Exam Overview and Tips

Assessment Overview and Tips

ASSESSMENT OVERVIEW

Paper	Name	Duration	Marks	Weighting
Paper 1	Theory Fundamentals	1h 30m	75	50% AS / 25% A-Level
Paper 2	Fundamental Problem-solving	2h	75	50% AS / 25% A-Level
Paper 3	Advanced Theory	1h 30m	75	25% A-Level
Paper 4	Practical	2h 30m	75	25% A-Level

PRACTICE EXAM TIPS

Before the Exam:

1. Review all topics systematically
2. Practice past paper questions
3. Understand concepts, don't just memorize
4. Know key definitions and terminology
5. Practice calculations (binary, file sizes, etc.)

During the Exam:

1. Read questions carefully
2. Show working for calculations
3. Write clearly and logically
4. Answer all questions (even if unsure)
5. Manage time effectively
6. Use appropriate technical terms

Common Mistakes to Avoid:

1. Confusing binary prefixes with decimal
2. Forgetting two's complement for negative numbers
3. Not reading questions thoroughly
4. Poor time management
5. Incomplete answers
6. Calculator errors in calculations

FINAL NOTES (AS)

This comprehensive revision guide covers all topics in the Cambridge International AS Level Computer Science (9618) syllabus. Use this document alongside:

1. Past examination papers
2. Practical programming experience
3. Teacher guidance and feedback
4. Additional textbook resources

Key Success Factors:

- Understand concepts thoroughly
- Practice regularly
- Review mistakes
- Manage time effectively
- Stay confident

FINAL NOTES (A2)

This comprehensive revision guide covers all topics in the Cambridge International A Level Computer Science (9618) for Paper 3 (Advanced Theory) and Paper 4 (Practical).

Success Tips:

1. Understand concepts, don't just memorize
2. Practice programming questions regularly
3. Review past paper questions
4. Know your algorithms and their complexities
5. Understand OOP principles thoroughly

For Paper 4:

- Practice implementing all sorting/searching algorithms
- Be comfortable with stacks, queues, linked lists
- Know recursive tracing
- Practice file processing operations
- Understand exception handling

Good luck with examinations!

Checklist for AS

EXAM PREPARATION CHECKLIST

Information Representation

☐ Binary, Denary, Hex conversion ☐ Two's complement representation ☐ BCD encoding ☐ ASCII vs Unicode ☐ Bitmap calculations (file size, resolution, colour depth) ☐ Vector vs Bitmap graphics ☐ Sound digitization (sampling rate, resolution) ☐ Lossless vs Lossy compression

Communication

☐ LAN vs WAN characteristics ☐ Client-server vs P2P models ☐ Network topologies (Bus, Star, Mesh, Hybrid) ☐ Transmission media (copper, fibre, wireless) ☐ IP addressing (IPv4, IPv6) ☐ DNS function ☐ Cloud computing

Hardware

☐ Computer system components ☐ Input/output devices ☐ RAM vs ROM ☐ SRAM vs DRAM ☐ Storage devices ☐ Embedded systems

Processor Fundamentals

☐ Von Neumann architecture ☐ Registers and their functions ☐ Fetch-Execute cycle ☐ Assembly language addressing modes ☐ Bit manipulation (shifts, masking)

System Software

☐ OS functions ☐ Memory, file, process management ☐ Compiler vs Interpreter ☐ Utility software

Security

☐ Threats (malware, hacking, phishing, pharming) ☐ Security measures (firewall, encryption, authentication) ☐ Data validation methods ☐ Data verification (parity, checksum)

Ethics

☐ Professional ethics ☐ Software licensing types ☐ AI impacts

Databases

☐ Database vs file-based systems ☐ Relational database terminology ☐ Normalization (1NF, 2NF, 3NF) ☐ SQL basics (DDL, DML)

Algorithms

☐ Computational thinking (abstraction, decomposition) ☐ Pseudocode writing ☐ Search algorithms (linear, binary) ☐ Sort algorithms (bubble, insertion)

Data Structures

☐ Primitive data types ☐ Records ☐ Arrays (1D, 2D) ☐ Stacks, Queues, Linked Lists

