



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2013

INFORMATION TECHNOLOGY P1

MARKS: 150

TIME: 3 hours

This question paper consists of 9 pages.

INSTRUCTIONS AND INFORMATION

1. This is a three-hour examination. Because of the nature of this examination it is important to note that you will NOT be permitted to leave the examination room before the end of the examination session.
2. You require the files listed below in order to answer the questions. They are EITHER issued to you on a CD OR the invigilator/educator will tell you where to find them on the hard drive of the workstation you are using OR in which network folder it is. If the files are issued to you on a CD, you need to copy them onto your hard disk.

QUESTION 1

Question1_U.pas

Question1_U.dfm

Question1_P.dpr

QUESTION 2

Library.mdb

Question2_U.pas

Question2_U.dfm

Question2_P.dpr

QUESTION 3

Books.txt

Question3_U.pas

Question3_U.dfm

Question3_P.dpr

QUESTION 4

Question4_U.pas

Question4_U.dfm

Question4_P.dpr

3. Save your work at regular intervals as a precaution against power failures.
4. Read ALL the questions carefully. Do only what is required by the question.
5. During the examination you may use the manuals originally supplied with the hardware and software. You may also use the HELP functions of the software. You may NOT refer to any other resource material.

SCENARIO

A library is an important source of information, and although computers have become so accessible to many, books are still a very good resource. There are many types of books available in a library, for example: fiction, non-fiction, reference material as well as magazines and some even make video/CDs/DVDs available for use.

QUESTION 1: DELPHI

All learners are allowed to use the computers in the library for research purposes. They have a certain time limit to use the computers depending on their respective grade. They will also receive a once-off username and password.

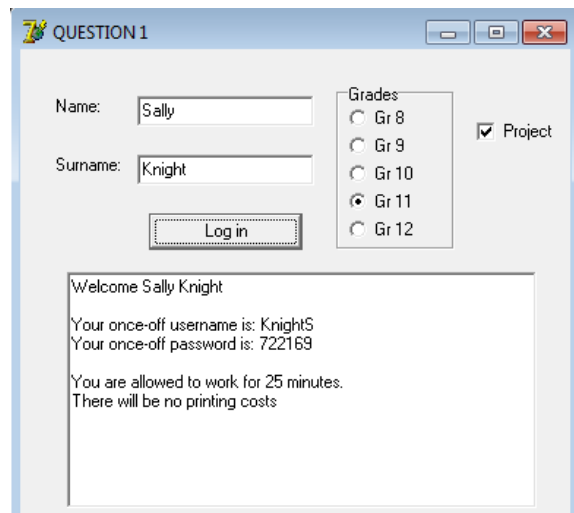
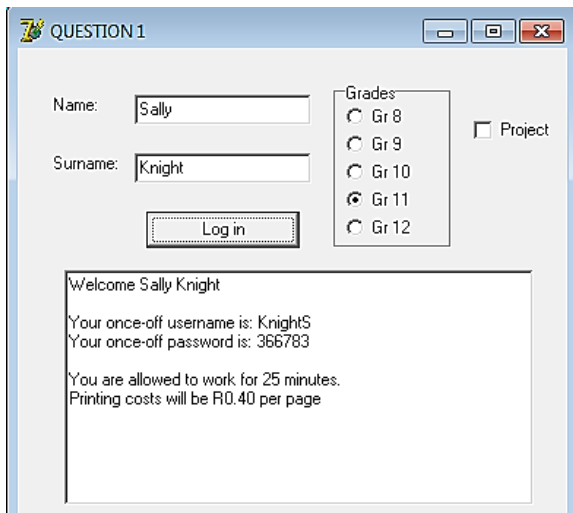
Open the **Question1_U.pas** and **Question1_P.dpr** files and complete the program.

The learners are expected to enter their names and surnames as well as select the grade they are in. The learners must also indicate whether they are working on a project. If this is the case they are allowed to print without making any payment. If the learner wants to print any other work, it will cost them R0,40 per page.

The username is created by making use of their surnames and initials of their names. The password is created by randomly generating a number between 1 and 1 000 000.

