

# Cambridge IGCSE™

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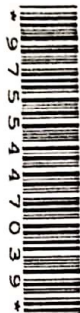
## COMPUTER SCIENCE

0478/22

Paper 2 Problem-solving and Programming

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

A car buying service helps customers calculate the price of buying a new car from Snazzy Autos. There are three models of car available: hatchback, saloon and estate. A car can be bought with optional extras.

Model	Price
Hatchback	Rs 5.35 lakh
Saloon	Rs 4.95 lakh
Estate	Rs 6.25 lakh

Optional extra	Price
Set of luxury seats	Rs 45000
Satellite navigation	Rs 5500
Parking sensors	Rs 10000
Bluetooth connectivity	Rs 350
Sound system	Rs 1000

Snazzy Autos customers buying a new car can trade in an old car. Offers from Rs 10000 to Rs 1.00 lakh can be made for an old car. If an old car is not traded in, then a discount of 5% is taken off the price of the new car and any optional extras. In addition, repeat customers are offered a discount of 10% off any optional extras and 10% off the price of the new car before trade-in.

Customers can either pay for the new car in full or make monthly payments over several years.

Write and test a program or programs for the car buying service.

- 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 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 – Calculate the price

Customers choose the model of car and select any optional extras required. Only valid choices can be accepted for the model and the extras. The customer is asked if they are an existing customer and if they have an old car to trade in. If the customer trades in an old car the amount offered by Snazzy Autos is entered. The price of the new car including model and extras is displayed. Any discount or trade-in amounts are displayed and the total price to pay is calculated and displayed.

#### Task 2 – Calculate the payment(s)

Extend Task 1 to display these payment methods:

- full amount paid now customer receives cashback of 1% on the total price
- equal monthly payments are made over four years with no extra charge
- the total price is increased by 5%; equal monthly payments are made over seven years.

For each payment method display: the total amount to pay, the amount of each payment, the number of payments and cashback where appropriate.

#### Task 3 – New full amount payment offer

Extend Task 2 to offer customers who decide to pay the full amount now either the 1% cashback or the chosen optional extras free. Customers are shown the offer that is the best value first and the other as an alternative. Details of each offer must be displayed in full.

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