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;
    btnQ213: 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_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);
var
  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);
var
  sSQL4: String;
begin
  sSQL4 := 'DELETE * FROM tblPayments WHERE PaymentNumber = 110';
  // Provided code - do not change
  dbCONN.executeSQL(sSQL4, dbgPayments);
end;
// ========================================================================
// Question 2.1.5        (8 marks)
// ========================================================================
procedure TfrmDBQuestion2.btnQ2_1_5Click(Sender: TObject);
var
  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
  redQ2.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
    begin
      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
  //     if (tblEmployees.FieldByName('Permanent').AsBoolean = False) then
  //       begin
  //         redDisplay.Lines.Add(tblEmployees.FieldByName('Surname').AsString
  //           + #9 + tblEmployees.FieldByName('FirstName').AsString
  //           + #9 + tblEmployees.FieldByName('Children').AsString);
  //       end;
  //     tblEmployees.Next;
  //   end;
end;
// ========================================================================
// Question 2.2.2          (5 marks)
// ========================================================================
procedure TfrmDBQuestion2.btnQ2_2_2Click(Sender: TObject);
begin
  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;
```

```
// =====================================================================
// 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 +
  //      (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.
```