<u>Computer Science – KS 5</u>

<u>&</u> 2

Summer

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Learners to revised all content developed, and prepare for final exams

Recap & Exams

Recap on Boolean logic operations, manipulate Boolean expressions including the use of Karnaugh maps.

Use logic gate diagrams and truth tables

Boolean Algebra

learners will build on the knowledge and understanding gained in year 12 to:

- Write webpages using HTML, CSS, and JavaScript
- Differentiate between server and client-side processing
- Identify the benefits and drawbacks of both types of processing.



Web Technologies

Learners to provide annotated evidence of testing the solution of their development process. Provide annotated evidence of usability testing

Learners to discuss the maintainability of the solution, and the potential further development of the solution of their work

Maintenance & Development

Evaluation(Testing to inform development)

Learners needs to develop understanding of:

Interpreting and modifying Structural Query Language

Learners to develop understanding of: -

- Breaking down the problem into smaller parts suitable for computational solutions justifying any decisions made.
- Explain and justify the structure of the solution.



- **Referential integrity**
- Normalization to 3NF



- - Describe usability features to be included in the solution.
 - Provide annotated evidence of each stage of the iterative development process, justifying any decision made.

Design and develop the solution

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- **Boolean logic, Boolean expressions** lacksquare
- Construct logic gate diagrams from Boolean expressions and logic gate diagrams
- De Morgan's laws, and be able to apply it to a Boolean expression
- Simplify Boolean expressions using Karnaugh maps

Learners will be introduced to programming project. The underlying approach to the project is to apply the principles of computational thinking to a practical coding problem. Their first task is to identify a problem, identify the stakeholders, research the problem and specify a proposed solution

Analysis of the problem

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Summe

Boolean Algebra

Learners need to develop knowledge and understanding of:

- **Data Protection Acts 1998**
- Computer Misuse Act 1990
- **Copyright and Patent Acts 1998**
- **Regulation of Investigatory Powers Acts 2000**

Legal, moral, cultural and ethical issues

Learners will develop knowledge and understanding of analysis and design of algorithms for a given situation. Compare complexity of algorithms, and the methods to determine the efficiency of different algorithms

Learners will develop knowledge understanding of:

- Programming data types such as integer, real, Boolean, Character string etc.
- Use of sign and magnitude and two's compliment to represent negative
- numbers in binary represented in a binary floating-point representation.
- How character sets (ASCII and UNICODE) are used to represent text

Data Types & Data structure

Spring 2



Exchanging Data

Algorithms



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THINKING AHEAD



Learners need to develop knowledge and understanding of types of software and the different methodologies used to develop software. This include:- System software, Application Generation, Software development, **Programming languages**

Learners will develop understanding of programming techniques such as sequence, iteration, and branching, recursion, modularity, the use of an IDE development, and computational methods.

Software and software development

Problem solving and Programming

Learners need to develop an understanding of:

- The structure and function of the processor
- Types of the processor
- Input, output, and storage devices



Characteristics of contemporary processors, input, output and storage devices



Elements of computational thinking



Develop understanding of thinking abstractly, thinking procedurally, Thinking logically and thinking concurrently