The time allowed on the computers is dependent on the grade that the learner is in. Gr 8 and Gr 9: 15 minutes; Gr 10: 20 minutes; Gr 11: 25 minutes and Gr 12: 30 minutes.

Complete the code for the 'Log in' button to produce similar output as shown below:



- Enter your name and surname as a comment in the first line of the program.
- Save your program.
- Make a printout of the code, if required.

[23]

QUESTION 2: DATABASE AND DELPHI

The database, **Library.mdb**, which contains data related to this topic, has been supplied to you in a folder named **Question 2**.

The **tblbooks** table stores data about all the books in the library. The fields in this table are defined as follows:

tblbooks : Table		
Field Name	Data Type	
Title	Text	
AuthorID	Text	
YearPublished	Number	
Language	Number	1 - English 2 - Afrikaans
ShelfNumber	Text	Shelf where book can be found

The following table is an example of the data contained in the table named **tblbooks**.

tblbooks : Table					
Title	AuthorID	YearPublished	Language	ShelfNumber	
The Ivory trail	391	1967	1	BUL 591.9	
The Power of positive thinking	2037	1966	1	PEA 170	
All about Napoleon Bonaparte	2692	1967	1	NAP 944.05	
Three great animal stories	451	1966	1	CAR 591.9	
Power of three	2253	1968	1	SAV 826	
Doctor Brad's nurse	40	1966	1	AME 826	
The Doctor's secret	717	1967	1	DEA 826	
Little Lord Fauntleroy	407	1966	1	BUR 826	
Christy	1758	1968	1	MAR 826	
Nurse Sally's last chance	799	1967	1	DUR 826	
The Stratton story	424	1967	1	CAD 826	
My Secret love	1348	1967	1	HOY 826	
Black mischief	2628	1962	1	WAU 826	
Beyond the Chindwin	876	1967	1	FER 940.63	
Double-crossers of ghost tree	2536	1965	1	TUT 826	
When Marnie was there	2195	1967	1	ROB 826	
Where eazles dare	1710	1968	1	MACL826	

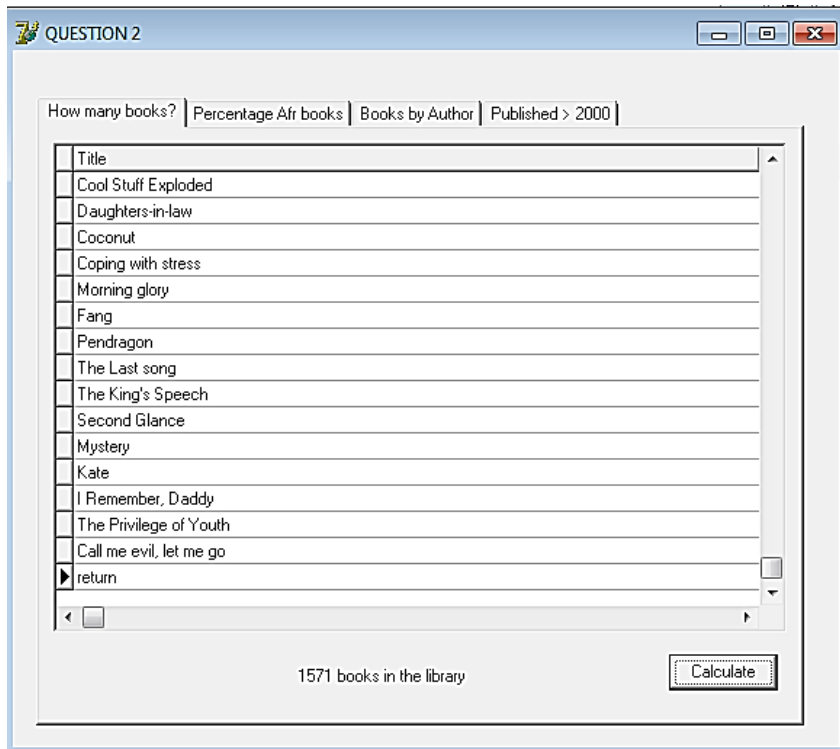
You are supplied with an incomplete Delphi program with a unit named **Question2_U** and a project named **Question2_P** in the folder named **Question 2**. Open the incomplete program.

