

AS · Cambridge (CIE) · Computer Science

🕒 8 mins 🗋️ 3 questions

Exam Questions

Computational Thinking Skills

Computational Thinking Skills

1 (a) A coffee shop runs a computerised loyalty card system.

Customers are issued with a loyalty card with their name together with a unique customer ID.

Loyalty points are added to their card each time they spend money at the shop.

The following information is stored for each customer: ID, name, home address, email address, mobile phone number, date of birth, number of points, date of last visit and amount of money spent at last visit.

A new module will generate a personalised email message to each loyalty card customer who has not visited the coffee shop in the last three months. The message will include a unique voucher code which can be used to authorise a discount if the customer goes to the shop within the next two weeks.

Identify **three** items of customer information that will be used by the new module **and** justify your choices.

Item 1

Justification

Item 2

Justification

Item 3

Justification

Answer



Mark Scheme and Guidance

- Customer ID – to reference the other customer details
- Email address – to send the email
- Name – to personalise the email
- Date of last visit – to select which customers should receive an email
- Unique voucher code (or method of code generation) – to include in the email

Mark as follows:

One mark per item **and** justification

Max 3 marks

(3 marks)

(b) Identify the computational thinking skill that you needed to use to answer part (a).

Answer



Mark Scheme and Guidance

Abstraction

(1 mark)

- 2 A fitness club has a computerised membership system. The fitness club offers a number of different exercise classes.

The following information is stored for each club member: name, home address, email address, mobile phone number, date of birth and the exercise(s) they are interested in.

When an exercise class is planned, a new module will send personalised text messages to each member who has expressed an interest in that exercise. Members wishing to join the class send a text message back. Members may decide **not** to receive future text messages by replying with the message 'STOP'.

The process of abstraction is used to filter out unnecessary information.

State **one** advantage of applying abstraction to this problem.

Answer



Mark Scheme and Guidance

To make the solution easier to design / implement / solve

(1 mark)

3 A fitness club has a computerised membership system.

The system stores information for each club member: name, home address, email address, mobile phone number, date of birth and exercise preferences.

Many classes are full, and the club creates a waiting list for each class. The club adds details of members who want to join a class that is full to the waiting list for that class.

When the system identifies that a space is available in one of the classes, a new module will send a text message to each member who is on the waiting list.

Decomposition will be used to break the new module into sub-modules (sub-problems).

Identify **three** sub-modules that could be used in the design and describe their use.

Sub-module 1

Use

Sub-module 2

Use

Sub-module 3

Use

Answer



Mark Scheme and Guidance

Examples include:

Module: `IdentifyMember()`

Use: Identifies a club member who has expressed an interest in a given class

Module: `GetMemberPhoneNumber()`

Use: Gets the mobile phone number of a member

Module: `CreateMessage()`

Use: Generates a text message to a member

Module: `SendMessage()`

Use: Sends a text message to a member in the waiting list

One mark for name **and** use

Note: max 3 marks

(3 marks)