Paper Reference(s)

6953/01

Edexcel GCE

Applied Information and Communication Technology

Unit 3: The Knowledge Worker

May 2009

Scenario

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

Practice files: DVR_practice.xls
Survey_practice.txt

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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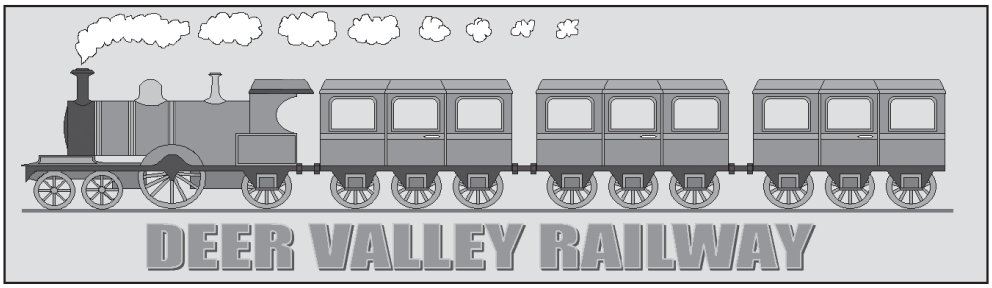
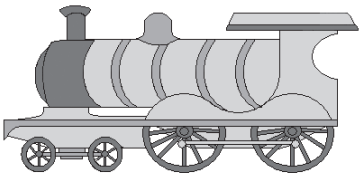
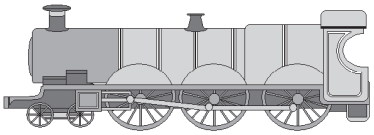
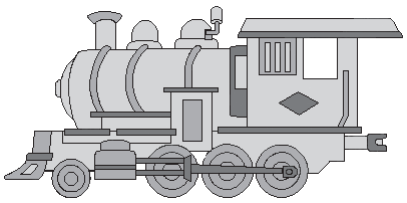




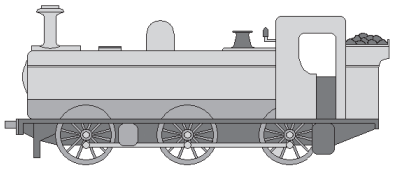
In the 1960s the government owned the entire rail network. At that time there was a movement of both passengers and freight away from rail and onto the road, which made some routes unprofitable. As a result a large number of railway lines were closed. The closures were mainly branch lines through rural areas where the number of passengers could not justify keeping the stations on those lines open.



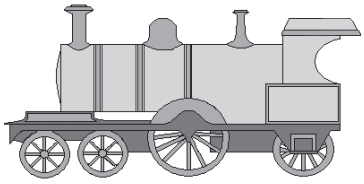
A number of these disused lines were bought by groups of steam train enthusiasts who restored the lines. They bought and restored old steam engines and passenger carriages and ran the lines as tourist attractions. One of these lines runs through the Surrey countryside and is known as the "Deer Valley 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.



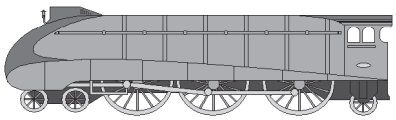
Recently a large number of housing developments have been built along the Daffodil line. Many residents of the developments have taken advantage of the Daffodil line because it links with a mainline service to London from Broughton Park. It was felt that a team of volunteers, no matter how dedicated,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



The company makes a good profit mainly based on the commuter traffic on the Daffodil line. The company has to run seven out of its nine trains on this line during the rush hours to cope with this traffic. These seven trains are kept in the engine sheds at Southwick overnight. They are all scheduled to go to Broughton Park during the morning peak period. The names of the engines are Duke of Wessex, Arrabella, Marquis of Granby, Charles Darwin, Delta, Caledonian Spirit and Lakeland Heights.



The company has found a number of problems with the current morning peak period timetable. Some of the trains are overcrowded whereas others are virtually empty. The company has employed you to advise on a new morning peak period timetable and has provided a partially completed model to help you.



The morning peak period is between 6 o'clock and 9 o'clock. In this period each train will run once from Southwick to Broughton Park, calling at all stations along the way. The trains have been timed between each station over the last three months.

The table shows the names of the stations and the mean time a train has taken to travel between stations.

Station	**Mean time from previous station (format *hh:mm*)**
Southwick	No previous station
Prestwell	00:10
Lower Marsden	00:20
Rottlesfield	00:10
Broughton Park	00:20

The company has undertaken a survey to provide data to help you. Each morning for one week, between 5 a.m. and 9 a.m., a team of employees asked **every** passenger using the Daffodil line three questions.

Which station are you travelling to?
Which station are you travelling from?
What time do you have to arrive at your destination station?

(Artwork Michelle Goates 2008)

Description of the model

The partially completed model will allow you to experiment with different train times and help you to provide a timetable which eliminates overcrowding on the trains.

Worksheet	Description
Timetable	The timetable worksheet allows you to set the times of the trains. Each train is listed and should be timetabled in the order they appear on the list. A dropdown box allows you to choose the time each train leaves Southwick. The remaining times are calculated by adding the mean time from the previous station to the time the train arrived at the previous station. Trains are allowed to leave Southwick at 0, 10, 20, 30, 40 and 50 minutes past the hour.
Survey Data	The survey data worksheet will contain the results of the survey and will be used to predict the number of passengers travelling on each of your trains at any given time.
Timings	This worksheet contains a matrix which calculates the length of time it takes to travel between each station. It is used to calculate the latest time a particular passenger needs to be at the station.
Passengers	This worksheet is important as it is where the number of passengers on each train at any particular time is calculated.
Station Worksheets	These are interim worksheets, one for each station, which are used to help calculate the number of passengers on each train at a particular time.

Some cells in the model are password protected. Should you wish to experiment with the model, the password is *edexcel*. Be aware that if you change the contents of any protected cell the model may not work.