London Examinations IGCSE

Information and Communication Technology

Paper 3

Case Study and Set Tasks

May 2008 and November 2008

Instructions to Candidates

All of the tasks should be attempted.

1. Work submitted must be your own and must be independent from that of other candidates.
2. Sharing the work for any task could result in all of your work being rejected.
3. The time allowed for each task is that set by your teacher.
4. The deadline date for each task is that set by your teacher. Time allowances and deadlines will reflect the need for the centre to submit the work to London Examinations by the required date.
5. There are no limitations on the hardware or software that you may use.
6. **All material submitted as evidence for a task must be clearly labelled with the Candidate Name and Candidate Number, and the task identification, e.g. Task 1(a), Task 1(b).**
7. **Only work which is specified in the set tasks should be submitted.**

Four marks will be awarded for full compliance with **instructions 6 and 7**.

Turn over

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TELVISNET

Telvisnet is a telecommunications company that uses fibre optic cable to provide telephone, television, and broadband Internet access to customers in the United Kingdom. Telvisnet started its services in London and has been gradually expanding to cover other areas of the country. Expansion into a new area involves a large investment to pay for laying cables and to fund an advertising campaign to recruit new customers. Telvisnet will only sign up customers if cables have already been laid in the area.

When cables are being laid in an area, Telvisnet sends out advertising leaflets to each address in that area. The leaflet campaign is followed up by sales agents who visit each address to try and sell Telvisnet's services.

One of Telvisnet's selling points is that it provides very flexible customer contracts. A customer may choose to take one, two or all three of the main services: telephone, television, and Internet. Once a main service is selected, there are several options available within each.

The options are:

A. Telephone   Cable rental plus:

Tariff	Monthly charge	Description of service
1	£0.00	All calls are charged.
2	£10.00	All weekend and evening calls are free. Daytime calls are charged.
3	£15.00	All calls are free.

B. Television   Cable rental plus:

Tariff	Monthly charge	Description of service
1	£0.00	Free channels only
2	£5.00	Free channels plus a choice of **five** extra channels.
3	£10.00	Free channels plus a choice of **twelve** extra channels.
4	£20.00	Free channels plus **all** available channels

C. Internet access   Cable rental plus:

Tariff	Monthly charge	Description of service
1	£12.00	Broadband with download speeds of up to 1 Mbs (megabits per second)
2	£14.00	Broadband with download speeds of up to 2 Mbs
3	£16.00	Broadband with download speeds of up to 4 Mbs
4	£18.00	Broadband with download speeds of up to 8 Mbs

Customers pay monthly for cable rental. It is only charged once if customers have more than one main service. Customers who pay for two main services are given an upgrade for one of those services. The upgrade gives them the service on the next higher tariff for no extra charge.

For example, a customer who takes Telephone tariff 1 and Internet tariff 1 could choose to upgrade their telephone to tariff 2 for no extra charge. Customers who pay for all three main services get two upgrades.

Connection to the system is free and Telvisnet supplies a cable modem to anyone taking out a 12-month contract. Customers may sign up for a shorter contract if they wish but will then have to purchase their own modem.

The sales agents use a spreadsheet to work out the cost of a contract for each customer. Sales agents are able to offer discounts on the first year's contract. The discounts are given as incentives for customers to sign up early or to take extra services. The sales agent decides the amount of discount and is allowed to offer up to 20%.

If a customer wishes to sign a contract, the customer is given an identification code. The code is based on the customer's name and address.

Telvisnet uses a database to handle customer accounts.

The advertising leaflet
Tasks 1(a) and 1(b) relate to this section.

The leaflet consists of a single sheet of A4 paper, folded to make four A5 pages.
- The front page announces the start of the new services.
- The middle two pages deal with the details of what is available, emphasising the range of services, flexibility of the contracts and price information.
- The back page has contact details and announces special offers for customers who sign up early.

The sales agent spreadsheet
Tasks 1(c) and 1(d) are related to this section.

The sales agents have a spreadsheet which calculates the price of a customer contract. The spreadsheet can:
- detail the tariffs for each of the three main services
- calculate the monthly and yearly price of any combination of services and tariffs
- calculate discounts given by the sales agents
- make allowance for the free upgrades available if customers take more than one service.

Any discount is applied to the total price. The price is shown as three cells: total price, percentage discount and discounted price.

The spreadsheet has a summary section that shows the selected services and tariffs, the contract length in months, and the total price of the contract.

The contract

Tasks 1(e) and 1(f) are related to this section.

If a customer wishes to sign a contract, the customer is given a reference code based on the customer's name and address. The sales agent adds these items to the spreadsheet and then runs a script or macro that transfers the following items to a text file:
* customer name
* customer reference code
* selected services and tariffs
* total price
* agent discount
* discounted price
* contract length in months.

The database

Task 2 is related to this section.

A database is used by Telvisnet to handle customer accounts. Two of the tables are CUSTOMER and SERVICE.

