understands the ethical issues surrounding the application of information technology, and the existence of legal frameworks governing its use e.g. Data Protection Act, Computer Misuse Act, Copyright etc.</p>