Province of the
EASTERN CAPE
EDUCATION

NATIONAL
SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2016

INFORMATION TECHNOLOGY P1

MARKS: 150

TIME: 3 hours

IINFTE

This question paper consists of 11 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Candidates must answer ALL four questions.

2. The duration of this examination is three hours. Because of the nature of this examination it is important to note that you will not be permitted to leave the examination room before the end of the examination session.

3. Answer only what is asked in each question. For example, if the question does not ask for data validation, then no marks will be awarded for data validation.

4. Your programs must be coded in such a way that they will work with any data and not just the sample data supplied or any data extracts that appear in the question paper.

5. Routines such as search, sort and selection must be developed from first principles. You may NOT use the built-in features of a programming language for any of these routines.

6. Save your work regularly.

7. The files that you need to complete this question paper have been given to you. The files are provided in the form of password-protected executable files.

    Do the following:
    *   Double click on the password-protected executable file.
    *   Click on the extract button.
    *   Enter the following password: **Cycling*#&**

    Once extracted, the following list of files will be available in the folder **DataNov2016**:

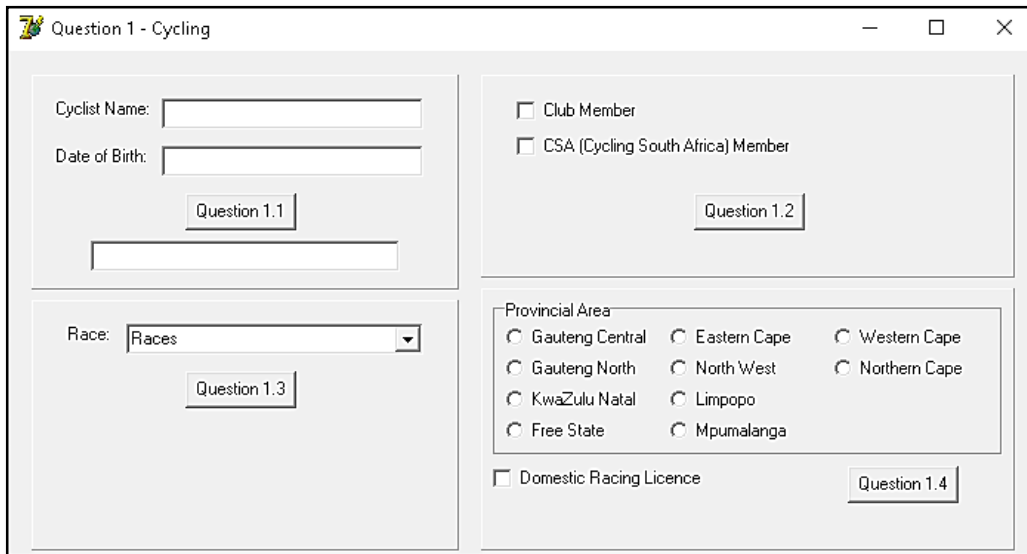| Question 1:	Question 2:	Question 3:	Question 4:
Question1P.dpr	Question2P.dpr	Question3P.dpr	Question4P.dpr
Question1P.res	Question2P.res	Question3P.res	Question4P.res
Question1U.dfm	Question2U.dfm	Question3U.dfm	Question4U.dfm
Question1U.pas	Question2U.pas	Question3U.pas	Question4U.pas
	timetrial.txt		Cycling.mdb

SCENARIO

Cycling is one of the fastest growing sports at the moment. There are more and more races available for cyclists to compete in, either road cycling or mountain biking. Most tourist attractions are also catering for the cyclist with a 5 km off-road track. Cycling is not limited to only the fittest, but rather a sport where anyone can take part; regardless of age and fitness level.

QUESTION 1: GENERAL PROGRAMMING SKILLS

A variety of aspects concerning cycling is dealt with in this question.

An example of the GUI is given below:

Complete the code for each section of QUESTION 1 as described in QUESTION 1.1 to QUESTION 1.4.

1.1   Cyclists are divided into two different categories namely, Junior and Senior. The categories are decided based on ages. If the cyclist is 18 years or younger they fall in the Junior category and cyclists older than 18 will fall in the Senior category.

Write code to ask the user to enter their name and date of birth. Display the category based on the age in the text area.

