## SECTION B

## QUESTION 2: DATABASE PROGRAMMING

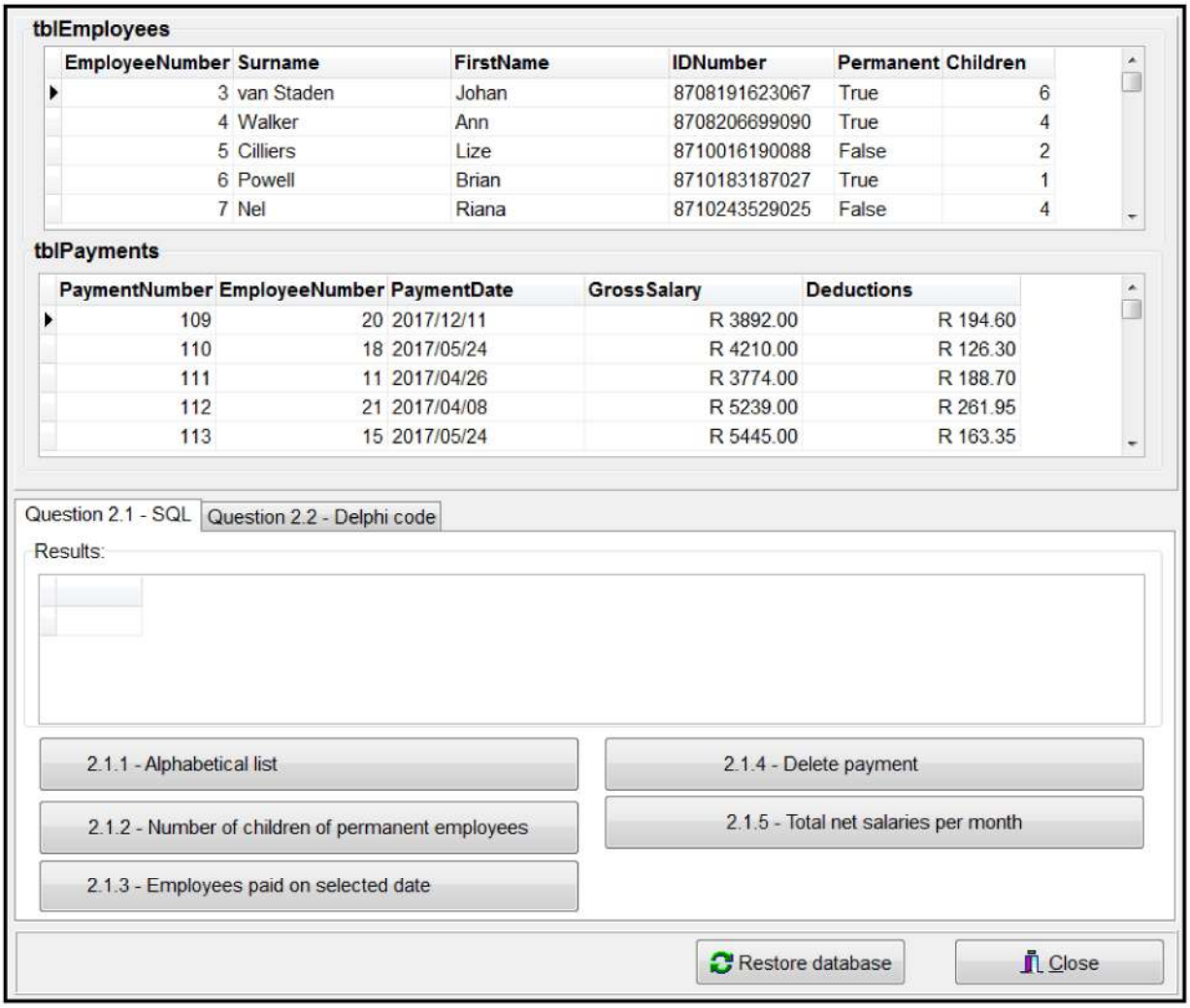
The database **PaymentsDB** contains the information of the staff members of a restaurant. The database contains two tables, namely **tblEmployees** and **tblPayments**, with data specifically related to the year 2017.

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:



- 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.

