OCR J277 EXAM PAPER 2					Video links	Notes
Topic	**Sub Topic**					
2.1.1 Computational thinking	Principles of computational thinking					
	o Abstraction				https://www.youtube.com/watch?v=wLJ1n47sGRI&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV	
	o Decomposition				https://www.youtube.com/watch?v=zcLlXCzb4IQ&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV&index=2	
	o Algorithmic Thinking.				https://www.youtube.com/watch?v=5EsSYVP_eMU&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV&index=3	
2.1.2 Designing, creating and refining algorithms	Identify the inputs, processes, and outputs for a problem				https://www.youtube.com/watch?v=SIOleZLPMb4&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV&index=4	
	Structure diagrams				https://www.youtube.com/watch?v=F6f6W7S9Y6k&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV&index=5	
	Create, interpret, correct, complete, and refine algorithms using:					
	o Pseudocode				https://www.youtube.com/watch?v=MFojJssyKLw&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV&index=6	
	o Flowcharts					
	o Reference language/high-level programming language					
	Identify common errors				https://www.youtube.com/watch?v=I0e74jfo1Es&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV&index=7	
	Logic					
	Syntax					
2.1.3 Searching and sorting algorithms	Standard searching algorithms:					
	o Binary search				https://www.youtube.com/watch?v=pKW-hwvD2-A&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV&index=9	
	o Linear search				https://www.youtube.com/watch?v=Hr5cP7LQUkU&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV&index=10	
	Standard sorting algorithms:					
	o Bubble sort				https://www.youtube.com/watch?v=aOZBMnTswL8&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV&index=11	
	o Merge sort				https://www.youtube.com/watch?v=Y8y7PnlE4Dg&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV&index=12	
	o Insertion sort				https://www.youtube.com/watch?v=jmdP4Y-x0Hc&list=PLCiOXwirraUAzsy9tacd98LBTbj7cyFQV&index=13	
2.2.1 Programming fundamentals	The use of variables, constants, operators, inputs, outputs and				https://www.youtube.com/watch?v=dpBe_TXFqZ8&list=PLCiOXwirraUAujkBVyzSh-LjjTCDwMU8v	
	The use of the three basic programming constructs used to control the				https://www.youtube.com/watch?v=t0VphK9cWgE&list=PLCiOXwirraUAujkBVyzSh-LjjTCDwMU8v&index=2	
	o Sequence					
	o Selection					
	o Iteration (count- and condition- controlled loops)					
	The common arithmetic operators				https://www.youtube.com/watch?v=qozjsKdyBzM&list=PLCiOXwirraUAujkBVyzSh-LjjTCDwMU8v&index=3	
	The common Boolean operators AND, OR, NOT				https://www.youtube.com/watch?v=IILJVSOg6Oo&list=PLCiOXwirraUAujkBVyzSh-LjjTCDwMU8v&index=4	
2.2.2 Data types	The use of data types:				https://www.youtube.com/watch?v=oQAQNKomako&list=PLCiOXwirraUAujkBVyzSh-LjjTCDwMU8v&index=5	
	o Integer					
	o Real/float					
	o Boolean					
	o Character and string					
	o Casting					
	The use of records to store data				https://www.youtube.com/watch?v=MN6FizrhlQI&list=PLCiOXwirraUAujkBVyzSh-LjjTCDwMU8v&index=8	
	The use of SQL to search for data				https://www.youtube.com/watch?v=zrEF1jeMwS8&list=PLCiOXwirraUAujkBVyzSh-LjjTCDwMU8v&index=9	
	The use of arrays (or equivalent) when solving problems, and				https://www.youtube.com/watch?v=izvYtCaD9EE&list=PLCiOXwirraUAujkBVyzSh-LjjTCDwMU8v&index=10	
	including both one-dimensional (1D)					
	two-dimensional (2D) arrays					
	Random number generation				https://www.youtube.com/watch?v=bni4XVtEJp4&list=PLCiOXwirraUAujkBVyzSh-LjjTCDwMU8v&index=12	
2.3.1 Defensive design	Defensive design considerations:				https://www.youtube.com/watch?v=2IIF4Infdf4&list=PLCiOXwirraUBb_Y1hsCHRgbvq0wXFVnj2	
	o Anticipating misuse				https://www.youtube.com/watch?v=8I0il6GQbTo&list=PLCiOXwirraUBb_Y1hsCHRgbvq0wXFVnj2&index=2	
	o Authentication					
	Input validation					
	Maintainability:				https://www.youtube.com/watch?v=YwW_fBw1eCY&list=PLCiOXwirraUBb_Y1hsCHRgbvq0wXFVnj2&index=3	
	o Naming conventions					
	o Indentation					
	o Commenting				https://www.youtube.com/watch?v=upt_QTi0id8&list=PLCiOXwirraUBb_Y1hsCHRgbvq0wXFVnj2&index=4	
	The purpose of testing				https://www.youtube.com/watch?v=IgOXjw76d0g&list=PLCiOXwirraUBb_Y1hsCHRgbvq0wXFVnj2&index=5	
	Types of testing:					

2.3.2 Testing	o Iterative					
	o Final/terminal					
	Identify syntax and logic errors					
	Selecting and using suitable test data:				https://www.youtube.com/watch?v=FbnEBkN_Nko&list=PLCiOXwirraUBb_Y1hsCHRgbvq0wXFVnj2&index=6	
	o Normal					
	o Boundary - test data as data of the correct type which is on the very edge of being valid					
	o Invalid/Erroneous					
	Refining algorithms				https://www.youtube.com/watch?v=pBz6YoFID0Y&list=PLCiOXwirraUBb_Y1hsCHRgbvq0wXFVnj2&index=7	
2.4.1 Boolean logic	Simple logic diagrams using the operations AND, OR and NOT				https://www.youtube.com/watch?v=jN9WtjyjXf4&list=PLCiOXwirraUCY53WmW5wqNgM4P-vms0Kl&index=1	
	Truth tables				https://www.youtube.com/watch?v=U7dbx9fllLc&list=PLCiOXwirraUCY53WmW5wqNgM4P-vms0Kl&index=2	
	Combining Boolean operators using AND, OR and NOT				https://www.youtube.com/watch?v=M7h8XBjp0-s&list=PLCiOXwirraUCY53WmW5wqNgM4P-vms0Kl&index=4	
	Applying logical operators in truth tables to solve problems					