Paper Reference(s)

6953/01

Edexcel GCE

Applied Information and Communication Technology

Unit 3: The Knowledge Worker

January 2010

Scenario

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

Practice files: NCTW_practice.xls
Line_practice.txt
Student_practice.txt
Threshold_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.

Printer's Log. No.
W36376A

Turn over

W850/R6953/57570 5/c2

Scenario

North Cyprus Turtle Watch

The 'Save the Planet' charity was formed in 1994 by a group of environmentalists who were worried about the number of marine creatures threatened by extinction. In those days its fundamental objective was to protect the Blue Whale whose numbers were dwindling at the time. As time went by the charity expanded its areas of interest and now has over 50 ventures being undertaken world wide.

One of these ventures is the 'North Cyprus Turtle Watch', which was set up to monitor the numbers of Green Belly Turtles. These have been under threat of extinction for about 50 years. Frodo James, a Lancashire born naturalist, is in charge of the project. He became famous through a TV programme called "The Dying World" in which several endangered species were investigated. Frodo became concerned about the Green Belly Turtle whilst filming one of his programmes and he successfully approached the charity for funding. He set up his base in Alagadi, North Cyprus. This is the only remaining nesting place of the Green Belly Turtle.

The North Cyprus Turtle Watch is currently running three projects. The first project involves the electronic tagging of male turtles so that they can be tracked. The female turtles will always return to the beach at Alagadi to lay their eggs but data about where the male turtles go is limited.

The second project is a captive breeding experiment. Turtle eggs are hatched and the baby turtles are kept in different sized tanks for the five years it takes for them to reach adulthood and consequently be able to breed. At this point they will be tagged and released back into the sea in the hope that they will boost numbers. The first batch is due for release in 2011.

The third project is an egg protection scheme and this is the project you will be working on. The gender of the hatched turtles depends on the average temperature of the nest during the incubation period. If the nest is covered by the sea for more than an hour a day then the average temperature tends to be lowered. This makes it more likely that the newly hatched turtles will be male.

It is possible to predict the highest point that the tide will reach on the beach each year, known as the **high water mark**. As this is known, it is possible to identify a line on the beach above which the newly hatched turtles will be female and below which male. This is known as the **threshold line**.

The female turtle will normally dig her nest in the first available space she comes to. Fewer nests are being dug above the threshold line because numbers of turtles have dwindled. This has led to a glut of male turtles while the female numbers have diminished. As these turtles only mate with one partner, the number of nests is determined by how many turtles there are of the gender with the fewer adults.

To combat this, the project is to implement a system by which student volunteers move a set number of nests from below the threshold line to above it. A small percentage of these nests are likely to be destroyed in this process. However, evening up the numbers of adult males and females will maximise the number of breeding pairs in five years' time.

You have been asked by Frodo to advise him on the number of nests to move in each of the next five years. To do this you have been supplied with a partially completed spreadsheet model and some data.

Note: the information contained in this scenario is fictitious. Much of the information has been adapted to provide a model of a suitable complexity.

Description of the model

The partially completed model will allow you to experiment with different values for the number of nests to be moved.

Worksheet	Description
Summary	The summary worksheet is where most of the data required is to be displayed. Some of the formulae are missing. Amongst other things the worksheet will show estimates for the surviving turtles, in total and split into male and females. It will show the distance from the bottom of the nesting area to the predicted threshold line and calculate estimates of the number of nests which will be dug below and above it. There is an area where you can enter the number of nests you want to move in each of the years 2010 to 2015 and the worksheet will show how many nests are likely to be destroyed in the process. It is a well known fact that very few of the newly hatched turtles will live to adulthood and this worksheet will show the number of turtles it expects to survive.
Threshold	The Threshold worksheet will contain the data used to predict the number of nests that will be dug below the threshold line.
Back Numbers	It is unclear how many turtles were born before the year 2010. However, in 2010 the baby turtles born in 2005, or at least those that survive, will be old enough to mate. These will need to be predicted in the model and this worksheet will contain those figures.

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.

BLANK PAGE