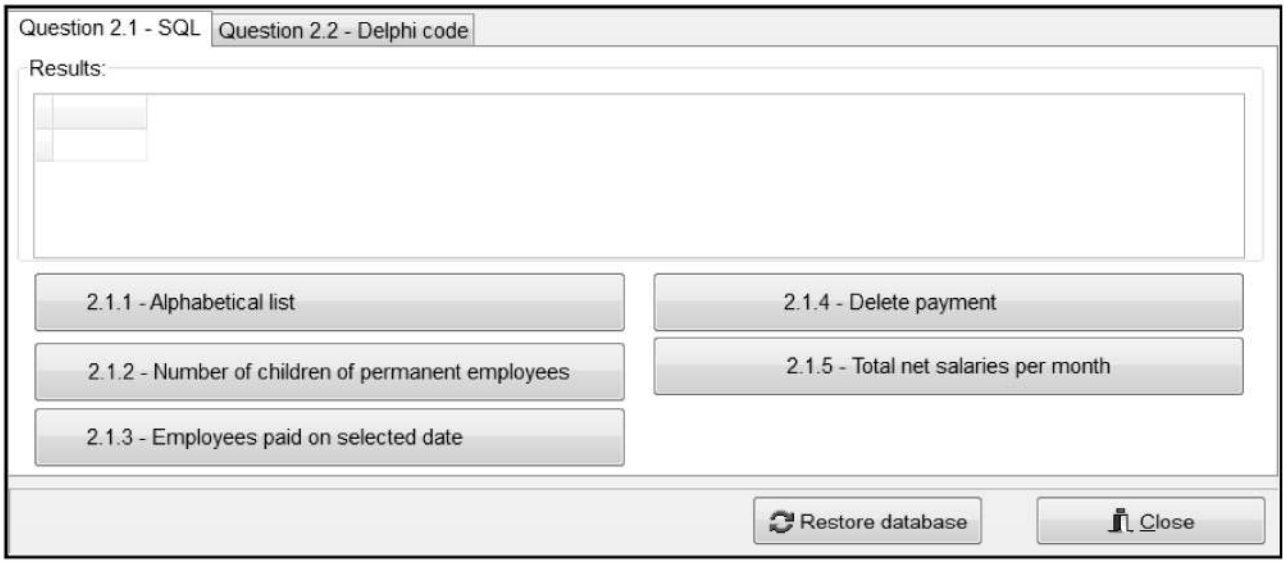
| Variable | Data type | Description |
|---|---|---|
| `tblEmployees` | `TADOTable` | Refers to the table tblEmployees |
| `tblPayments` | `TADOTable` | Refers to the table tblPayments |

## 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 |

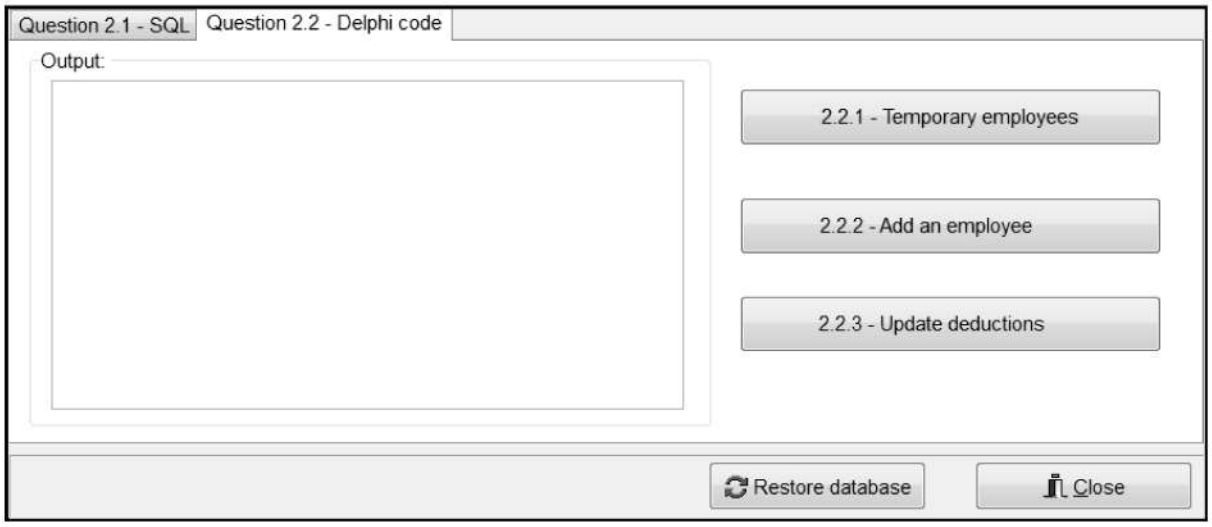
(8)

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**