NOTE: The date of birth must be entered in the format: YYYY/MM/DD

Example of output:
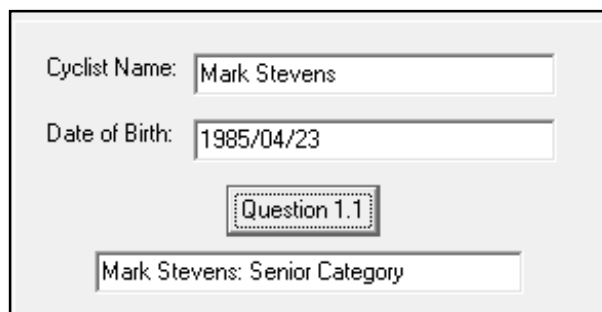
(8)

1.2 Each cyclist has to pay race fees when they enter into races. If they are a member of Cycling SA, they will get a 10%. They will also get a discount of 6% if they belong to a club.

Write code to inform the user how much discount, if any, they can expect on their race fees.

Example of output if club member is selected:

Example of output if club member and CSA options are selected:

Example of output if no option is selected:

(6)

1.3 Race numbers are assigned to cyclists. The race number consists of the initials of the race name, for example Bay to Beach will be BtB as well as a random number between 1000 and 9999 (numbers included).

Write code to determine the race number for the cyclists based on the race that they are taking part in.

Example of output (output will be different due to random numbers that are generated):
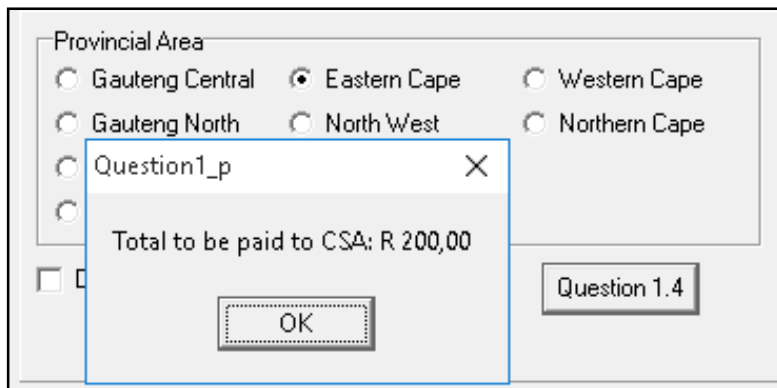

(9)

1.4   For each race an amount has to be paid to CSA. The amount is made up of a
       compulsory amount of R150, a provincial fee determined by the different
       provinces and a day licence of R35 if the entrant is not a member of CSA (entered
       in QUESTION 1.2). If the cyclist wants to be seeded for future races then a
       domestic racing licence of R350 must be paid.

       Provincial Fees:

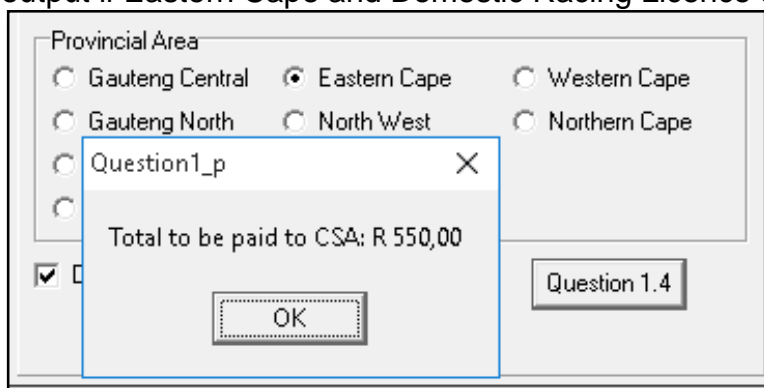   Gauteng Central   R75
       Gauteng North   R50
       KwaZulu Natal   R50
       Free State   R75
       Eastern Cape   R50
       North West   R75
       Northern Cape   R50
       Limpopo   R50
       Mpumalanga   R25
       Western Cape   R50

       Example of output if Eastern Cape is selected and Domestic Racing Licence is
       not selected:

       Provincial Area
       ○ Gauteng Central   ● Eastern Cape   ○ Western Cape
       ○ Gauteng North   ○ North West   ○ Northern Cape
       ○ Question1_p   ×
       ○
           Total to be paid to CSA: R 200,00
       □ □   Question 1.4
                   OK

       Example of output if Eastern Cape and Domestic Racing Licence are selected:

       Provincial Area
       ○ Gauteng Central   ● Eastern Cape   ○ Western Cape
       ○ Gauteng North   ○ North West   ○ Northern Cape
       ○ Question1_p   ×
       ○
           Total to be paid to CSA: R 550,00
       ☑ □   Question 1.4
                   OK
                                                                                    (13)

       • Enter your name and surname as a comment in the first line of the program
         file.
       • Save your program.
       • A printout of the code may be required.