Programming

☐ Variables and constants ☐ Selection (IF, CASE) ☐ Iteration (FOR, WHILE, REPEAT) ☐ Procedures and functions ☐ Parameter passing

Software Development

☐ Development lifecycle ☐ Testing methods and data ☐ Maintenance types

Key terms for AS

SUMMARY OF KEY TERMS

Term	Definition
Abstraction	Removing unnecessary details
Algorithm	Step-by-step solution
BCD	Binary Coded Decimal
Bit	Binary digit (0 or 1)
Bitmap	Image made of pixels
Bus	Data transfer pathway
Cache	Fast memory for frequently used data
Client	Computer requesting services
CPU	Central Processing Unit
Database	Organized data collection
Decomposition	Breaking into sub-problems
DNS	Domain Name System
Encryption	Coding data for security
Ethernet	Network technology
Firewall	Security barrier
Gateway	Network connection point
GUI	Graphical User Interface
Hexadecimal	Base 16 number system
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol
IP Address	Unique device identifier
LAN	Local Area Network

Term	Definition
Lossless	Compression without data loss
Lossy	Compression with data loss
MAC Address	Unique hardware address
Malware	Malicious software
Modem	Modulator-Demodulator
Network	Connected computers
Normalization	Database organization process
Operating System	System software managing hardware
Pixel	Picture element
Protocol	Communication rules
Pseudocode	Simplified programming notation
Router	Network connection device
Server	Computer providing services
SQL	Structured Query Language
Subnet	Sub-network division
TCP/IP	Internet protocol suite
Topology	Network arrangement
Vector	Mathematically defined graphics
Virus	Self-replicating malware
WAN	Wide Area Network

Checklist for A2

EXAM PREPARATION CHECKLIST

Paper 3 - Advanced Theory:

☐ User-defined data types ☐ File organisation and hashing ☐ Floating-point representation ☐ TCP/IP protocol layers ☐ Circuit vs packet switching ☐ RISC vs CISC processors ☐ Pipelining ☐ Boolean algebra and Karnaugh maps ☐ Flip-flops ☐ Virtual machines ☐ OS process scheduling ☐ Encryption methods ☐ Digital certificates ☐ AI and machine learning ☐ Neural networks ☐ Graph algorithms

Paper 4 - Practical:

☐ Bubble sort ☐ Insertion sort ☐ Linear search ☐ Binary search ☐ Stack implementation ☐ Queue implementation ☐ Linked list implementation ☐ Binary tree implementation ☐ Recursion ☐ OOP concepts ☐ File processing ☐ Exception handling

KEY TOPICS QUICK REFERENCE

Paper 3 Topics:

- User-defined data types (enumerated, pointer, records, sets)
- File organisation (serial, sequential, random)
- Floating-point representation
- TCP/IP protocols
- Circuit switching vs packet switching
- RISC vs CISC processors
- Pipelining

- Boolean algebra and Karnaugh maps
- Flip-flops
- Virtual machines
- OS scheduling algorithms
- Encryption (symmetric, asymmetric)
- Digital signatures and certificates
- SSL/TLS
- AI and machine learning
- Neural networks
- Graph search algorithms (Dijkstra, A*)
- Recursion
- Programming paradigms

Paper 4 Skills:

- Bubble sort implementation
- Insertion sort implementation
- Linear search implementation
- Binary search implementation
- Stack operations
- Queue operations
- Linked list operations
- Binary tree operations
- Recursive algorithms
- OOP implementation
- File processing
- Exception handling

Pseudocode Vs Python Quick Reference (A2)

PSEUDOCODE VS PYTHON QUICK REFERENCE

Pseudocode	Python
DECLARE x : INTEGER	x = 0
IF condition THEN	if condition:
ELSE	else:
ENDIF	(indentation)
FOR i ? 1 TO 10	for i in range(1, 11):
NEXT i	(indentation)
WHILE condition	while condition:
ENDWHILE	(indentation)
REPEAT	while True:
UNTIL condition	if condition: break
OUTPUT "text"	print("text")
INPUT x	x = input()
PROCEDURE name	def name():
FUNCTION name RETURN type	def name():
ARRAY[0:9]	list of size 10
TRUE/FALSE	True/False