ANNEXURE F: SOLUTION FOR QUESTION 2

```
unit Question2 U;
// --- Delphi and Database programming -----
// Possible solution for Question 2.
interface
uses
  Windows, Messages, SysUtils, Variants, Classes, Graphics, Controls, Forms,
  Dialogs, StdCtrls, Buttons, ExtCtrls, ConnectDB U, DB, ADODB, Grids,
  DBGrids, ComCtrls, DateUtils, DBCtrls;
type
  TfrmDBQuestion2 = class(TForm)
    pnlBtns: TPanel;
    bmbClose: TBitBtn;
    bmbRestoreDB: TBitBtn;
    grpTblPayments: TGroupBox;
    grpTblEmployees: TGroupBox;
    dbgEmployees: TDBGrid;
    dbgPayments: TDBGrid;
    tabsQ2 2ADO: TTabSheet;
    tabsQ2 1SQL: TTabSheet;
    btnQ2 2 1: TButton;
    redQ2: TRichEdit;
    grpresults: TGroupBox;
    dbgrdSQL: TDBGrid;
    grpOutput: TGroupBox;
    pgcTabs: TPageControl;
    pnlTables: TPanel;
    btnQ2 1 1: TButton;
    btn0213: TButton;
    btnQ212: TButton;
    btnQ2 1 4: TButton;
    btnQ2 1 5: TButton;
    btnQ2 2 2: TButton;
    btnQ2 2 3: TButton;
    procedure bmbRestoreDBClick (Sender: TObject);
    procedure FormCreate(Sender: TObject);
    procedure FormClose (Sender: TObject; var Action: TCloseAction);
    procedure btnQ2 1 1Click(Sender: TObject);
    procedure btnQ213Click(Sender: TObject);
    procedure btnQ212Click(Sender: TObject);
    procedure btnQ2_1_4Click(Sender: TObject);
procedure btnQ2_1_5Click(Sender: TObject);
procedure btnQ2_2_1Click(Sender: TObject);
procedure btnQ2_2_1Click(Sender: TObject);
procedure btnQ2_2_2Click(Sender: TObject);
procedure btnQ2_2_3Click(Sender: TObject);
  private
  public
  end;
var
  frmDBQuestion2: TfrmDBQuestion2;
  dbCONN: TConnection;
  // Provided global variables
  tblEmployees, tblPayments : TADOTable;
implementation
{$R *.dfm}
[$R+]
{$Region 'Question 2.1 - SQL SECTION'}
```

```
// ------
// Question 2.1.1
                (3 marks)
// -----
procedure TfrmDBQuestion2.btnQ2 1 1Click(Sender: TObject);
 sSQL1: String;
begin
 sSQL1 := 'SELECT * FROM tblEmployees ORDER BY Surname ASC';
 // Provided code - do not change
 dbCONN.runSQL(sSQL1);
end:
// -----
// Question 2.1.2 (5 marks)
// -----
procedure TfrmDBQuestion2.btnQ212Click(Sender: TObject);
var
 sSQL2: String;
begin
sSQL2 := 'SELECT Surname, FirstName, Children '+
       'FROM tblEmployees WHERE Children > 3 AND Permanent = TRUE';
 // Provided code - do not change
 dbCONN.runSQL(sSQL2);
end:
// -----
// Question 2.1.3 (6 marks)
// -----
procedure TfrmDBQuestion2.btnQ213Click(Sender: TObject);
var
 sSQL3: String;
begin
  sSQL3 := 'SELECT PaymentNumber, IDNumber FROM tblEmployees E, tblPayments P
    '+ 'WHERE E.EmployeeNumber = P.EmployeeNumber AND PaymentDate =
            #2017/01/17#';
 // Provided code - do not change
 dbCONN.runSQL(sSQL3);
end;
// Question 2.1.4 (3 marks)
procedure TfrmDBQuestion2.btnQ2 1 4Click(Sender: TObject);
 sSQL4: String;
 sSQL4 := 'DELETE * FROM tblPayments WHERE PaymentNumber = 110';
 // Provided code - do not change
 dbCONN.executeSQL(sSQL4, dbgPayments);
// -----
// Question 2.1.5
             (8 marks)
procedure TfrmDBQuestion2.btnQ2 1 5Click(Sender: TObject);
 sSQL5: String;
begin
 sSQL5 := 'SELECT Month(PaymentDate) as MonthNum, '+
   'FORMAT(SUM(GrossSalary-Deductions), "Currency") AS TotalAmountPaid '
   + ' FROM tblPayments GROUP BY Month (PaymentDate) ';