                                                                                    [36]

QUESTION 2

Cyclists are very competitive with themselves and always want to improve on their previous times. They make use of special software which tracks their speed the entire distance and then they can analyse their performance afterwards.

The text file, **timetrial.txt**, contains an unknown number of lines of text (which does not exceed 50 entries).

Each line consists of the cyclist's surname, name, the time it took for the first lap, time it took for the second lap. The time is given in minutes.

Format of each line of text in the text file:

<surname>#<name>#<first lap time>#<second lap time>

2.1 When the program is compiled (FormCreate), the contents of the text file must be assigned to TWO arrays, **arrName** and **arrAverage**.

ArrName must contain the name and surname of the cyclist and **arrAverage** will be the average of the two lap times. (21)

2.2 When the user clicks the **Display Info** button, the cyclists' names must be displayed; as well as the total number of cyclists.

Example of output:
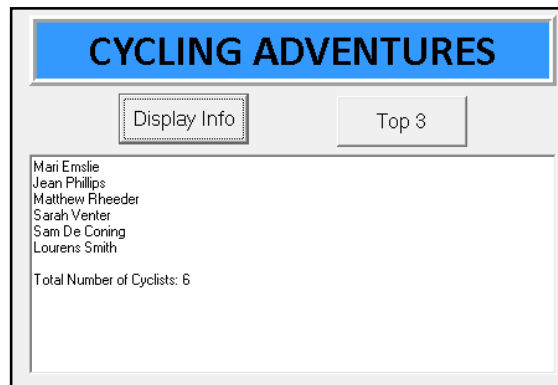
(5)

2.3 Write code for the **Top 3** button which will display the name AND average of the THREE fastest cyclists. The fastest cyclist's information must be displayed first.

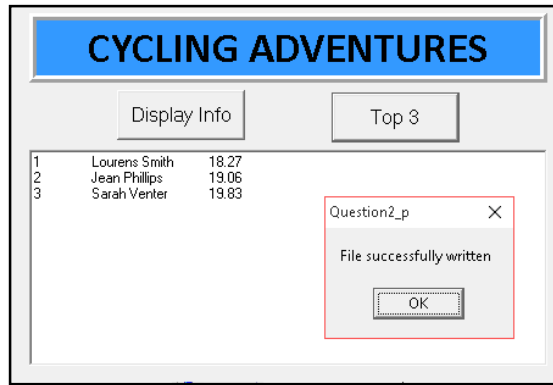Write the information of the Top 3 cyclists to a text file called **top3.txt**. It must be in the following format:

<position>#<name>#<average rounded off to two decimal places>

Display the Top 3 in the output component, in columns.

Once the information is written to the text file display a suitable message.

Example of output:

(19)

- Enter your name and surname as a comment in the first line of the program file.
- Save your program.
- A printout of the code may be required.

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[45]

QUESTION 3

When hosting a cycling event, there is a lot of administration that needs to be done. Race numbers must be created, checking whether the cyclists have entered in the correct age group, t-shirts and medals need be ordered, etc.

3.1 Write a **function** named **Age** which will receive the ID number of the cyclist and return the age of the cyclist. The ID number must be used to calculate the age. The first six digits of an ID number represent YYMMDD. The month and day can be ignored. (9)

3.2 Write a **procedure** named **Gender** which will receive the ID number and return the gender of the cyclist in the format of 'Male' or 'Female'. If the 7th digit of the ID number is less than 5, then it represents female. If the 7th digit is equal to 5 or more, then the cyclist is a male. (8)

3.3 Write a **procedure** named **RaceNumber** which will receive the category that the cyclist entered. The race number consists of the first 3 letters of the category (in capital letters) as well as a random number between 1000 and 9999. Display the race number in the given output component. (7)

3.4 Write code for the **Calculate Race Number** button which will ask the user for their name and ID number. The gender must then be determined by calling the appropriate method. The categories are determined by the ages as shown below:

AGE	CATEGORY
13–18 (both included)	Junior
19–39 (both included)	Elite
40–59 (both included)	Veteran
60 +	Masters

Display the cyclist's name and gender (on two lines) in the output component. Call the RaceNumber method to calculate the race number.

Example of output:

(12)

- Enter your name and surname as a comment in the first line of the program file.
- Save your program.
- A printout of the code may be required.

[36]

QUESTION 4

All the racing events for the Eastern Cape are stored in a database named
cycling.mdb.

