

Pearson Edexcel GCE

Applied Information and Communication Technology Unit 7: Using Database Software

4–22 May 2015

Assessment Window: 3 weeks

Time: 10 hours

Paper Reference

6957/01

You must have:

Cover sheet, short treasury tag, Student_exam.txt, Teacher_exam.txt.

Instructions

- Complete your candidate details on the cover sheet provided.
- All printouts must contain your name, candidate number, centre number and activity number.
- At the end of the examination:
 - all printouts should be placed in the correct order
 - use a treasury tag to attach your printouts (**as shown**) to page 2 of the cover sheet.

Information

- The total mark for this paper is **90**. There are **six** activities in this examination totalling 88 marks. 2 further marks are allocated to Standard Ways of Working.
- The marks for **each** question, within an activity, are shown in brackets
 - use this as a guide as to how much time to spend on each question.
- Use relational database software to carry out the database activities in this examination.
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
 - you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

Advice

- Read through the Scenario carefully.
- Work through the activities in order.
- Attempt **ALL** activities.
- Label your printouts clearly as instructed.
- Printing must be undertaken within the examination time.

Turn over ►

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Scenario

Conaught College – Pastoral Care System

Conaught College is located in the North West of England.

Alison Smith is the Head of Student Services. The Head of Student Services oversees the pastoral care system, which involves teachers and personal tutors. There are 12 personal tutors working at the college. They each look after a group of students. Alison is one of the 12 personal tutors.

Students enrol at the college for two years. During their first year they study up to five subjects at AS level. In their second year they continue to study three or four of the subjects at A2 level.

The pastoral care system informs personal tutors when there are issues with students. Issues could be when students have performed well or where there are concerns. All issues can then be discussed with the student and any action taken.

Currently the pastoral care system uses a spreadsheet. However, the personal tutors find the spreadsheet difficult to use. It is very difficult to find their own students or to identify new issues.

Alison knows you are studying ICT and thinks you could develop a more efficient solution to allow personal tutors to keep track of the students in their group and for teachers to keep track of actions being taken. In the first instance, it has been agreed that you will design and build a prototype relational database system that will focus on five tasks.

1 **Logging in**, which involves:

- ensuring only a valid personal tutor or teacher is allowed entry to the system
- loading the correct form depending on the type of user.

2 **Viewing a personal tutor group**, which involves:

- displaying the details of the personal tutor logged in
- generating and displaying the total number of students in their group
- displaying the student details along with an overview of the issues raised for all students in the group.

3 **Viewing issues for a particular student**, which involves:

- clicking on a student name to display a more detailed overview of the issues raised for them.

4 **Adding teacher issues**, which involves:

- allowing a teacher to select a student
- indicating the type of issue
- writing comments about the issue
- saving the issue if all requirements are met.

5 **Printing tutor group issues** – the personal tutor who is logged in needs to be able to print out issue reports for their group.

Instructions to Candidates

All word processed documents **MUST** have a header and a footer. The header must contain the activity number. The footer must contain your name, candidate number and centre number.

Minimum font size of 10 must be used throughout.

Screen prints must be large enough to be easily read.

All database reports must have the activity number, your name, candidate number and centre number in the page header.

Activity 1 – Understanding the situation (suggested time 30 minutes)

Use word processing software to answer these questions.

- (a) The scenario describes the tasks that the prototype system must carry out to support personal tutors and teachers. However, it does not describe all possible tasks.

Identify **one** additional task that the database could include and state whether this supports personal tutors, teachers or both.

(2)

- (b) The scenario identifies a role that is not included in the prototype tasks.

(i) Identify this role.

(1)

(ii) Identify **two** tasks the database could include to support the user in this role.

(2)

- (c) Give **two** reasons why it is necessary to have a login system for users in a database such as this.

(2)

Evidence to be submitted for Activity 1

On **one** side of A4:

- Your answers for parts (a), (b) and (c).

(Total for Activity 1 = 7 marks)

Activity 2 – Structure (suggested time 2 hours)

You will need to use the data files **Student_exam.txt** and **Teacher_exam.txt**

These are provided in your examination area.

Study the data files.

- (a) Create an efficient database structure that minimises data duplication. Ensure you use all and only the fields provided.

Screenprint the relationships in your database, making sure that the table names, field names and relationships can be clearly seen.

(7)

- (b) Use the correct data types and key fields for your database.

Produce screen prints in **DESIGN** view of each of your tables showing **only** the field names, data types and primary keys.

(3)

- (c) An efficient database must include suitable validation.

Note: you can use the same field more than once if appropriate.