- The program should be able to connect to the database named **Library.mdb**.
- When you do QUESTION 2.1 and you find that the connectivity is not in place, use the following steps to establish connection with the database:
 - Click on the ADOTable component named **adolibrary**.
 - Click on the Ellipse button (three dots) to the right of the 'ConnectionString' property in the Object Inspector.
 - Click on the Build button which takes you to the Data Link Properties dialogue box.
 - Select Microsoft Jet 4.0 OLE DB Provider and click on Next.
- The first option on the Connection tabsheet allows you to browse and find the **Library.mdb** file.
- Remove the user name Admin.
- Click on the Test Connection button.
- Click OK on each one of the open dialogue windows.

NOTE: If you cannot establish connectivity with the database at all when you execute the program you must still do and submit the programming code for marking.

2.1 Complete the code in the **How many books?** Menu Option to display how many books there are in the library.

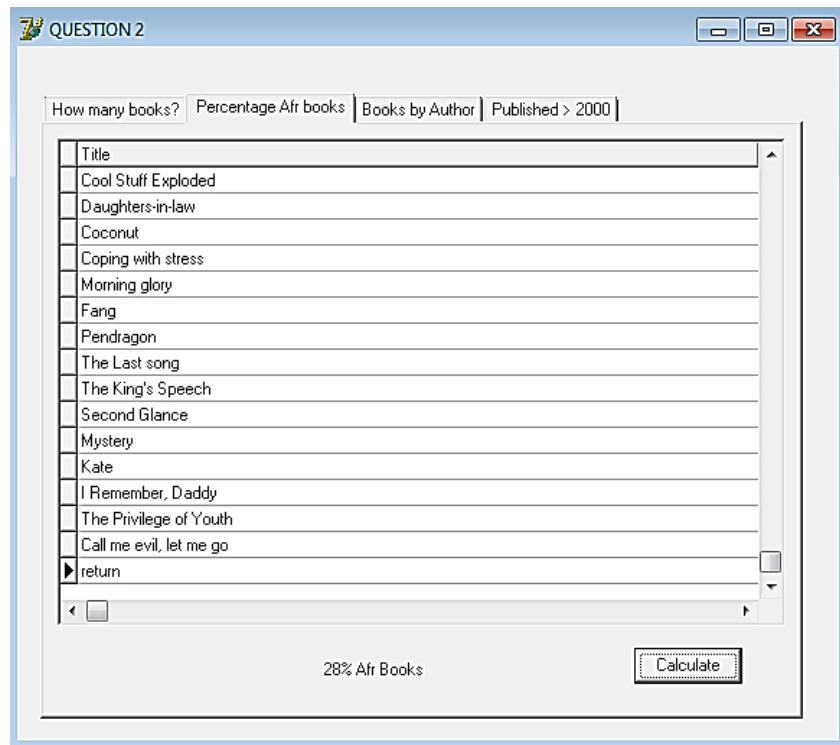
Example of output:



(7)

2.2 Complete the code in the **Percentage Afr Books** Menu Option to display the percentage of Afrikaans books in the library.

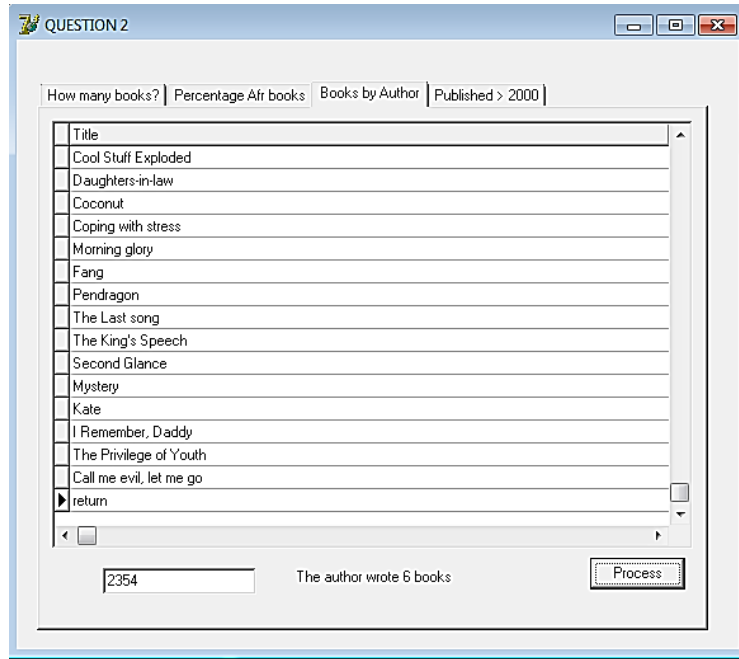
Example of output:



