SECTION B

QUESTION 2: DATABASE PROGRAMMING

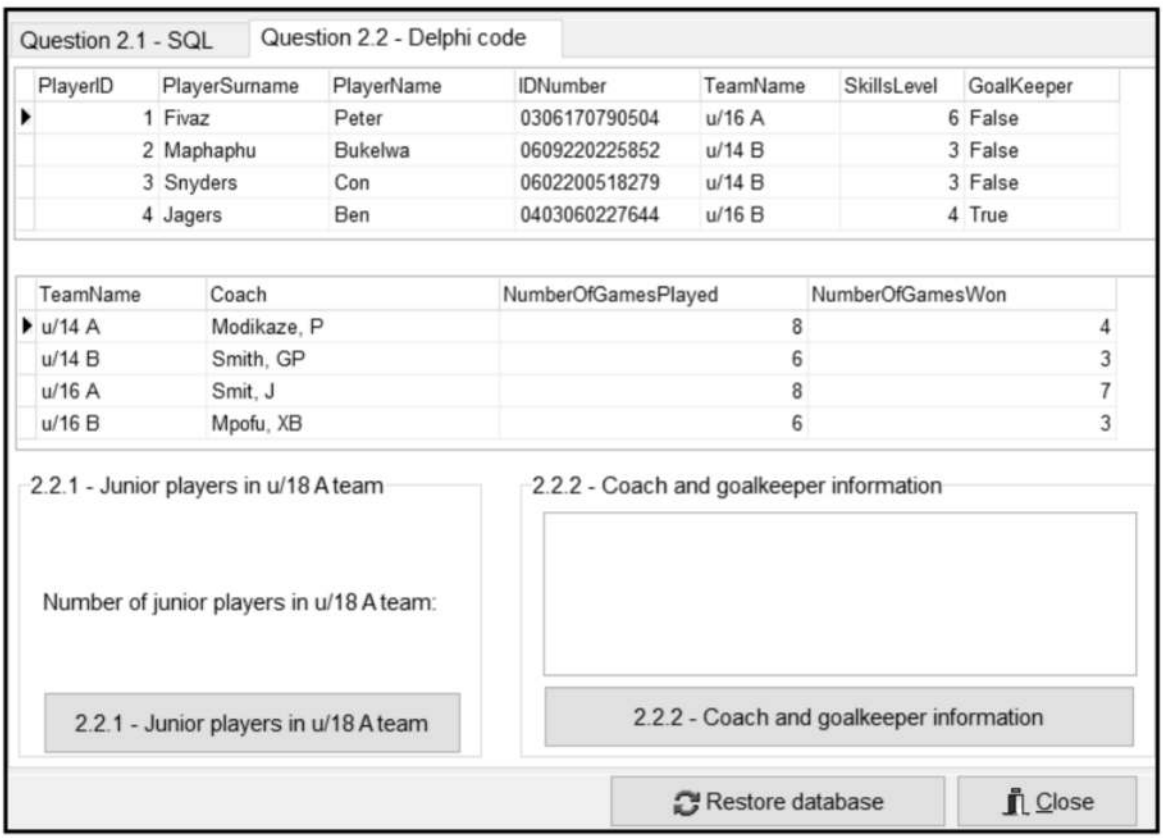
The hockey organiser at your school requires your assistance with the administration of the players, teams and coaches.

The database **HockeyDB** contains two tables called **tblPlayers** and **tblTeams.**

The data pages attached at the end of this question paper provide information on the design of the database and the content of the tables.

Do the following:

- Open the incomplete project file called **Question2_P.dpr** in the **Question 2** 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 content of the tables is displayed as shown below on the selection of **Tabsheet Question 2.2 - Delphi code**.



