

Definitions and Concepts for AQA Computer Science AS-level

Topic 3: Systematic Approach to Problem Solving

3.1 Aspects of Software Development

3.1.1 Analysis

Analysis: The first stage of software development where the problem is defined and the requirements for the system are identified.

Data Model: An abstract model organising data items and their relations to one another and to the real-world entities they represent.

3.1.2 Design

Design: The second stage of software development where the algorithms, data structures and user interfaces are designed. Data input, processing, output and security specifications are taken into account along with hardware considerations.

Modularity: A software design technique based on the principle of decomposing the functionality of a program into independent components known as modules.

3.1.3 Implementation

Implementation: The third stage of software development where the actual code and data structures are written and developed based on the agreed design specifications to produce prototypes.

3.1.4 Testing

Boundary Test Data: Test data typically on the edge case of the acceptable range of inputs.

Erroneous Test Data: Test data typically outside of the acceptable range of inputs that is invalid and should trigger the system to produce an error.

Normal (Typical) Test Data: Test data within the acceptable range for the system. The expected result should be obtained from the system.

Testing: The fourth stage of software development where the system is tested for errors and inconsistencies with the analysis and design specifications using a variety of different input data and scenarios.

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3.1.5 Evaluation

Evaluation: The final stage of software development where the system is critically reviewed with the user specification and judged according to the performance objectives and its usefulness to solving the problem.