// Provided code - do not change
 dbCONN.runSQL(sSQL5);
end;
{$EndRegion}
{$Region 'Question 2.2 - Delphi section'}
```

```
// Question 2.2.1 (6 marks)
// -----
procedure TfrmDBQuestion2.btnQ2 2 1Click(Sender: TObject);
begin
 // Provided code
 red02.Clear:
 redQ2.Paragraph.TabCount := 2;
 redQ2.Paragraph.Tab[0] := 80;
 redQ2.Paragraph.Tab[1] := 150;
 redQ2.Lines.Add('Temporary employees');
 redQ2.SelAttributes.Style := [fsBold, fsUnderline];
 redQ2.Lines.Add('Surname' + #9 + 'Firstname' + #9 + 'Children');
 // Add your code here
 tblEmployees.First;
 while not tblEmployees.Eof do
 begin
   if (tblEmployees['Permanent'] = False) then
     redDisplay.Lines.Add(tblEmployees['Surname'] + #9 +
        tblEmployees['FirstName'] + #9 + IntToStr(tblEmployees['Children']));
   end:
   tblEmployees.Next;
 end;
 // Alternative solution
 // tblEmployees.First;
 // while not tblEmployees.Eof do
 // begin
 11
      if (tblEmployees.FieldByName('Permanent').AsBoolean = False) then
 11
       redDisplay.Lines.Add(tblEmployees.FieldByName('Surname').AsString
 11
          + #9 + tblEmployees.FieldByName('FirstName').AsString
 11
 11
          + #9 + tblEmployees.FieldByName('Children').AsString);
 // end;
 // tblEmployees.Next;
 // end;
end:
// Question 2.2.2 (5 marks)
procedure TfrmDBQuestion2.btnQ2 2 2Click(Sender: TObject);
 tblEmployees.Insert;
 tblEmployees['Surname'] := 'Zwelini';
 tblEmployees['Firstname'] := 'Lungile';
 tblEmployees['IDNumber'] := '7601050179081';
 tblEmployees['Permanent'] := True;
 tblEmployees['Children'] := 3;
 tblEmployees.Post;
 // Alternative solution
 // tblEmployees.Insert;
 // tblEmployees.FieldByName('Surname').AsString := 'Zwelini';
 // tblEmployees.FieldByName('Firstname').AsString := 'Lungile';
 // tblEmployees.FieldByName('IDNumber').AsString := '7601050179081';
 // tblEmployees.FieldByName('Permanent').AsBoolean := True;
 // tblEmployees.FieldByName('Children').AsInteger := 3;
 // tblEmployees.Post;
end:
```

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// ------
// Question 2.2.3
                  (4 marks)
procedure TfrmDBQuestion2.btnQ2 2 3Click(Sender: TObject);
begin
 tblPayments.Edit;
 tblPayments['Deductions'] := tblPayments['Deductions'] + tblPayments
   ['GrossSalary'] * 0.01;
 tblPayments.Post;
 // Alternative solution
 // tblPayments.Edit;
 // tblPayments.FieldByName('Deductions').AsFloat :=
       tblPayments.FieldByName'Deductions').AsFloat +
 11
       (tblPayments.FieldByName('GrossSalary').AsFloat * 0.01);
 // tblPayments.Post;
end;
//-----
{$EndRegion}
{ $REGION 'Setup DB connections - DO NOT CHANGE!' }
procedure TfrmDBQuestion2.bmbRestoreDBClick(Sender: TObject);
begin
 dbCONN.RestoreDatabase(dbgEmployees, dbgPayments, dbgrdSQL);
 redQ2.Clear;
 tblEmployees := dbCONN.tblOne;
 tblPayments := dbCONN.tblMany;
end;
procedure TfrmDBQuestion2.FormClose(Sender: TObject; var Action: TCloseAction);
begin
 dbCONN.dbDisconnect;
end;
procedure TfrmDBQuestion2.FormCreate(Sender: TObject);
begin
 CurrencyString := 'R';
 dbCONN := TConnection.Create;
 dbCONN.dbConnect;
 tblEmployees := dbCONN.tblOne;
 tblPayments := dbCONN.tblMany;
 dbCONN.setupGrids(dbgEmployees, dbgPayments, dbgrdSQL);
 pgcTabs.ActivePageIndex := 0;
end;
{$ENDREGION}
end.
```