



# Cambridge IGCSE™

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## COMPUTER SCIENCE

0478/21

Paper 2 Problem-solving and Programming

May/June 2020

PRE-RELEASE MATERIAL



No additional materials are needed.

**This material should be given to the relevant teachers and candidates as soon as it has been received at the centre.**

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### INSTRUCTIONS

- You should use this material in preparation for the examination.
- You should attempt the practical programming tasks using your chosen high-level, procedural programming language.

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This document has **2** pages. Blank pages are indicated.

Your preparation for the examination should include attempting the following practical tasks by **writing and testing a program or programs**.

A shop sells a range of mobile devices, SIM cards and accessories as shown in the table:

| Category | Item code | Description                                      | Price (\$) |
|----------|-----------|--------------------------------------------------|------------|
| Phone    | BPCM      | Compact                                          | 29.99      |
| Phone    | BPSH      | Clam Shell                                       | 49.99      |
| Phone    | RPSS      | RoboPhone – 5-inch screen and 64GB memory        | 199.99     |
| Phone    | RPLL      | RoboPhone – 6-inch screen and 256GB memory       | 499.99     |
| Phone    | YPLS      | Y-Phone Standard – 6-inch screen and 64GB memory | 549.99     |
| Phone    | YPLL      | Y-Phone Deluxe – 6-inch screen and 256GB memory  | 649.99     |
| Tablet   | RTMS      | RoboTab – 8-inch screen and 64GB memory          | 149.99     |
| Tablet   | RTLTM     | RoboTab – 10-inch screen and 128GB memory        | 299.99     |
| Tablet   | YTLM      | Y-Tab Standard – 10-inch screen and 128GB memory | 499.99     |
| Tablet   | YTLL      | Y-Tab Deluxe – 10-inch screen and 256GB memory   | 599.99     |
| SIM card | SMNO      | SIM Free (no SIM card purchased)                 | 0.00       |
| SIM card | SMPG      | Pay As You Go (SIM card purchased)               | 9.99       |
| Case     | CSST      | Standard                                         | 0.00       |
| Case     | CSLX      | Luxury                                           | 50.00      |
| Charger  | CGCR      | Car                                              | 19.99      |
| Charger  | CGHM      | Home                                             | 15.99      |

Write and test a program or programs for this shop.

- Your program or programs must include appropriate prompts for the entry of data; data must be validated on entry.
- Error messages and other output need to be set out clearly and understandably.
- All arrays, variables, constants and other identifiers must have meaningful names.

You will need to complete these **three** tasks. Each task must be fully tested.

### Task 1 – Setting up the system.

Write a program to:

- use appropriate data structures to store the item code, description and price information for the mobile devices, SIM cards and accessories
- allow the customer to choose a specific phone or tablet
- allow phone customers to choose whether the phone will be SIM Free or Pay As You Go
- allow the customer to choose a standard or luxury case
- allow the customer to choose the chargers required (none, one or both may be purchased)
- calculate the total price of this transaction
- output a list of the items purchased and the total price.

### Task 2 – Allow a customer to order multiple mobile devices.

Extend **Task 1** to:

- offer the customer the opportunity to purchase an additional mobile device
- if required, perform bulleted steps 2 to 7 of **Task 1** for each additional mobile device and calculate a running total for the customer
- once no further devices are required, output the total the customer will need to pay.

### Task 3 – Offering discounts.

Extend the program to allow a discount of 10% off the price of every additional phone or tablet purchased.

Output the new total the customer will need to pay and the amount of money saved.

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