The extract of the information stored in **cycling.mdb** is given below:

Day	Date	Where	Race	Type	Contact
SAT	06-Feb	ADDO	VW HERALD CYCLE TOUR - MTB	XCM	brad@mountainevents.co.za
SUN	07-Feb	PE	VW HERALD CYCLE TOUR - ROAD	ROAD	julie@mountainevents.co.za
SAT	06-Feb	LILYFONTEIN	LILYFONTEIN RED BARON TOMATO TROT AND CYCLE	MTB	marketing@lilyfontein.co.za
FRI	19-Feb	PE	FAT ATTACK 3 DAY STAGE RACE	MTB	siska@redcherry.co.za
SAT	20-Feb	PE	FAT ATTACK 3 DAY STAGE RACE	MTB	siska@redcherry.co.za
SUN	21-Feb	PE	FAT ATTACK 3 DAY STAGE RACE	MTB	siska@redcherry.co.za
SAT	27-Feb	STUTTERHEIM	SHS RANCE TIMBER MTB RACE	MTB	shsadmin@stutthigh.co.za
SAT	05-Mar	UITENHAGE	WINGS & WHEELS MTB CHALLENGE	MTB	info@ergoflex426.co.za
SUN	06-Mar	CAPE TOWN	CAPE ARGUS CYCLE TOUR	ROAD	
SAT	12-Mar	KOMGA	THE CABBAGE PATCH	MTB	cabbagepatchrun@gmail.com
SAT	19-Mar	PLETT PE	BAY TO BEACH	ROAD	siska@redcherry.co.za
SUN	20-Mar	PLETT PE	BAY TO BEACH	ROAD	siska@redcherry.co.za
SAT	09-Apr	EL	RIDING WITH THE BULLS	MTB	hartfamily@lantic.net
SUN	17-Apr	PE	THORNHILL CYCLE TOUR - THORNHILL 100	ROAD	info@jbaybikepark.co.za
SAT	23-Apr	PE	MEERKAT CHALLENGE	MTB	chanelrood@yahoo.com
SUN	24-Apr	GRAHAMSTOWN	BELMONT VALLEY CHALLENGE	MTB	cmgorham@gmail.com
SAT	30-Apr	MPEKWENI	MPEKWENI 2 DAY STAGE	XCS	allen.cathi@gmail.com
SUN	01-May	MPEKWENI	MPEKWENI 2 DAY STAGE	XCS	allen.cathi@gmail.com
SUN	01-May	CRADDOCK	SWAERSHOEK MTB CHALLENGE	MTB	admin@swaershoekmtb.co.za
SUN	01-May	JBAY	MY SPAR MTB CLASSIC	XCM	sue@petimberhomes.co.za
SUN	15-May	NANAGA	NANAGA MTB RACE	MTB	sheenaokeeffe@gmail.com
SUN	22-May	EL	EASTERN WHEELERS CHALLENGE	MTB	lfanicchi@alfordsystems.com
THUR	26-May	WILLOWMORE	TOUR DE BAVIAANSKLOOF MTB	MTB	leylandji@igen.co.za

Your program should be able to connect to the database named **cycling.mdb**.
When you do QUESTION 4.1 and you find that the connectivity is not in place,
use the following steps to establish connectivity:

- Click on the Adotable component **adocycling**.
- Click on the Ellipsis button (three dots) to the right of the 'ConnectionString' property in the Object Inspector.
- Click on the Build button which takes you to the Data Link Properties dialogue box.
- Click on the Provider tab to open the Provider tab sheet and select Microsoft Jet 4.0 OLE DB Provider. Click on the Next button.
- The Connection tab sheet will be displayed. The first option on the Connection tab sheet provides an Ellipsis button (three dots) that allows you to browse and look for the **cycling** file. Once you have found it, select the **cycling** file and then click on the Open button.
- Remove the user name Admin.
- Click on the Test Connection button.
- Click OK on each of the open dialogue windows.
- Select the correct table in the TableName property of the adocycling component.
- Click on the DataSource component.
- Ensure that the DataSet property is set to **adocycling**