(10)

2.3 Complete the code in the **Books by Author?** Menu Option to display how many books of a specific author are available in the library. The AuthorID must be entered using an EditBox.

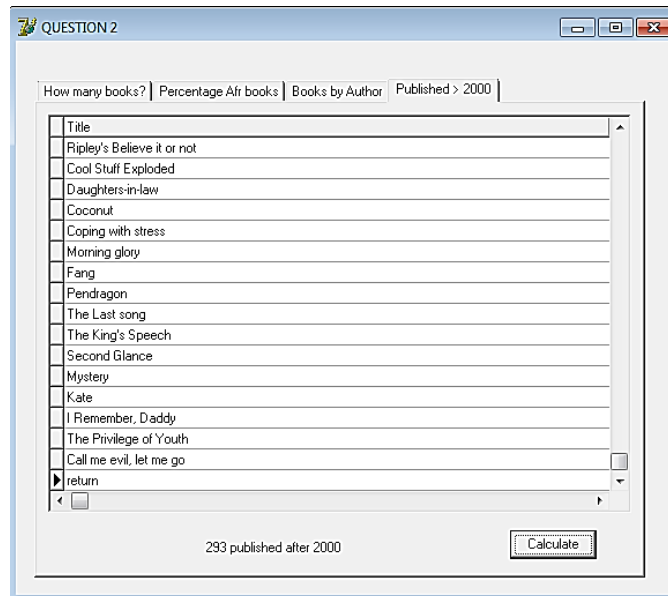
Example of output if the AuthorID **2354** (Wilbur Smith) is entered:



(9)

2.4 Complete the code in the **Published > 2000** Menu Option to display all the books in the library that were published after 2000.

Example of output:



(8)

- Enter your name and surname as a comment line in the first line of the program.
- Save your program.
- Make a printout of the code, if required.

[34]

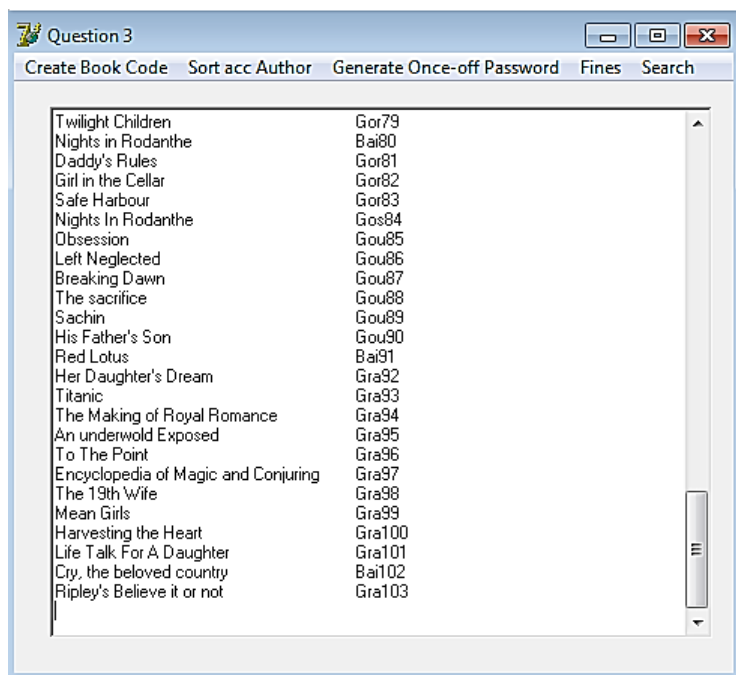
QUESTION 3: DELPHI PROGRAMMING

This question will perform many different functions that are required in a library. All the information required is stored in an array called **arrbooks**.

