88075515

INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY
STANDARD LEVEL
PAPER 2

Monday 19 November 2007 (morning)

2 hours

INSTRUCTIONS TO CANDIDATES

- Do not open this examination paper until instructed to do so.
- Section A: answer all parts of the question.
- Section B: answer two questions.

SECTION A

*Answer **all** parts of the question.*

Area of impact: Business and employment

1. A food store uses a relational database to manage the sale of its food products. This database contains a table named PRODUCT, which contains information about each product in the store.

    Each food item in the store carries a label on which is printed a bar code. When an item is sold, the bar code of the item is scanned and the cost of the item is added to the customer's bill.

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    ST. 4662 OP. 00001878 TE. 16 TR. 00462
    TROPICANA.    502231397956        £1.44V
    HEINZ SOUP    500015706344        £0.59D
    SOUP          500015706265        £0.59D
    PEACH SLICES  000002721184        £0.38D
    MILK          000002041215        £0.33D
    POTATOES      000002748691        £0.98D
    YOGURT        000004025517        £0.42D
    YOGURT        000004025515        £0.42D
    CUCUMBER PTN  000002301070        £0.32D
    ROLLS         025247000063        £0.63D
    BANANAS       000000000522K
      0.790 kg @    £0.85/kg          £0.67D
    FROSTIES      500012715399        £1.64D

                         TOTAL        £8.41
                          CARD        £8.41
                     TOTAL EPS        £8.41

    MERCHANT No. 54518402
    EPS NO. 8143
    AID A0000000050001
    APP EFFECTIVE DATE:    01/10/04
    CT:40  CV:1842804F0184D6AE

    MAESTRO UK  *Pin Verified
    A/C No. **** **** ****            0 I
    EXPIRY DATE FROM
    AUTHORISATION No.

                    CHANGE DUE        £0.00
    PLEASE KEEP THIS COPY FOR YOUR RECORDS

           No. ITEMS SOLD 12

    TC# 7157 5296 5597 0926 2612

    THANK YOU FOR SHOPPING WITH US
          18/01/07      18:05:42
    ```

    Customers can receive a loyalty card by providing their name, address and email address to the store. They receive points whenever they make a purchase. These points can be used to obtain discounts on future purchases.

    (a)   Identify **two** fields that would be required in the PRODUCT table.   *[2 marks]*

    (b)   Describe how the cost of each item is obtained after the bar code of each item
          is scanned.   *[4 marks]*

    (c)   Explain how errors could occur on the customer's bill.   *[4 marks]*

    (d)   Discuss reasons why customers may be uncomfortable with the use of
          loyalty cards.   *[10 marks]*

SECTION B

Answer **two** *questions.*

Area of impact: Education

2. Polar High School requires its teachers to produce web pages, which contain information about courses, lesson notes, links to additional resources and presentations used in lessons. Entry into the website is restricted to students who are taking the courses. The school is considering extending the site to include additional resources such as chat rooms and blogs.

   When students are using this website, the system collects information about them and their online activities.

   (a) Identify **two** ways that software can be used to produce the web pages. *[2 marks]*

   (b) Describe the process the system uses to ensure that only certain students have access to the ITGS course materials. *[4 marks]*

   (c) Explain why some teachers might be reluctant to produce the web pages for their courses. *[4 marks]*

   (d) Discuss the benefits **and** concerns that may result from the collection of information about a student's online activities. *[10 marks]*

Area of impact: Health

3. Computer manufacturers are including features in the design of hardware and software to assist persons with impaired vision or blindness. Blind users can also make use of voice synthesis systems in order to access information. Sometimes, these systems are less than completely successful.

(a) Identify **two** ways in which a computer's operating system can be used to assist users with impaired vision. *[2 marks]*

(b) Many blind people can read text that is written in Braille, which is a system of raised dots that represent characters. Describe how software and hardware can be used to provide Braille output from a text document. *[4 marks]*

(c) Explain the precautions that all computer users can take in order to avoid eye problems. *[4 marks]*

(d) Discuss reasons why voice synthesisers may not always provide effective help for their users. *[10 marks]*

Area of impact: Arts, entertainment and leisure

4. Many people use social networking websites such as MySpace.com in order to meet new people, talk to them in chat rooms, make special purchases and express their interests. In order to post personal details or to contact members, membership is first required. Some members think that they can set up false details in their membership application without fear of being identified.

