

Higher Information Systems

2006 q.24a Expert Systems

Drumville College has over 5000 students attending classes in 102 courses in 64 classrooms, lecture theatres and practical rooms. Every year, it takes a member of staff several weeks to plan the timetable to ensure all the classes can take place as required.

- a. Give **two** reasons why this timetabling problem may be a suitable subject on which to develop an expert system. **(2)**
- b. Describe **two** factors which the college should consider before deciding whether to develop the expert system. **(2)**

2007 q. 25 Expert Systems

Alison uses a route planning website to help her plan a journey from her home in Dundee to see her aunt and uncle who live in Kington.

She enters the postcodes of her starting point and destination, and can also specify whether she wants the fastest route, shortest route, or a route that avoids motorways or toll roads and bridges.

- a. When Alison clicks on the Check Details button, the bottom screen is displayed in which she is asked to confirm the address of the start and end points of her journey, as shown. Explain how a database could be used to provide the additional information.
- b. The route planner makes use of an expert system to produce the route plan. Describe **two** reasons why route planning is a suitable domain for an expert system. **(4)**
- c. The expert system provides a detailed route which includes a total distance and estimated time.
 - (i). Alison decides to check an alternative route planning website which also uses an expert system. She finds that the recommended route from this website is longer than the route from the first website. Describe **three** reasons why the routes may be different. **(6)**
 - (ii). When Alison makes her journey, she finds that it takes her 1 hour longer than indicated on the route plan. Describe **two** limitations of a route planning expert system which may have contributed to this result. **(4)**

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2007P q.28d Expert Systems

REHAB is a rule-based expert system that is being developed for use in social security offices. The expert system will be used to refer recipients of social security disability allowance to employment rehabilitation services.

Due to the pressure of work faced by experienced caseworkers responsible for the assessment and review of recipients, the current situation of many recipients cannot be reviewed for several months. As a result, recipients miss out on the benefits offered by the rehabilitation services.

By developing REHAB, it is hoped that unqualified administration staff will be able to use the expert system to reach unbiased and consistent assessment decisions regarding referral of the recipients of disability allowance to employment rehabilitation services. Eventually, it is hoped that administration staff using the expert system will be able to make assessments in less time and with a level of accuracy superior to the experienced caseworkers using manual methods.

d. Compare the quality of information provided by the REHAB expert system with the quality of similar information provided by experienced caseworkers in terms of:

- timing
- availability **(2)**

2009 26 Expert Systems

Holidays International is a members-only holiday firm. Members logging on to the company's website see a web page similar to that shown below.

a. This web page is produced using a *deductive database* making use of an expert system and a relational database.

Describe the part played by the expert system and the relational database in producing the above page. **(3)**

b. Describe **one** limitation of using an expert system like this to recommend holidays. **(2)**

Holidays International

Welcome back Mr and Mrs Reid:

Your last three holidays arranged by us were:

1. Intercontinental Hotel, Sri Lanka
2. Hotel Superbe, Goa
3. Five Palms Resort, Fiji

Based on previous holidays arranged by us we would recommend:

1. Hotel Ritz, Maldives
2. Club Paradise, Mauritius
3. Excelsior Club and Resort, Seychelles