The layout of the array is as follows: **title; surname, initials**

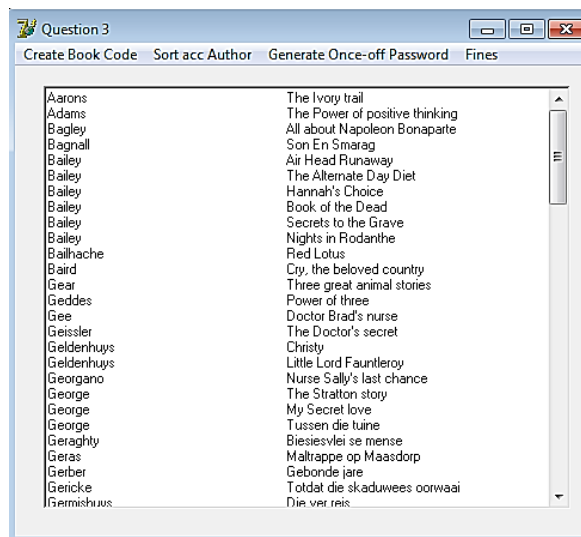
- 3.1 Write code for the **Create Book Code** Menu Option which will get the book title and place it in an additional array named **arrtitle** as well as the author and place it in another array named **arrsurname**, from the array called **arrbooks**.

The book code must then be created by taking the first three letters of the author's surname and adding the counter at the end. The title and the book code must be neatly displayed in the richedit making use of columns.



(12)

- 3.2 Write code for the **Sort acc Author** Menu Option which will display the books according to the author's surname alphabetically. Display the author's surname and book title neatly in columns.



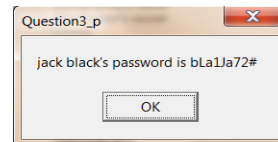
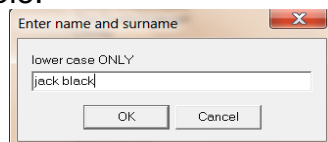
(13)

- 3.3 Write code for the **Generate Once-Off Password** Menu Option which will ask the user (librarian) to enter their name and surname in lowercase. The password must then be generated as follows:

The first three letters of the surname (the second letter must be in capitals) + random number between 0 and 9 + first two letters of the name (first letter in capitals) + random number between 0 and 99 + '#.'

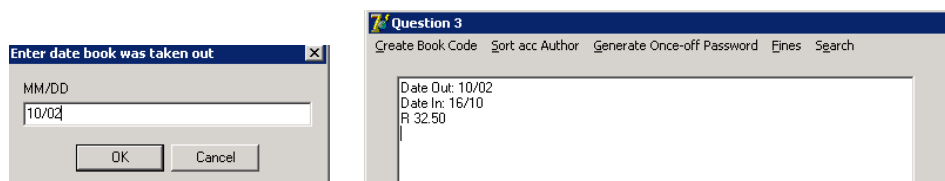
Display a message indicating what the user's password will be. The name and password must also be stored in an array named **arrpassword** (method scope).

For example:



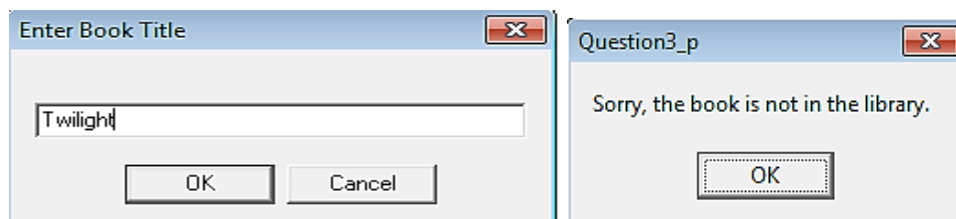
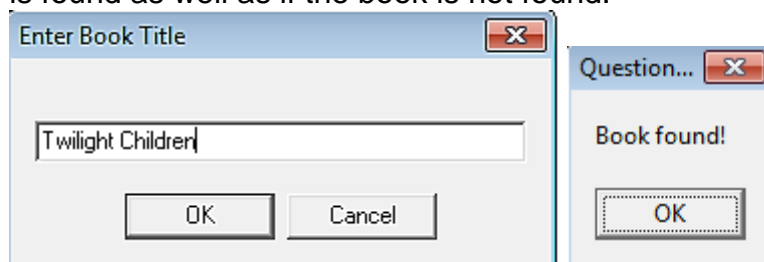
(18)