You **MUST** name the type of validation used in each case.

- (i) Screenprint in **DESIGN** view **ONE** example of a **Range Check** on an appropriate field. Ensure you can clearly see the field it is applied to and the range specified.

(1)

- (ii) Screenprint in **DESIGN** view **ONE** example of a **Presence Check** on an appropriate field. Ensure you can clearly see the field it is applied to.

(1)

- (iii) Screenprint in **DESIGN** view **ONE** example of a **List Check** or **Table Lookup** on an appropriate field. Ensure you can clearly see the field it is applied to and the list items or row source.

(1)

- (d) Import the data from the text files provided into your database.

Screenprint each table showing at **least five records** and the **full record count**.

(If the fields are too wide to fit on one page, truncated data is allowed.)

(4)

You must assemble your screen prints in the order you were asked to complete them.

(Total for Activity 2 = 17 marks)

Activity 3 – Dealing with logging in, adding and managing issues (suggested time 4 hours)

(a) A form is required that will allow a personal tutor or a teacher to log in.

Create a login form for them to use.

The form should include a submit button and allow:

- selection of the type of user (either personal tutor or teacher)
- input of a username
- input of a password.

Screenprint the form in **DESIGN** view.

It does not need any annotations.

(2)

(b) An automated method of verifying the user is required.

Create an automated method of verifying the user.

The automated method of verification should:

- check whether the username that is entered exists in the relevant table
- check whether the password that is entered matches the password that is stored for that username
- display a suitable message if the login details are valid
- display a suitable message if the login details are not valid.

Screenprint the form in **DESIGN** view.

Screenprint in **DESIGN** view any macros, code and/or queries you have used.

Annotate your screen prints to explain how your method works. Ensure that the detail can be seen in full.

(3)

(c) Create a query that will display a personal tutor's details.

The query should:

- apply only to the personal tutor who is logged in
- include their name
- include their tutor room
- calculate the total number of students in their group.

Screenprint the query in **DESIGN** view.

Ensure you show all criteria and how the calculation was carried out.

(3)

(d) Create a query that will display student details.

The query should:

- only include students in the group of the personal tutor who is logged in
- include the student ID
- concatenate their name (last name, first name)
- sort into ascending order of name
- generate the total number of issues per student
- generate the number of closed issues per student
- generate the number of open issues per student.

Screenprint the query in **DESIGN** view.

Ensure you show:

- all criteria
- how the concatenation, calculations and sort were carried out
- the join type of the tables in the query window.

(7)

(e) A form, with a subform, is required that will allow personal tutors to view details of students in their group.

- The form should be based on the query created in 3(c).
- The subform should be based on the query created in 3(d).
- Customise the form so that data cannot be changed.

Screenprint the form in **DESIGN** view.

Ensure the method you have used to prevent personal tutors changing data can be clearly seen.

(2)

(f) The form and subform created in 3(e) need to load if a valid personal tutor has logged in.

- Amend the login form created in 3(a) so that this happens.

Screenprint in **DESIGN** view the method you have used. Ensure the detail can be seen in full.

(1)

(g) A form is required that will allow the personal tutor who is logged in to see an overview of issues for a particular student.

Create the form.

The form should:

- display a list of issues including:
 - the name of the teacher who raised the issue
 - the date that the issue was raised
 - the issue area
 - whether the issue is closed or not
- generate and display the total number of issues raised
- only show the issues for the student whose name is clicked on the form created in 3(e).

Screenprint the form in **DESIGN** view.

It does not need any annotations.

Screenprint in **DESIGN** view the method you used to display the details for the selected student only.

Annotate this screenprint to explain how your method works.

Ensure the detail can be seen in full.

(4)

(h) A form is required that will allow a teacher to raise an issue for a particular student.

(i) Create the form.

The form should allow:

- the selection of a student
- the selection of the area of issue
- the teacher to enter the details of the issue.

(2)

(ii) Generate and display a new issue ID, which is the highest issue ID currently in use plus 1.

(1)

(iii) Generate and display today's date.

(1)

Screenprint the form in **DESIGN** view.

Ensure you clearly show how the issue ID and today's date were generated.

(i) An automated method of saving a new issue is required.

Create an automated method of saving the new issue details.

The automated method of saving should:

- ensure the student has been selected
- ensure the area of issue has been selected
- ensure the issue details have been entered
- automatically assign the TeacherUsername from the login details
- save the issue details in the relevant table.

Screenprint in **DESIGN** view any macros, code and/or queries you have used.

Ensure the detail can be seen in full.

