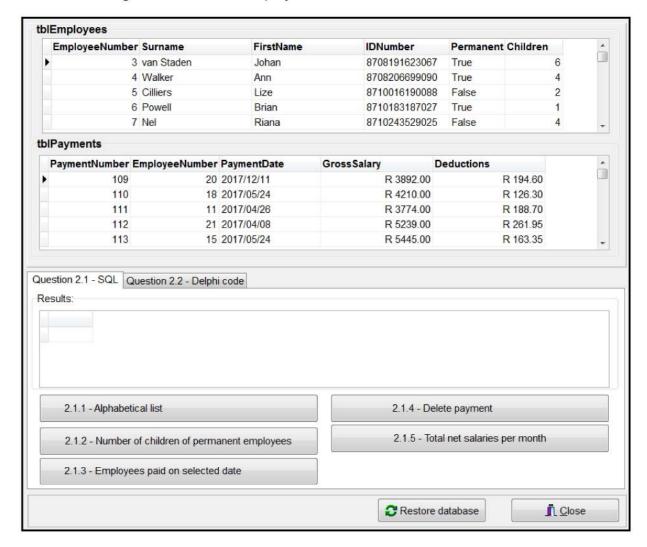**SECTION B**

QUESTION 2: DATABASE PROGRAMMING

The database **PaymentsDB** contains the information of the staff members of a restaurant. The database contains two tables, namely **tblEmployees** and **tblPayments**, with data specifically related to the year 2017.

The data pages attached at the end of the question paper provide information on the design of the database and its contents.

Do the following:

- Open the incomplete project file called **Question2_P.dpr** in the **Question2** folder.
- Enter your examination number as a comment in the first line of the **Question2_U.pas** unit file.
- Compile and execute the program. The program has no functionality currently.

    The following user interface is displayed:

tblEmployees

EmployeeNumber	Surname	FirstName	IDNumber	Permanent	Children
3	van Staden	Johan	8708191623067	True	6
4	Walker	Ann	8708206699090	True	4
5	Cilliers	Lize	8710016190088	False	2
6	Powell	Brian	8710183187027	True	1
7	Nel	Riana	8710243529025	False	4

tblPayments

PaymentNumber	EmployeeNumber	PaymentDate	GrossSalary	Deductions
109	20	2017/12/11	R 3892.00	R 194.60
110	18	2017/05/24	R 4210.00	R 126.30
111	11	2017/04/26	R 3774.00	R 188.70
112	21	2017/04/08	R 5239.00	R 261.95
113	15	2017/05/24	R 5445.00	R 163.35

Question 2.1 - SQL   Question 2.2 - Delphi code

Results:

2.1.1 - Alphabetical list	2.1.4 - Delete payment
2.1.2 - Number of children of permanent employees	2.1.5 - Total net salaries per month
2.1.3 - Employees paid on selected date	

⟳ Restore database   ⬛ Close

- Follow the instructions that follow to complete the code for each section, as described in QUESTION 2.1 and QUESTION 2.2.
- Use SQL code to answer QUESTION 2.1 and Delphi code to answer QUESTION 2.2.

NOTE:

- The **[Restore database]** button is provided to restore the data contained in the database to the original content. If you need to test your code on the original data, you may click this button to restore the data.
- The content of the database is password protected. Therefore you will not be able to gain access to the content of the database with Microsoft Access.
- Do NOT change any of the code provided.
- Code is provided to link the GUI components to the database.
- TWO variables are declared as public variables, as described in the table below.

Variable	Data type	Description
tblEmployees	TADOTable	Refers to the table tblEmployees
tblPayments	TADOTable	Refers to the table tblPayments

2.1   **Tab sheet [Question 2.1 – SQL]**

In this section you may use ONLY SQL statements to answer QUESTION 2.1.1 to QUESTION 2.1.5.

Code to execute the SQL statements and display the results of the queries is provided. The SQL statements are incomplete.