[Source: http://www.myspace.com/]

(a) Identify **two** ways in which investigators can establish the true identity of a member.   *[2 marks]*

(b) Social networking websites provide services that are free for users. Describe **two** ways that these websites generate funding to support the development of the site.   *[4 marks]*

(c) Explain how the operators of websites such as *MySpace* attempt to prevent multiple fake applications.   *[4 marks]*

(d) Discuss issues that *MySpace* must consider when formulating an "acceptable use" policy for its members.   *[10 marks]*

Area of impact: Science and the environment

5. The Basel Action Network (BAN) has discovered that large quantities of obsolete computers, mobile phones and other used electronic equipment have been exported from the USA and Europe to Lagos, Nigeria. The hard drives of the discarded computers often contained personal information that was not removed by their previous owners.
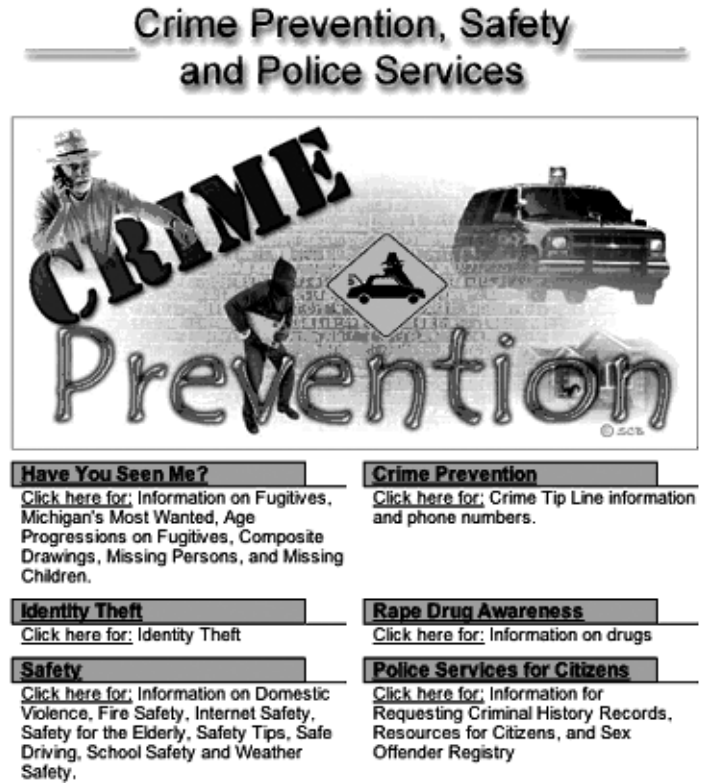
Instead of being reused, this "donated" equipment ended up being burned near residences in empty lots or dumped in swamps. Both actions result in serious health and environmental concerns.

[Source: http://www.ban.org/BANreports/10-24-05/documents/PressRelease.pdf]

(a) Identify **two** methods that could be used to ensure that all files from the hard disks of the donated computers cannot be read. *[2 marks]*

(b) Describe **two** specific kinds of toxic material contained in computer hardware and their effects on health or the environment. *[4 marks]*

(c) Explain why developing countries accept the donation of obsolete computer hardware from developed countries. *[4 marks]*

(d) Discuss actions that may be necessary to ensure the successful implementation and long-term usability of the donated computers. *[10 marks]*

Area of impact: Politics and government

6. The US allows police to make information available to the public about crimes and the persons who were convicted of those crimes. The police databases may include the photo of the offender, electronic fingerprints along with physical identifying information and contact details after the offender is discharged.

[Source: http://www.michigan.gov/msp/0,1607,7-123-1589---,00.html]

(a) Identify **two** methods that can be used to ensure that the data available is accurate. *[2 marks]*

(b) Describe the database search that can provide a list of all the criminals guilty of bank robbery and car theft who live in the USA. *[4 marks]*

(c) Explain the advantages of electronic fingerprints over physically taking fingerprints with black ink. *[4 marks]*

(d) Evaluate the decision to make the database of criminals available online to the public. *[10 marks]*