London Examinations GCE

Computing

Ordinary Level

Advance Notice of Case Study for Paper 1

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Turn over

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INTERNATIONAL

CASE STUDY

Weatherproof.com

Introduction to weather insurance
When the weather is bad, organisers of outdoor events such as tennis tournaments or music festivals sometimes lose money because the events have to be cancelled, or because not enough people attend. The organisers can reduce the loss by paying a premium to an insurance company before the event takes place. When the premium has been received, the insurance company issues a policy which clearly explains under what conditions compensation will be paid. Then, if the weather is bad and the conditions are fulfilled, the insurance company pays the compensation.

Weatherproof.com
Weatherproof.com is a company that uses the Internet to sell insurance to clients who organise outdoor events in Britain. Clients apply for insurance by completing an on-line form on the company's web site. In most cases the client will be told instantly how much the premium will cost. Payment of the premium can be made by a number of on-line methods. After the premium has been paid, a printable copy of the policy is downloaded to the client's computer.

The on-line form
The on-line form is designed for several kinds of event and for various amounts of compensation. However, it does not suit all requirements so Weatherproof.com offers an e-mail service. When a client applies by e-mail, a risk assessor assesses the application. The risk assessor may take one of the following actions:

- refuse to cover the event

- accept the application and decide how much the premium will cost

- ask the client for further information.

The database
Weatherproof.com uses a database to make decisions about insurance premiums. The database holds weather records which contain information about the weather conditions in all parts of the country for the last 25 years. The database can calculate the probability of different types of weather occurring in a place on a particular date.

The database contains three tables: CLIENT, EVENT and WEATHER:

- CLIENT (Surname, first name, address1, address2, address3, postcode, telephone, e-mail, client account number, payment method)

  Payment method only shows the type of payment used and is linked to a secure section of the database which holds the details.

- EVENT (Event name, event number, client account number, postcode, event type, size, date, start time, finish time, compensation, event notes)

  The event type, size and compensation fields contain pre-set, coded entries which can be selected from a list. These correspond to drop-down lists for the same items on the on-line form which the client fills in. One of the entries for the event type, size and compensation fields is "other". This indicates that a risk assessor has been involved and details will be found in the *event notes* field. The *event notes* field is 500 bytes long.

- WEATHER (Year, month, day, time, record number, maximum temperature, minimum temperature, average temperature, maximum wind speed, minimum wind speed, average wind speed, rain depth, hours of rain, hours of sunshine)

  The time field is formatted as three radio buttons labelled with the times 0001 to 0800, 0801 to 1600 and 1601 to 2400. Temperatures are measured in degrees Celsius and wind speeds in metres per second. Values are stored to one decimal place. Rain depth is in millimetres and hours of rain or sunshine are held to two decimal places.

The process of calculating an insurance premium takes into account the location, given by the postcode of the nearest building, and the historical weather records.

A postcode is a set of letters and numbers which are allocated to buildings by the Post Office. A postcode has the format LLD DLL or LLDD DLL where L is a letter and D is a digit.

The premium is calculated from the probability of bad weather and the amount of money which the client wishes to receive if compensation has to be paid.

Most policies have simple conditions for paying compensation, e.g.

- the average temperature drops below a certain value

- it rains for longer than a given length of time

- the wind speed reaches a particular value.

Weather stations
For this type of policy, Weatherproof.com usually relies on information from local weather stations that are operated by the national weather service. When an event is too far from a local weather station, Weatherproof.com provides a portable weather station.

The portable weather stations are programmed to take the required readings automatically and are linked to Weatherproof.com by a wide area network (WAN). The WAN connection is via a radio link and transmits 4 kilobits per second (4 kbs). The readings are sent to Weatherproof.com in real time. The readings are stored in the database and can be analysed if a claim is made.

To reduce the risk of fraud, the weather station has a Global Positioning System (GPS) receiver and a web cam fitted to it. The GPS gives the weather station's location to the nearest metre. The web cam takes pictures of the weather conditions. The images are in 8-bit (256) colour and are formatted as bitmaps.

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