The CUSTOMER table has fields:
* to identify the customer
* to identify the services they have taken
* to calculate monthly payments
* for tariffs
* to calculate when reminders should be sent for contract renewal.

The SERVICE table is a reference table containing details for each service and tariff.

TASKS

Task 1

(a) **The leaflet design.** Sketch designs for the **four A5** pages of the leaflet. In the sketches:

- headings should be given, but areas of descriptive text may be shown as blocks
- the full text of the blocks should be shown on the reverse of the design sheets
- outline drawings may be used to indicate any graphical components.

The four A5 pages should be submitted two per sheet of A4.

(9)

(b) **Making the leaflet.** Make and print the **four A5** pages designed in **Task 1(a)**. The pages must form a leaflet. They may be printed as one double-sided sheet of A4, or as two sheets of A4 which are then glued back to back.

Any changes from the designs in Task 1(a) must be clearly indicated.

(5)

(c) **The spreadsheet design.** Design the spreadsheet. Annotate the design to show where functions, formulae, or other special features will be used. Functions and formulae do not need to be written out in full but the annotation must explain their purpose.

The design must be submitted as a <u>single</u> A4 sheet.

(9)

(d) **Making the spreadsheet.** Make the spreadsheet.

Any changes from the design in Task 1(c) must be clearly indicated.

Enter details for a customer who is taking:

- Telephone, tariff 2
- Television, tariff 3
- Internet access, tariff 2.

The customer has chosen to have upgrades to the telephone and television services. The sales agent has given the customer a 10% discount.

Print the sheet and annotate it to explain how it works.

(7)

(e) **Designing the script or macro.** Design a script or macro that collects the following details from the spreadsheet and places them in a text file:

- customer name
- customer reference code
- services and tariffs selected
- total price
- agent discount
- discounted price
- contract length in months.

Annotate the design to explain how this script or macro works. The design may be submitted in any suitable form, e.g. a flowchart, structured English or a scripting language.

The design must be submitted as a <u>single</u> A4 sheet.

(4)

(f) **Making the script or macro.** Make and print the script or macro from **Task 1(e)**. Annotate the printout to explain how it works.

(4)

(Total 38 marks)

Task 2

The Database

(a) The database holds details of all customers and services. Sketch a design for a screen used to input customer details. The screen should be designed to be user-friendly. Annotate your design to explain your choice of:

- field names
- field sizes
- data types
- validation checks
- calculations
- user-friendly features.

The design must be submitted as a <u>single</u> A4 sheet.

(12)

(b) Build the SERVICE table and enter data for each service and tariff.

Print the table on a <u>single</u> A4 sheet.

(2)

(c) The CUSTOMER and SERVICE tables are linked so that when the service and tariff are entered in the CUSTOMER table, the other service details will be entered automatically. Tariff and service details **must** be taken from the SERVICE table. Draw and annotate a diagram to explain how this link would work.

The annotated diagram must be submitted as a <u>single</u> A4 sheet.

(4)

(d) Using your designs from **Task 2(a) and Task 2(c)**, build the CUSTOMER table for this application and link it to the SERVICE table. Enter data for twenty customers. They should be taking a range of services. Some customers should be due to renew their contracts in the next thirty days.

Print the CUSTOMER table on a <u>single</u> A4 sheet.
Print <u>one</u> example of the input screen on a <u>single</u> A4 sheet.

Annotate the printouts to show any validations, calculations or other operations associated with the fields.

Print a <u>single</u> A4 sheet to show how the CUSTOMER and SERVICE tables are linked.

Any changes from the designs in Task 2(a) or Task 2(c) must be clearly indicated.

(6)

7

(e) Design and implement a method of showing upgrades on the CUSTOMER table. The method must:

- take the tariff and service details from the SERVICE table
- allow for one or two upgrades
- not allow impossible upgrades e.g. tariff 3 of the Telephone service cannot be upgraded.

Print one example of the amended input screen. The example should be for a customer who has **two** upgrades.
Annotate the printout to explain the changes you have made.

Print and annotate a single A4 sheet to show how impossible upgrades are prevented.

(6)

(f) Make a search for customers who are due to renew their contracts in the next month.

Print out the following items as evidence:

(i) a screen showing search conditions which would work
(ii) a screen showing the search results.

(2)

(g) The sales department of Telvisnet wishes to send a letter to customers whose contracts are due for renewal in the next month. The letter will indicate that if the customer takes an extra service, the contract may be renewed with a 10% discount. Sketch a design for the template for the letter.

Submit the following items as evidence:

(i) the design for the letter template
(ii) **one** completed letter
(iii) a screen shot to show that the letter template is linked to the database.

(6)

(Total 38 marks)

Task 1 and Task 2

Presentation and relevance of submitted material, as specified in the 'Instructions to Candidates' on the front cover.

(Total 4 marks)

TOTAL FOR PAPER: 80 MARKS

END