The following user interface is displayed:

Do the following to complete the incomplete SQL statements assigned to the variables **sSQL1**, **sSQL2**, **sSQL3**, **sSQL4** and **sSQL5** per question respectively:

2.1.1   **Button [2.1.1 – Alphabetical list]**

Display ALL details of employees in the **tblEmployees** table, sorted alphabetically according to the surname field.

Example of output of the first four records:

EmployeeNumber	Surname	Firstname	IDNumber	Permanent	Children
11	Adams	Megan	8804108271062	True	6
18	Ajam	Amy	8808023964093	False	1
22	Barth	Luke	8811045557049	False	5
23	Boreham	Olwethu	8812163974057	False	5

(3)

2.1.2   **Button [2.1.2 – Number of children of permanent employees]**

Display the surname, first name and number of children of all the permanent employees with more than three children.

Example of output of the first four records:

Surname	FirstName	Children
van Staden	Johan	6
Walker	Ann	4
Botha	Rina	5
Adams	Megan	6

(5)

2.1.3   **Button [2.1.3 – Employees paid on selected date]**

Display the payment number and ID number of all the employees who were paid on 2017/01/17.

Example of output:

PaymentNumber	IDNumber
131	8708191623067
149	8804101172067

(6)

2.1.4   **Button [2.1.4 – Delete payment]**

Delete the record with the payment number 110 from the **tblPayments** table.

Code has been provided to display a message to indicate that the content of the database was changed.

(3)

2.1.5   **Button [2.1.5 – Total net salaries per month]**

The net salary of an employee is calculated by subtracting the deductions from the gross salary.

Calculate and display the total amount that the restaurant has paid towards net salaries per month. Display the month using the field name **MonthNum** and display the calculated amount using the field name **TotalAmountPaid**. Format the amount as currency.

Example of output for the first three months if the original data was used:

MonthNum	TotalAmountPaid
1	R 48 979.69
2	R 45 462.89
3	R 39 069.39

(8)

2.2   **Tab sheet [Question 2.2 – Delphi code]**

In this section only Delphi programming code may be used to answer QUESTION 2.2.1 to QUESTION 2.2.3.

NO marks will be awarded for SQL statements in QUESTION 2.2.

The user interface for QUESTION 2.2 is shown below.

2.2.1   **Button [2.2.1 – Temporary employees]**

Write code to display the surname, first name and number of children of all temporary employees from the **tblEmployees** table in the rich edit component **redQ2**.

NOTE: Code for headings and columns are provided.

Example of output for first four records:

Temporary employees		
Surname	FirstName	Children
Cilliers	Lize	2
Nel	Riana	4
Magwa	Megan	4
Cerfontein	Lwazi	3

(6)

2.2.2   **Button [2.2.2 – Add an employee]**

Write code to add a record to the **tblEmployees** table. The data of the employee to be added is provided below.

Surname: Zwelini
First name: Lungile
ID number: 7601050179081
Permanent: Yes
Children: 3

Example of the last few records in the **tblEmployees** table after adding the record for Lungile:

EmployeeNumber	Surname	FirstName	IDNumber	Permanent	Children
26	Makuleni	Nicola	8906138880020	False	6
27	Crawford	Bulumko	9007082259024	True	2
28	Plaatjies	Bulumko	9007082259029	True	2
29	Bosch	Tegan	9007262590039	True	3
30	Zwelini	Lungile	7601050179081	True	3

(5)

2.2.3   **Button [2.2.3 – Update deductions]**

The deductions amount for a specific payment was captured incorrectly. The user must select a record from the DBGrid **dbgPayments**.

Write code to update the deductions field of the record that has been selected by increasing the deductions amount by 1% of the gross salary.

Example of content of record if payment number 112 was selected:

PaymentNumber	EmployeeNumber	PaymentDate	GrossSalary	Deductions
112	21	2017/04/08	R 5239.00	R 261.95

Example of updated content of record with payment number 112:

PaymentNumber	EmployeeNumber	PaymentDate	GrossSalary	Deductions
112	21	2017/04/08	R 5239.00	R 314.34

(4)

- Ensure that your examination number has been entered as a comment in the first line of the program file.
- Save your program.
- Print the code if required.

TOTAL SECTION B: 40