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

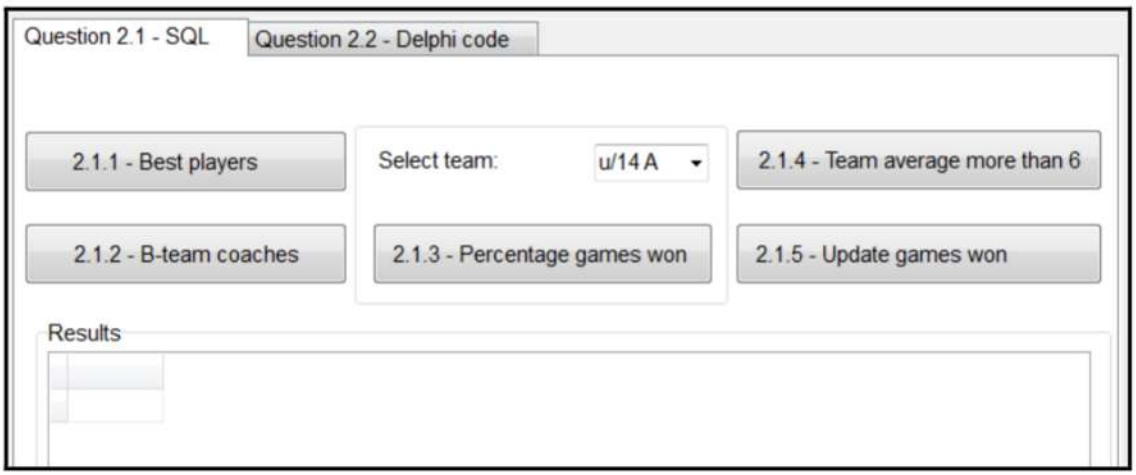
NOTE:

- The 'Restore database' button is provided to restore the data contained in the database to the original content.
- The content of the database is password protected, in other words you will not be able to gain access to the content of the database using Microsoft Access.
- Code is provided to link the GUI components to the database. Do NOT change any of the code provided.
- TWO variables are declared as global variables, as described in the table below.

Variable	Data type	Description
`tblTeams`	`TADOTable`	Refers to the table **tblTeams** in the database **HockeyDB**
`tblPlayers`	`TADOTable`	Refers to the table **tblPlayers** in the database **HockeyDB**

2.1 Tab sheet [Question 2.1 - SQL]

Example of the GUI for QUESTION 2.1:



NOTE:

- Use ONLY SQL statements to answer QUESTION 2.1.1 to QUESTION 2.1.5.
- Code is provided to execute the SQL statements and display the results of the queries. The SQL statements assigned to the variables **sSQL1**, **sSQL2**, **sSQL3**, **sSQL4** and **sSQL5** are incomplete.

Complete the SQL statements to perform the tasks described in QUESTION 2.1.1 to QUESTION 2.1.5 that follow.

2.1.1 **Button [2.1.1 - Best players]**

Display the surnames and names of all players with a skills level of 10.

Example of output of the first four records:

PlayerSurname	PlayerName
Mjikelo	Karel
Goliath	Siphokazi
Ncamiso	Nozipo
Baxter	Nomhle

(3)

2.1.2 **Button [2.1.2 - B-team coaches]**

Display the names of the coaches and teams of all the B-teams.

Example of output:

Coach	TeamName
Smith, GP	u/14 B
Mpofu, XB	u/16 B
Mullan, NV	u/18 B

(4)

2.1.3 **Button [2.1.3 - Percentage games won]**

Code has been provided to extract a team name from the combo box, **cmbQ2_1_3**.

Display the name of the team, their coach and the **percentage** of games won by the team. Save the percentage of games won in a calculated field called **PercentageGamesWon**.

Example of output if the u/14 B team was selected:

TeamName	Coach	PercentageGamesWon
u/14 B	Smith, GP	50

NOTE: You do NOT have to format the calculated value. (4)

2.1.4 **Button [2.1.4 - Team average more than 6]**

The average skills levels of teams are used to identify teams with the highest possibility of winning their games.

Display the names and average skills levels of all teams with an average skills level of more than 6. The average skills level per team must be saved in a calculated field called **AverageSkillsLevel**, formatted to ONE decimal place.

Example of output:

TeamName	AverageSkillsLevel
u/14 A	8.2
u/16 A	7.7
u/18 A	8.4

(5)

2.1.5 **Button [2.1.5 - Update games won]**

The results of the games won during the last sports day must be used to update the **NumberOfGamesWon** field. Only the u/14 B team lost their game.

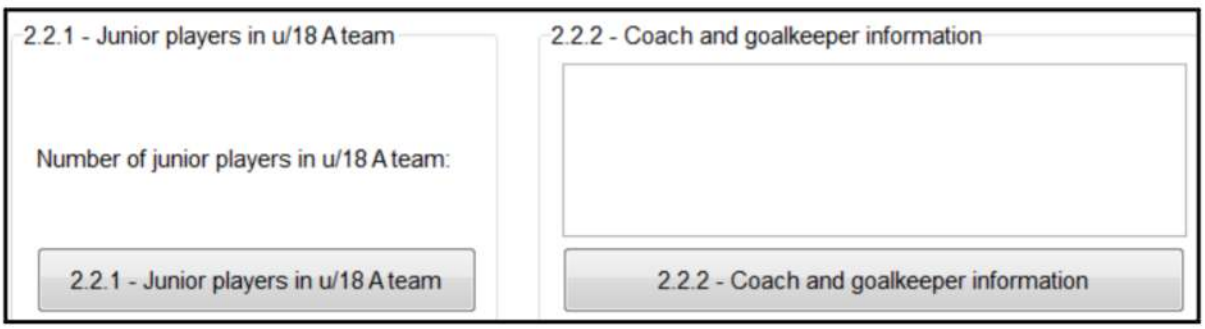
Update the data in the **tblTeams** table by adding a value of 1 to the **NumberOfGamesWon** field for the teams who won their game.

