Computer Science J277 OCR

Year 10

		Comp 01	Comp 02	Comp 03	Recap Recall. In and On/Starters	Homeworks
Term 1						
Week 1	ALGORITHMS		Introduction to Course setting up etc	The use of variables, constants, operators, inputs, outputs, assignments	Abstraction, Decomposition, Algorithmic thinking, Flowcharts, Pseudocode, Syntax and Logic errors, Trace Tables	Input, output, concatenation
Week 2			Computational thinking	The use of variables, constants, operators, inputs, outputs, assignments	Abstraction, Decomposition, Algorithmic thinking, Flowcharts, Pseudocode, Syntax and Logic errors, Trace Tables	Input, output, concatenation, casting
Week 3			Searching algorithms	The use of data types: Integer, Real, Boolean, Character and string, Casting	Abstraction, Decomposition, Algorithmic thinking, Flowcharts, Pseudocode, Syntax and Logic errors, Trace Tables	Input, output, concatenation, casting
Week 4			Sorting algorithms	The use of the three basic programming constructs used to control the flow of a program: Sequence	Abstraction, Decomposition, Algorithmic thinking, Flowcharts, Pseudocode, Syntax and Logic errors, Trace Tables	Input, output, concatenation, casting, MOD
Week 5			Developing algorithms using flow diagrams	The use of the three basic programming constructs used to control the flow of a program:Iteration (count- and	Abstraction, Decomposition, Algorithmic thinking, Flowcharts, Pseudocode, Syntax and Logic errors, Trace Tables	Input, output, concatenation, casting, DIV
Week 6			Developing algorithms using pseudocode	The use of the three basic programming constructs used to control the flow of a program:Iteration (count- and	Abstraction, Decomposition, Algorithmic thinking, Flowcharts, Pseudocode, Syntax and Logic errors, Trace Tables	Input, output, concatenation, casting, DIV, relational operators
Week 7			Interpret, correct or complete algorithms	The common Boolean operators AND, OR and NOT	Abstraction, Decomposition, Algorithmic thinking, Flowcharts, Pseudocode, Syntax and Logic errors, Trace Tables	Input, output, concatenation, casting, DIV, relational operators
Half Term						
Week 8	PROGRAMMING		Summative Tests	The common arithmetic operators	Sorting and searching algorithms	Revision support
Week 9			Programming Fundamentals	Naming conventions, Indentation, Commenting		Input, output, concatenation, boolean operators
Week 10			Sequence and selection	Ability to manipulate strings, including: Concatenation, Slicing		Input, output, concatenation, boolean operators
Week 11			Iteration	String Handling/operations: String Length, Substrings, Uppercase, Lowercase, Ascii Conversion (ASC, CHR)	Abstraction, Decomposition, Algorithmic thinking, Flowcharts, Pseudocode, Syntax and Logic errors, Trace Tables	Input, output, concatenation, string manipulation
Week 12			Arrays	The use of basic file handling operations: Open, Read, Write, Close		Input, output, concatenation, string manipulation
Week 13			Procedures and functions	The use of arrays (or equivalent) when solving problems, including both one-dimensional and two-dimensional arrays	Binary, Linear, Search, Bubble, Merge and Insertion Sort	Input, output, concatenation, string manipulation
Week 14			Records and files	Skills Recap		Input, output, concatenation, string manipulation
Week 15			SQL	Skills Recap		IF statements
Week 16			Summative Tests	Skills Recap	Abstraction, Decomposition, Algorithmic thinking, Flowcharts, Pseudocode, Syntax and Logic errors, Trace Tables	Revision support
Term 2						
Week 17	DATA REP	Storage units and binary numbers		How to use sub programs (functions and procedures) to produce structured code	Binary, Linear, Search, Bubble, Merge and Insertion Sort	IF statements, boolean operators
Week 18		Binary arithmetic and hexadecimal		How to use sub programs (functions and procedures) to produce structured code	Variables, Constants, operators, inputs, outputs, and assignments. Programming Constructs: Selection, Sequence, Iteration. Arithmetic and Boolean Operators	IF statements, DIV/MOD
Week 19		Charactors		Random number generation	Data types and Casting	ELIF
Week 20		Images		Random number generation	String Manipulation, file handling, records, SQL, arrays (1D and 2D), Sub Programs (Procedures and Functions), Random name generator.	ELIF
Week 21		Sound		Skills Recap	Abstraction, Decomposition, Algorithmic thinking, Flowcharts, Pseudocode, Synatax and Logic errors, Trace Tables	FOR loops
Week 22		Compression		Defensive design considerations: Anticipating misuse, Authentication, Input validation, Maintainability:	Binary, Linear, Search, Bubble, Merge and Insertion Sort	FOR loops
Half Term						
Week 23	SYS ARCH	Summative Tests		Defensive design considerations: Anticipating misuse, Authentication, Input validation, Maintainability:	Variables, Constants, operators, inputs, outputs, and assignments. Programming Constructs: Selection, Sequence, Iteration. Arithmetic and Boolean Operators	Revision support
Week 24		The CPU		Testing - Final and Iterative	Data Storage - Data Rep - Bianry Denary, Hex, Addition, Shifts, Charactors Images and Sound	For loops
Week 25		CPU Performance		Testing - Normal, Boundary, Invalid, Erroneous	Data types and Casting	While loops, boolean operators
Week 26		Memory		Testing (mixture of above)	Starter Contingency	Nested FOR loops
Term 3						
Week 26		Secondary Storage		Skills Contingenency/Mini Project	Abstraction, Decomposition, Algorithmic thinking, Flowcharts, Pseudocode, Synatax and Logic errors, Trace Tables	Lists
Week 27		Summative Tests		Skills Contingenency/Mini Project	Binary, Linear, Search, Bubble, Merge and Insertion Sort	Revision support
Week 28			Logic and Languages - Logic diagrams and truth tables	Skills Contingenency/Mini Project	Variables, Constants, operators, inputs, outputs, and assignments. Programming Constructs: Selection, Sequence, Iteration. Arithmetic and Boolean Operators	Arrays

Week					
Week 29	LOGIC AND LANGUAGE		Defensive design	Project	Data Storage - Data Rep - Bianry Denary, Hex, Addition, Shifts, Charactors Images and Sound	Functions
Week 30			Errors and testing	Project	Architecture of a CPU - Fetch, Decode, Execute. Componets - ALU. CU, Cahce, Registers,, Von Neumann/registers - MAR, MDR, PC, ACC	Functions
Week 31			Translators and facilities of languages	Project	CPU Perfromance - Clock Speed, Cache Size, Number of Cores. 1.1.3 - Embedded Systems	Procesdures
Week 32			The Integrated Development Enviroment	Project	Primary Storage - Ram, Rom and Virtual Memory	File creating/reading/writing
Half Term						
Week 33			Summative Tests	Project	String Manipulation, file handling, records, SQL, arrays (1D and 2D), Sub Programs (Procedures and Functions), Random name generator.	Revision support
Week 34			End of year test revision	Mini Project - Pseudocode Evidence	Boolean logic and Truth Tables	File creating/reading/writing
Week 35			End of Year Test revision	Mini Project - Algorithm Evidence	Authetication and Anticipating Misuse, Input Validation, Program Maintainability	Validation checks
Week 36			Contingency, Revision for end of year test and Programming Practice		Languages - High and Low, Translators and Compilers & IDE's	Validation checks
Week 37			End of year test		Starter Contingency	Revision support
Week 38			WOW WEEK			