

Contents:

A1 Computer fundamentals	2
A1.1 Computer hardware and operation	3
A1.2 Data representation and computer logic	38
A1.3 Operating systems and control systems	66
A1.4 Translation (HL only)	90
A1 End-of-topic questions	98
A2 Networks	100
A2.1 Network fundamentals	101
A2.2 Network architecture	124
A2.3 Data transmissions	144
A2.4 Network security	154
A2 End-of-topic questions	165
A3 Databases	166
A3.1 Database fundamentals	167
A3.2 Database design	173
A3.3 Database programming	191
A3.4 Alternative databases and data warehouses (HL only)	215
A3 End-of-topic questions	235
A4 Machine learning	236
A4.1 Machine learning fundamentals	237
A4.2 Data preprocessing (HL only)	251
A4.3 Machine learning approaches (HL only)	264
A4.4 Ethical considerations	307
A4 End-of-topic questions	314
B1 Computational thinking	316
B1.1 Approaches to computational thinking	317
B1 End-of-topic questions	335
B2 Programming	336
B2.1 Programming fundamentals	337
B2.2 Data structures	350
B2.3 Programming constructs	362
B2.4 Programming algorithms	376
B2.5 File processing	407
B2 End-of-topic questions	413
B3 Object-oriented programming (OOP)	416
B3.1 Fundamentals of OOP for a single class	417
B3.2 Fundamentals of OOP for multiple classes (HL only)	473
B3 End-of-topic questions	542
B4 Abstract data types (ADTs) (HL only)	548
B4.1 Fundamentals of ADTs	549
B4 End-of-topic questions	581