Example of output:

(3)

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

Example of GUI for QUESTION 2.2:



NOTE:

- Use ONLY Delphi programming code to answer QUESTION 2.2.1 and QUESTION 2.2.2.
- NO marks will be awarded for SQL statements in QUESTION 2.2.

2.2.1 **Button [2.2.1 - Junior players in u/18 A team]**

The u/18 A team includes some of the junior players that are exceptionally talented. Junior players are players that were born after the year 2002.

NOTE: The first two digits of the **IDNumber** field indicate the year of birth of a player.

Write code to do the following:

- Save the surnames and names of all the junior players who are members of the u/18 A team to a new text file called **Junior18A.txt**.
- Determine the total number of junior players in the u/18 A team and display the result in the **lblQ2_2_1** label.

Example of content of the **Junior18A** text file:

```
Cannon Julian
Goliath Siphokazi
```

Example of output to be displayed on the **lblQ2_2_1** label:

Number of junior players in u/18 A team: 2

(11)

2.2.2 **Button [2.2.2 - Coach and goalkeeper information]**

The coach and goalkeeper of all the teams are invited to a special training session.

Code has been provided to set the various column widths and to display the headings, as shown in the example of output.

Write code to display a list containing the following information on each team:

- Name of the team
- Surname and initials of the coach
- Surname and name of the goalkeeper in the format:

```
<Surname>, <Name>
```

Example of output of the first five records:

TeamName	Coach	Goalkeeper
u/14 A	Modikaze, P	Nel, Koos
u/14 B	Smith, GP	Scheepers, Kurtley
u/16 A	Smit, J	Phillips, Moses
u/16 B	Mpofu, XB	Jagers, Ben
u/18 A	Decan, H	David, Ivan

(10)

- 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

INFORMATION TECHNOLOGY P1

DATABASE INFORMATION OF HockeyDB FOR QUESTION 2:

The design of the database tables is as follows:

Table: **tblTeams**

This table contains the data of all the hockey coaches.

Field name	Data type	Description
TeamName (PK)	Text (10)	A unique team name. A team name is saved in the format 'u/18 A', where A indicates an A-team, B indicates a B-team and so on. The number 18 is the age group of the team players.
Coach	Text (25)	The surname and initials of the team's coach
NumberOfGamesPlayed	Integer	The total number of games the team played this season
NumberOfGamesWon	Integer	The total number of games the team won this season

Example of the first four records of the **tblTeams** table:

TeamName	Coach	NumberOfGamesPlayed	NumberOfGamesWon
u/14 A	Modikaze, P	8	4
u/14 B	Smith, GP	6	3
u/16 A	Smit, J	8	7
u/16 B	Mpofu, XB	6	3

Table: **tblPlayers**

This table contains the data of the hockey players of three different age groups:

Field name	Data type	Description
PlayerID (PK)	Autonumber	A unique number assigned to the player
PlayerSurname	Text (25)	The surname of the player
PlayerName	Text (25)	The name of the player
IDNumber	Text (20)	The South African ID number – first 6 digits is the person's date of birth in the format yymmdd.
TeamName	Text (10)	The team name that the player is a member of, e.g. 'u/18 A'
SkillsLevel	Integer	A value in the range 1 to 10 indicating the player's skills level. A value of 1 indicates a low skills level. A value of 10 indicates a high skills level.
GoalKeeper	Boolean	A value indicating whether the player is a goalkeeper (true) or not (false)

Example of the first four records of the **tblPlayers** table:

PlayerID	PlayerSurname	PlayerName	IDNumber	TeamName	SkillsLevel	GoalKeeper
1	Fivaz	Peter	0306170790504	u/16 A	6	False
2	Maphaphu	Bukelwa	0609220225852	u/14 B	3	False
3	Snyders	Con	0602200518279	u/14 B	3	False
4	Jagers	Ben	0403060227644	u/16 B	4	True

NOTE:

- Connection code has been provided.
- The database is password protected, therefore you will not be able to access the database directly.

The following one-to-many relationship with referential integrity exists between the two tables in the database: