Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2015

INFORMATION TECHNOLOGY P1

MARKS: **150**

TIME: **3 hours**

IINFTDM1

This question paper consists of 11 pages.

INSTRUCTIONS AND INFORMATION

1. This is a three-hour examination. 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.

2. You require the files listed below in order to answer the questions. They are either on a CD issued to you, or the invigilator/educator will tell you where to find them on the hard drive of the workstation you are using or in a network folder.

   Question1 Folder
   Question1_p.dpr
   Question1_u.dfm
   Question1_u.pas

   Question2 Folder
   Question2.dpr
   Question2.dfm
   Question2.pas
   Field.txt

   Question3 Folder
   Question3.dpr
   Question3.dfm
   Question3.pas

   Question4 Folder
   Question4_p.dpr
   Question4_u.dfm
   dmResultsData_u.dfm
   dmResultsData_u.pas
   Question4_u.pas
   Medals.mdb

3. If a CD containing the above files was issued to you, write your name and surname on the label.

4. Save your work at regular intervals as a precaution against power failures.

5. Rename the *P1 Data folder* as your *Name and Surname*.

6. Type in your name and surname as a comment in the first line of each program.

7. Read ALL the questions carefully. Do only what is required.

8. At the end of this examination session you will be required to hand in the CD with all the files with the work you have done or you must make sure that ALL the files with your work have been saved on the network as explained to you by the invigilator/educator.

9. Ensure that ALL files can be read.

10. During the examination you may use the HELP functions of the software. You may NOT make use of any other resource material.

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SCENARIO:

Athletes from three different houses compete in an athletics competition. An athlete may be sponsored by six different sponsors.

QUESTION 1: DELPHI PROGRAMMING

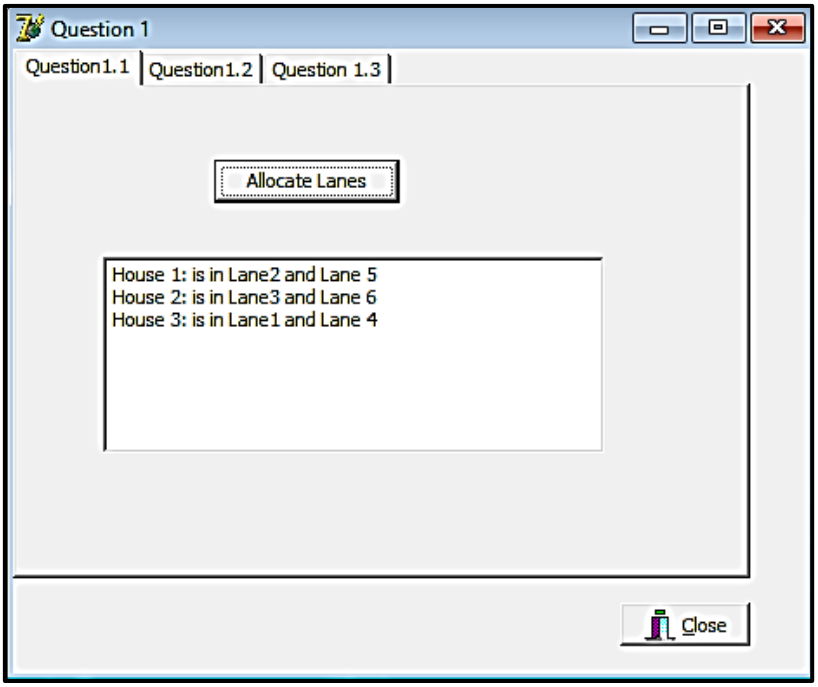
Open the file Question1_p.dpr.

1.1 Complete the code for Question 1.1 tabsheet to generate a random number between one and three to determine the lanes that each house must use for track events.

Six lanes are available. In the case that two athletes from the same house are present, then the house in lane 1 will also be in lane 4, lane 2 will also be in lane 5, and lane 3 will also be in lane 6.

Ensure that no number is repeated.

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



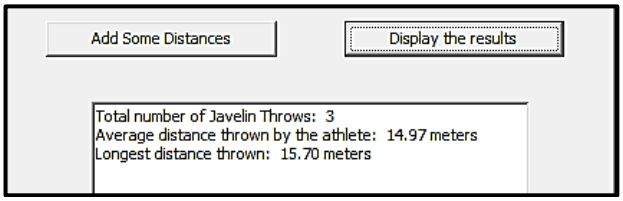
(10)

1.2 Question 1.2 tabsheet:

1.2.1 Enter the distances that the athlete has thrown when the 'Add some distances' button is clicked. Make use of an Inputbox.

Keep track of the longest distance thrown, as well as the number of throws done by the athlete. (7)

1.2.2 When 'Display the Results' button is clicked, calculate the average distance thrown. Display the total number of throws, the average, and the longest distance thrown (both rounded off to two decimal places).



(6)

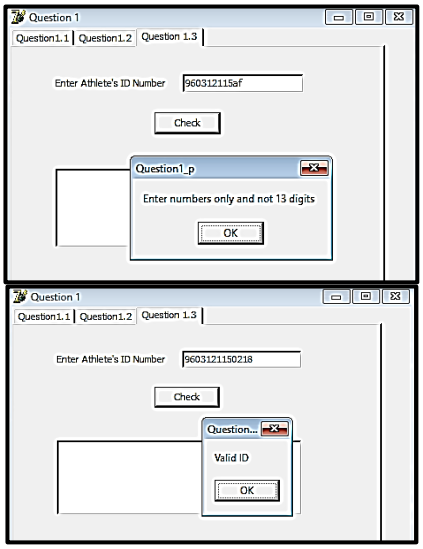
1.3 With the Question 1.3 Tabsheet, each athlete has a chance to test his/her ID number to see whether it is even or odd.

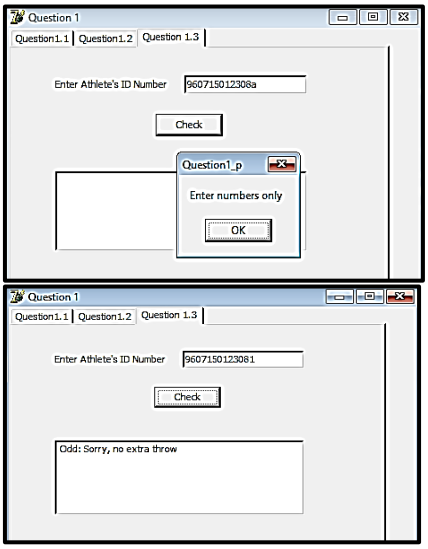
The 13 digit ID number is even if the sum of the digits is even or odd if the sum of the digits is odd. If the number is even, then the athlete will be allowed one extra throw.

E.g. for the ID number 6903121156648 the sum
6+9+0+3+1+2+1+1+5+6+6+4+8=52, which is even.

The ID number must first be checked to make sure it consists of 13 characters and that it contains only numerical digits. Suitable error messages must be displayed to show what the error is.

If the ID number is valid then the sum of all the digits must be calculated and a message must be displayed informing the athlete whether he/she can have another throw.





(24)

- Enter your name and surname as a comment line in the first line of the file named Question1_u.pas.
- Save the program.
- Make a printout of the code of the Question1_u.pas file. **[47]**

QUESTION 2: DELPHI PROGRAMMING

You are asked to examine the contents of a text file named *field.txt* saved in the folder named *Question2*. This file contains the data referring to the description of athletes who have entered for events.

During registration of athletes, a code is generated for each athlete. The codes are stored in field.txt and has the following format.