- 3.4 Write code for the **Fines** Menu Option which will ask the user to enter the date a book was taken out of the library. It must then calculate and display the amount that needs to be paid if the book is overdue. If the difference between the current date and the date (MM/DD) the book was taken out on is 14 days or less, there will be no fine. If the difference is between 14 and 21 days (included) then the fine will be R1,50 per day that it is late. If the book is more than 21 days late, then the fine will be R2,50 per day it is late. Once the fine has been calculated, display the date the book was taken out on, date the book was returned as well as the amount that is needed to be paid.



(24)

- 3.5 Write code for the **Search** Menu Option which will search for a book title as entered using an InputBox. A suitable message must be displayed if the book is found as well as if the book is not found.



(10)

- Enter your name and surname as a comment line in the first line of the program.
- Save your program.
- Make a printout of the code, if required.

[77]

QUESTION 4: DELPHI PROGRAMMING

International Standard Book Number or commonly known as ISBN is a unique number, consisting of 13 digits, assigned to a book. Each ISBN has a check digit (13th digit). There is a calculation to check whether the first 12 digits equal the check digit which then indicates that the ISBN is correct or valid.

Method: (Only use the first 12 digits)

Each digit from left to right is alternatively multiplied by 1 or 3, and then the products are added and divided by 10 to give a remainder ranging from 0 to 9. The remainder subtracted from 10 will result in a single digit which should equal the check digit.

Example: ISBN is 9780306406157

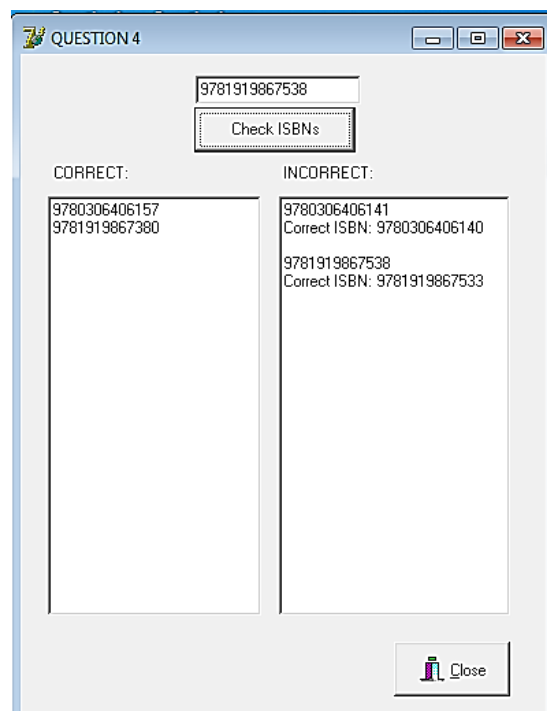
$$9 \times 1 + 7 \times 3 + 8 \times 1 + 0 \times 3 + 3 \times 1 + 0 \times 3 + 6 \times 1 + 4 \times 3 + 0 \times 1 + 6 \times 3 + 1 \times 1 + 5 \times 3 = 9 + 21 + 8 + 0 + 3 + 0 + 6 + 12 + 0 + 18 + 1 + 15 = 93$$

$$93 / 10 = 9 \text{ remainder } 3$$

$$10 - 3 = 7 \quad \text{*if this answer = 10 then it must be changed to 0*}$$

7 equals 13th digit of ISBN → ISBN correct

Complete the incomplete program to check whether the ISBN that is entered, is correct using the above method of calculation. If the ISBN is correct it must be displayed in the appropriate richedit component. If the ISBN is incorrect it must then be displayed in the appropriate richedit component. The incorrect ISBN must be corrected by replacing the incorrect check digit with the check digit which was calculated. Display the corrected ISBN below the incorrect ISBN as shown in the example below.



- Enter your name and surname as a comment line in the first line of the program.
- Save your program.
- Make a printout of the code, if required.

[16]

TOTAL: 150