KING JAMES'S SCHOOL
KNARESBOROUGH

Edexcel GCSE Computer Science Learning Journey

	Autumn Term	Spring Term	Summer Term
Year 10	Working With Data — variables, constants, data types, arithmetic operators & debugging. Problem-solving tasks: My Pet, Split the Pizza. Hardware & CPU Architecture — FDE cycle, buses, stored program concept. Selection & flowcharts; IF statements & Boolean logic. Embedded Systems — RAM, ROM, optical, magnetic & solid-state storage.	Repetition — WHILE, FOR loops, counters, flags & random numbers. Tasks: Guessing Game, Theme Park Ride, Fever Monitor. Data Representation — binary, denary, hexadecimal, two's complement & binary shifts. Bitmaps, Sound & Compression — pixels, ADC, sample rate, lossy & lossless. 1D Data Structures — lists/arrays, indexing, append/delete, iteration.	Operating Systems & Utility Software — file management, scheduling, memory allocation, compression, backup & defragmentation. Subprograms — procedures, functions, parameters, global vs local variables, reusable subroutines. Turtle Programming — coordinates, polygons, decomposition & abstraction. Combining subprograms for complex graphics.

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Autumn Term	Spring Term	Summer Term	
Networks & Internet Technologies — LAN/WAN, routers, MAC & IP addressing, bandwidth, latency, Wi-Fi, Bluetooth, NFC, RFID. Packet switching, TCP/IP, HTTP/FTP/SMTP. Strings & Validation — presence, length, range & format checks; exception handling. Ethical, Legal, Cultural & Environmental Issues — Data Protection Act, Computer Misuse Act, copyright.	Programming Languages — high/low level, translators: compilers, interpreters, assemblers. 1D Structures & Searching — linear search, binary search, bubble sort & merge sort. 2D Data Structures — tables/records, searching rows, nested iteration. Working With Files — reading, writing, appending, CSV processing, storing data in 2D lists. Testing; Boolean logic & truth tables; AI & Machine Learning; Cybersecurity — malware, phishing, firewalls, encryption & IoT security.	Final exam practice	**Year 11**