Edexcel GCE

Applied Information and Communication Technology

Unit 9: Communications and Networks

May 2009

Scenario

Please open this material immediately. It should be distributed to candidates at least three working weeks before the examination.

Note: There are no practice files for this examination.

The description overleaf will be used as the scenario for the above specification, and will be reissued with the examination paper. This scenario should be used for the purposes of preparing candidates for the examination. This material must not be taken into the examination.

Further details are in the Instructions for the Conduct of Examinations, available from the Edexcel website for this qualification and subject.

Edexcel will not accept any request for special consideration should candidates be given the incorrect scenario for the examination they are sitting.
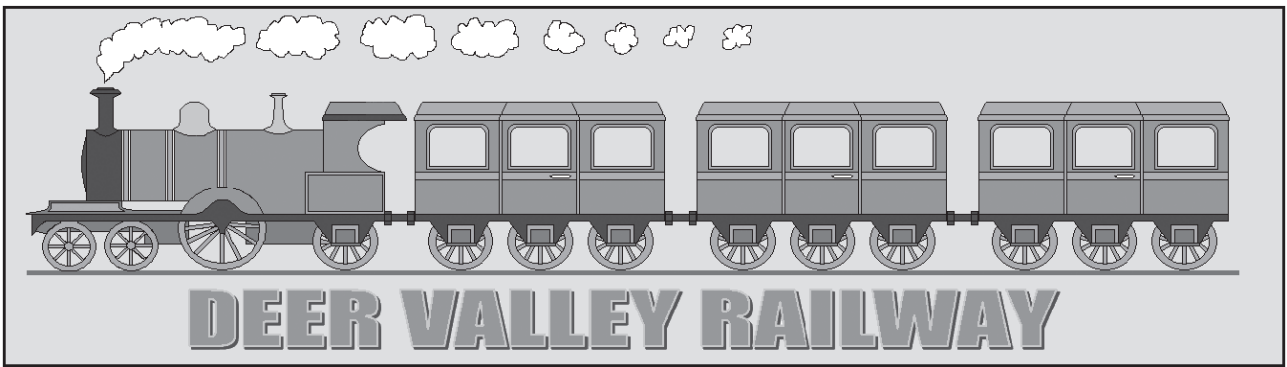
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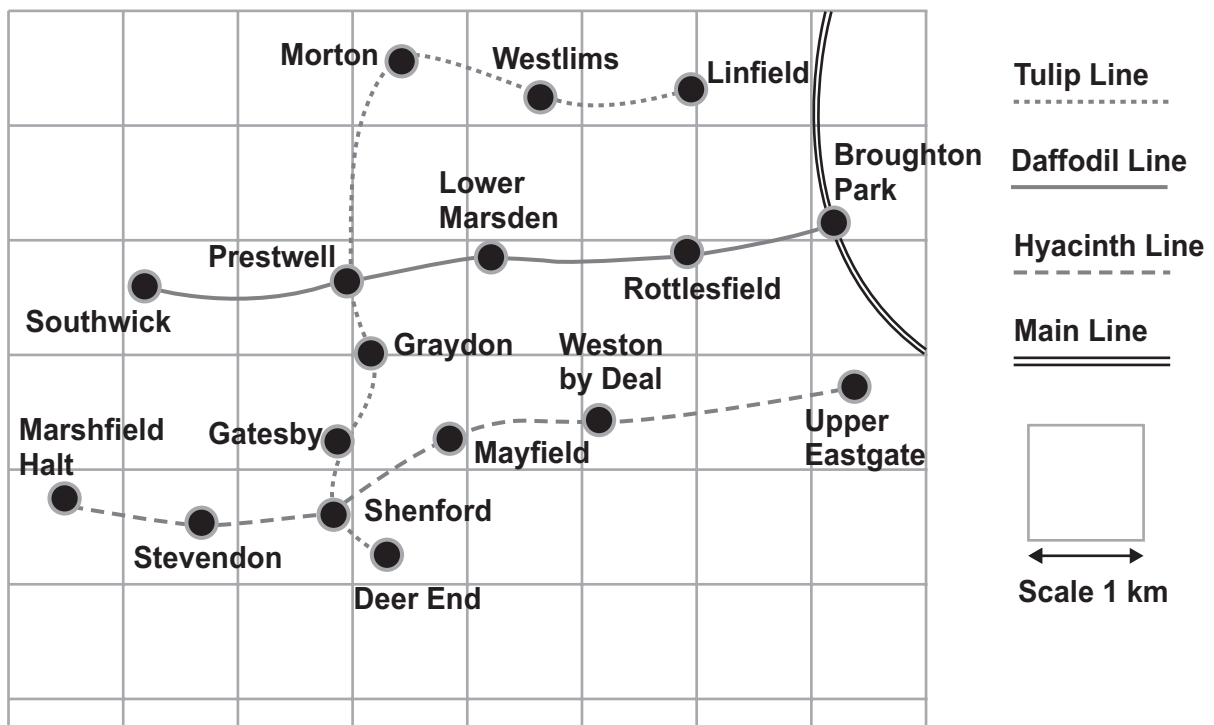
In the 1960s the government owned the entire rail network. At that time there was a movement of both passengers and freight away from rail and onto the road, which made some routes unprofitable. As a result a large number of railway lines were closed. The closures were mainly branch lines through rural areas where the number of passengers could not justify keeping the stations on those lines open.

