Free Practice Pack

Exam-style Computer Science questions, in the style of the real papers — with mark-scheme-style answers. From Team Skilly.

Cambridge IGCSE Computer Science (0478)

1.2 Data representation · 2 marks

A sound is sampled at 44 100 Hz using 16-bit samples, in stereo. Calculate the file size, in bytes, of 10 seconds of this recording. Show your working.

Mark scheme

44 100 × 16 × 2 × 10 = 14 112 000 bits ÷ 8 = **1 764 000 bytes** (≈ 1.68 MB). 1 mark for the correct method, 1 mark for the correct final answer in bytes.

2.3 Algorithm design · 4 marks

Write pseudocode for an algorithm that inputs 20 integers into an array and then outputs the largest value stored.

```
DECLARE Numbers : ARRAY[1:20] OF INTEGER
DECLARE Index, Max : INTEGER
FOR Index <- 1 TO 20
OUTPUT "Enter number " & Index
INPUT Numbers[Index]
NEXT Index
Max <- Numbers[1]
FOR Index <- 2 TO 20
IF Numbers[Index] > Max
THEN
Max <- Numbers[Index]
ENDIF
NEXT Index
OUTPUT Max
```

Mark scheme

1 mark for correctly declaring/filling the array, 1 mark for initialising **Max** to the first element, 1 mark for a loop that compares every remaining element, 1 mark for outputting **Max** at the end.

1.6 Security · 2 marks

Describe what is meant by “phishing” and state one method a user can take to help prevent it.

Mark scheme

Phishing: sending fraudulent emails/messages that appear to come from a legitimate source, to trick the recipient into revealing personal or financial data. **Prevention** (any one): don't click links from unknown senders; check the sender's actual email address; use up-to-date anti-phishing/spam filtering software.

AQA GCSE Computer Science

Programming: trace tables · 3 marks

Complete a trace table to show the value of total each time the loop runs, and state the final output.

```
total = 0
for i in range(1, 5):
total = total + i
print(total)
```

Mark scheme

`i` takes 1, 2, 3, 4 (range(1,5) excludes 5); `total` becomes 1, 3, 6, 10 in turn. **Final output: 10.** 1 mark for correct i values, 1 mark for correct running totals, 1 mark for the correct final output.

Databases · 4 marks

A school currently stores student records in several separate flat files. State two benefits of moving this data into a relational database instead.

Mark scheme

Any two, each with a brief explanation: reduced data redundancy (each fact stored once, linked by relationships); improved data integrity/consistency (validation rules applied centrally); easier to query data that spans multiple tables; better control over who can access which data.

AP CSP (College Board)

Big Idea 1 · Creative Development · MCQ

A programmer breaks a large program into smaller, named procedures that each perform one task. This is an example of: (A) Abstraction (B) Encryption (C) Fault tolerance (D) Lossy compression

Mark scheme

(A) Abstraction — hiding implementation detail behind a named procedure lets the rest of the program use it without knowing how it works internally.

Big Idea 4 · Computer Systems & Networks · MCQ

The internet is described as “fault tolerant” mainly because: (A) It encrypts all data in transit (B) Data is broken into packets that can be routed along multiple alternative paths (C) Every device has a unique IP address (D) It uses a single central server to manage traffic

Mark scheme

(B) — because there's no single point of failure: if one path or router goes down, packets can still be routed another way to reach their destination.

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