(3)

(Total for Activity 3 = 29 marks)

Activity 4 – Testing (suggested time 1 hour)

Testing is a very important aspect of database development and the prototype must be tested in order to ensure it can cope with normal and invalid data.

(a) Invalid data testing

Test the login form you created in Activity 3 to show that it will reject an invalid login attempt.

Produce:

- a screen print in **FORM** view showing the login form with your test data
- a screen print of the message that appears when the test data is submitted.

(2)

(b) Valid data testing

(i) Enter the login details of this personal tutor on the form you created in Activity 3.

Username: CW2011

Password: uugqb6374

Produce:

- a screen print in **FORM** view showing the form with the test data
- a screen print of the form that loads when the test data is submitted.

(3)

(ii) The form displays the details of all students in the tutor group. Click on the name 'Yates Kirsten'.

Produce:

- a screen print in **FORM** view of the form that appears when the name is clicked.

(3)

(c) Use the form you created in Activity 3 to create a new issue.

Enter these details.

Teacher Username: AI1057

Teacher Password: qanuly12

Student ID: 20820

Area of issue: Absence

Issue Comments: Kirsten has missed my lessons all week. I am a bit concerned as she did not appear on the absences list. Can you please speak to her or let me know if there are any problems?

Produce:

- a screen print of the completed form in **FORM** view
- a screen print of the relevant table showing the new record. Not all of the comments need to show.

(2)

(Total for Activity 4 = 10 marks)

Activity 5 – Printing tutor group issue lists (suggested time 1 hour)

Note: this activity requires you to produce a database report. The activity number, your name, candidate number and centre number should be in the page header for the report. (You need to modify your report in DESIGN view to do this.)

A personal tutor who is logged in needs to be able to print out a report showing students in their tutor group who have issues.

The report should display:

- the personal tutor details
- the group details
- the total number of issues for each student
- the number of closed issues for each student
- the number of open issues for each student
- the overall number of issues for the group as a whole.

(a) Create a query that will find students with issues for the personal tutor who is logged into the system.

The query should include:

- the first and last name of the personal tutor and the tutorial room
- the first and last name of the student and the student ID
- the date the issue was raised, the area of issue and the issue description and whether the issue is closed or not.

Screenprint the query in **DESIGN** view. Ensure that all fields and criteria can be seen in full.

(2)

(b) Create a database report.

(i) Group the report appropriately by Personal Tutor and then Student.

(2)

(ii) Ensure that the Personal Tutor group header shows these fields:

- PersonalTutorFirstName
- PersonalTutorLastName
- TutorialRoom.

(1)

(iii) Ensure that the Student group header shows these fields:

- StudentFirstName
- StudentLastName

and these labels:

- AreaOfIssue
- IssueDescription
- Closed.

(1)

(iv) Ensure that the detail section shows these fields:

- AreaOfIssue
- IssueDescription
- Closed.

(1)

(v) Ensure that the Student footer shows these calculated fields:

- Total Issues
- Number Closed Issues
- Number Open Issues.

(3)

(vi) Ensure that the Personal Tutor group footer shows the total issues overall.

(1)

(c) Format the report.

(2)

Screenprint the report in **DESIGN** view.

Print the database report for personal tutor AB2009.

Evidence to be submitted for Activity 5

- A screen print of the query in **DESIGN** view.
- The printed database report.
- A screen print of the report in **DESIGN** view.

(Total for Activity 5 = 13 marks)

***Activity 6 – Evaluation (suggested time 1 hour)**

You need to evaluate these aspects of the prototype you have produced and suggest possible extensions.

- The login form.
 - How well the form and verification of the user meets the criteria identified in the scenario.
 - Further functionality that could be added.
- Viewing the details of a tutor group and issues for a particular student.
 - How well the forms meet user needs.
 - Further functionality that could be added.
- Printing tutor group issues list.
 - How it could be improved.
- Dealing with ongoing issues.

Currently a teacher can raise an issue and a personal tutor can respond. This is fine if an issue requires no further action. However, at times the issue may be ongoing with both the teacher and personal tutor needing to add further comments.

- What changes would need to be made to the underlying structure of the database to incorporate this facility.

Produce an evaluation including extensions or enhancements as appropriate.

The Quality of your Written Communication (QWC) will be assessed in this question.

(Total for Activity 6 = 12 marks)

Standard Ways of Working.

All printouts must contain the activity number, your name, candidate number and centre number.

Pages must be securely fastened to the cover sheet and in the correct order.

A minimum font size of 10 should be used for all word processed documents.

(Standard Ways of Working = 2 marks)

TOTAL FOR PAPER = 90 MARKS

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