A number of these disused lines were bought by groups of steam train enthusiasts who restored the lines. They bought and restored old steam engines and passenger carriages and ran the lines as tourist attractions. One of these lines runs through the Surrey countryside and is known as the "Deer Valley Railway" because of the number of deer which can be seen around the area. The first line was opened in 1974 and was called the Daffodil line. A large number of volunteers ensured that the track was in good order, drove the trains, sold tickets and maintained the station buildings. By 1979 two other lines, the Tulip and Hyacinth lines, had opened. The Deer Valley Railway has been running as a very successful tourist attraction ever since.

Map of the Deer Valley Railway

Recently a large number of housing developments have been built along the Daffodil line. Many residents of the developments have taken advantage of the Daffodil line because it links with a mainline service to London from Broughton Park. It was felt that a team of volunteers, no matter how dedicated, could not manage the increased number of passengers. Consequently, the "Deer Valley Railway Company" (DVRC) was set up and permanent employees now run the railway on commercial lines.

The DVRC was set up as a 'not for profit' company, so that revenue generated by the Daffodil line could be used to support the ongoing restoration of trains, buildings, and infrastructure of the three lines. The Tulip and Hyacinth lines are still run by volunteers and the manager of each line sits on the board of the DVRC. There are no immediate plans to run the Tulip and Hyacinth lines commercially.

The Deer Valley Railway is still using equipment from the days of steam trains. The only exceptions being a modern signalling system and a private digital telephone network. Both of these use trackside cables and are maintained by signals and telecoms specialists from the team of volunteers. The telephone exchange is at Broughton Park and the telecoms specialists are familiar with both DSL and ISDN technology.

The volunteers have installed at least one PC and printer at each station but there is no network and most of the IT equipment is second-hand and quite old. The volunteers use the equipment for tasks such as producing tickets, newsletters, publicity material, volunteer rosters, and tea shop menus.

All of the stations are equipped with a credit card payment terminal (chip and pin). The terminals are linked to the credit card system through a standard telephone line at each station.

The new General Manager of DVRC is George Harwell. He is 60 years old and has worked in the rail industry for over 40 years. He has a good knowledge of some specialised areas of IT such as signalling and control technology. He has used networks before but has little knowledge of how they are set up or managed, and expects such things to be handled invisibly by technical staff with a minimum of fuss for the user.

George has an office at the Broughton Park station.

Other staff based at Broughton Park are:
• the Senior Engineer, who has an office in the engine shed
• the Accountant, who shares an office with the Personnel Officer
• two secretaries, who share an office and undertake administrative work for anyone at Broughton Park who requests their services
• the Receptionist
• the Station Master, and an Assistant Station Master who share an office adjacent to the booking office.

Everyone will need their own PC.

Bulk and high quality printing at Broughton Park will be done on a shared colour laser printer. Black and white printers will be needed in reception and in each office for small jobs.

Each station on the railway will need a PC and printer in the booking office, with a connection to one of the existing credit card payment terminals.

Your project

You are an I.T. consultant and have been hired by George Harwell to help him to modernise all three lines of the DVRC. You will advise George on I.T. matters and also produce reports for submission to the board of the DVRC.

In discussions with George, you find out that his main concerns are that any system set up for the DVRC must be:

- **robust**. He is aware that an item of equipment may be used by several people, including trainees and new volunteers. Things should not break easily
- **reliable**. George emphasises that the DVRC is spread over many square kilometres and that he would rather spend a bit more money setting things up if it means he can save on technical staff salaries
- **easy to maintain**. As for the previous point, George wants users to be able to perform routine tasks such as changing printer cartridges, rather than having to call for technical support
- **user friendly**. George knows he will need I.T. staff to run things 'behind the scenes' but anything that ordinary users will operate must be simple to use
- **value for money**. This is a lesser priority than the previous points but cost must be considered therefore you will have to justify your decisions.