An incomplete program has been created for you to process queries on the data in the given database. Your task is to complete this program.
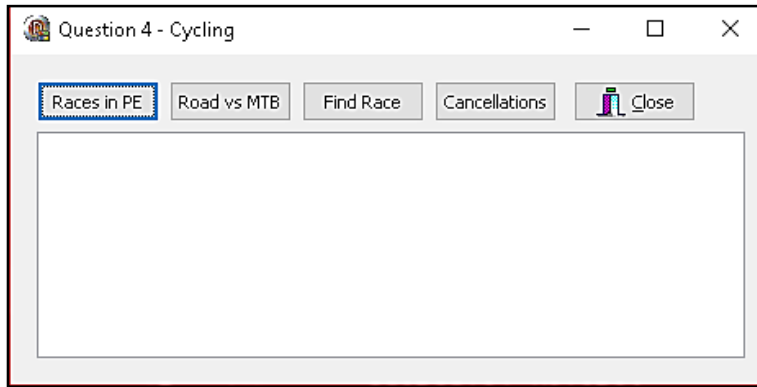
4.1 Write code for the **Races in PE** button which must display the date of the race and race name which will take place in Port Elizabeth. The total number of races must also be displayed.
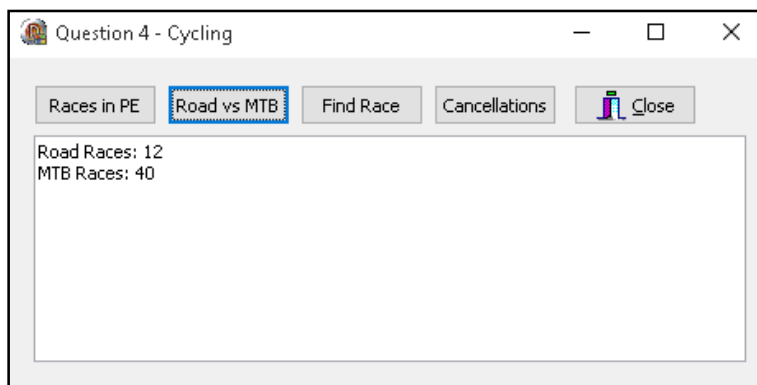
NO FILTERS MAY BE USED.

Example of output:
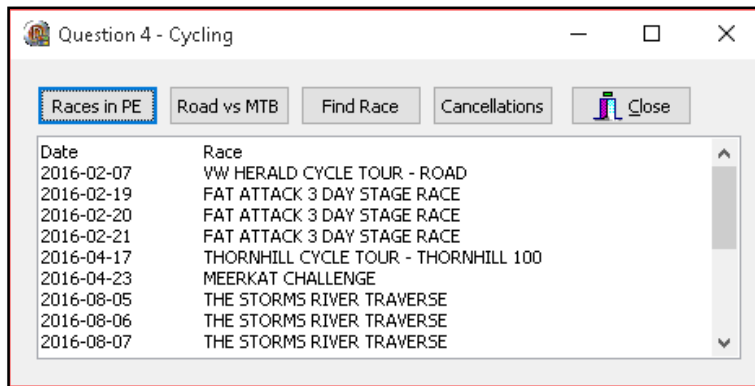
(12)

4.2 Write code for the **Road vs MTB** button which must display the total Road cycle races and the total MTB cycle races.
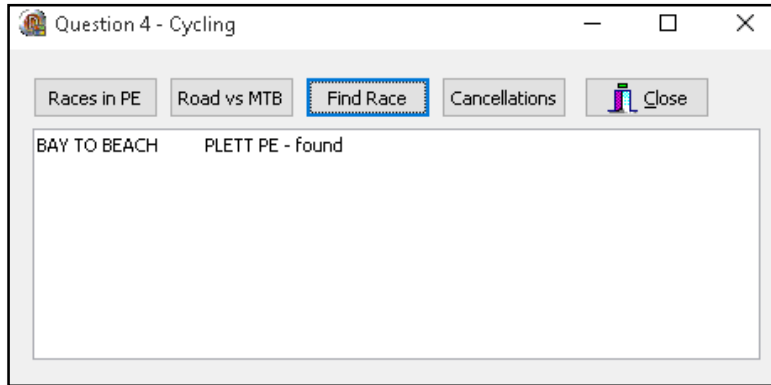
Example of output:

(6)

4.3 **Find Race** button: The user will be asked to enter a race name and then the database must be checked to see if that race is on the race timetable. If it is found, then the Race Title and where it will take place must be displayed. If it is not found, a suitable message must be displayed.

Example of output:

(7)

4.4 Write code for the **FormOnCreate** EventHandler which will add an e-mail address for the Cape Argus Cycle Tour. When the table was created there was no contact person, but now the contact address is argus@capeargus.co.za. (4)

4.5 Due to bad weather the Cabbage Patch race in Komga has been cancelled. Delete the record from the table. Display a message once the race has been deleted. (4)

- Enter your name and surname as a comment in the first line of the program file.
- Save your program.
- A printout of the code may be required.

[33]

TOTAL: 150