DHJ14412SAS

- Pos 1,2,3: indicate the three possible events J=Javelin, S=Shot put, D=Discus, H=High jump, L=Long jump
- Pos 4,5: indicates the age group
- Pos 6: Indicates the gender 0-4 female, 5-9 male
- Pos 7,8: indicates the athlete number between 10 and 99
- Pos 9, 10, 11: indicates the athlete's sponsor. Sponsor codes: SAS = Sasol, CAL = Caltex, SPA = Spar, BID=Bidvest, FNB=FNB, TOT=Total

2.1 Declare an array with class scope, named *arrAthletes*, which can store a maximum of 20 elements. The learner codes will be stored in *arrAthletes,* use a suitable variable to keep track of the number of athletes with valid codes. (3)

2.2 Write a method named **ValidCode** which will receive a string containing the athlete's code and it will return whether the code is valid or not.

The following rules apply:

- The code must be 11 characters long.
- The first three characters must be uppercase alphabetical characters.
- The next five characters must be numerical digits.
- The last three characters must be uppercase alphabetical characters. (15)

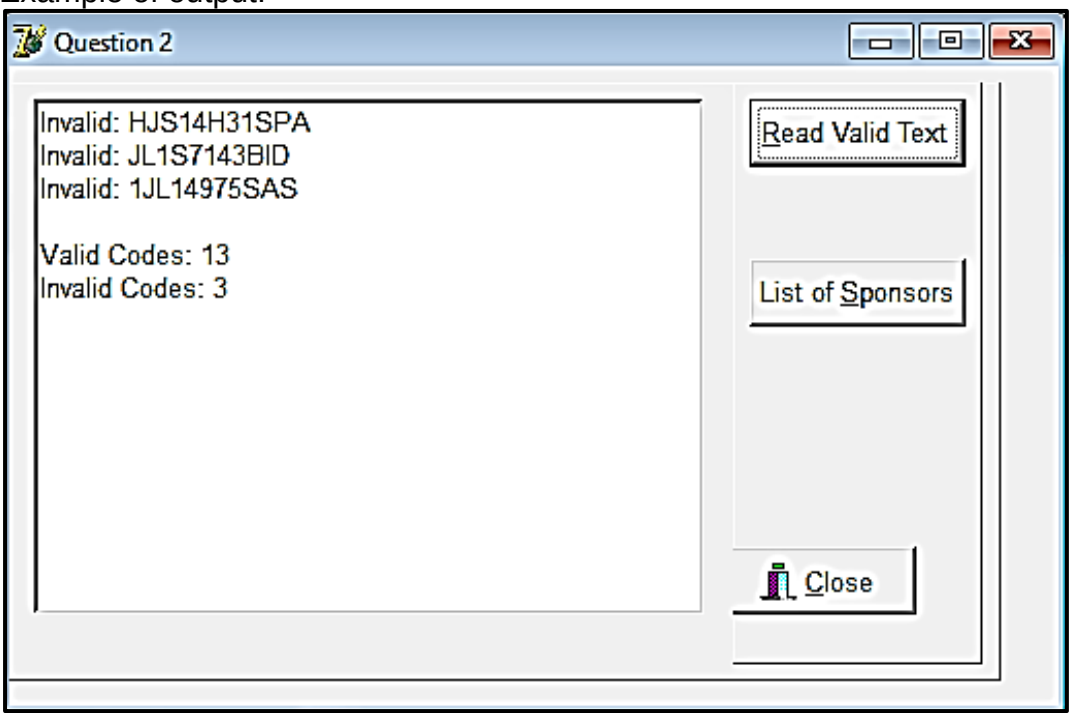
2.3 Complete code for the **Read Valid Text** Event Handler which must read information from the text file, **field.txt**.

This method must test if the text file exists. If the file does not exist, a suitable error message must be displayed and the program must terminate.

If the file exists the file must be opened, a loop must be initialised to read its contents. Add further code to read each line of text from the text file. The athlete code must be stored in the array named *arrAthletes*. The array should only contain the data of valid athlete codes. The invalid codes must be displayed as shown below.

The total number of invalid and valid codes must be displayed after all the invalid codes.

Example of output:

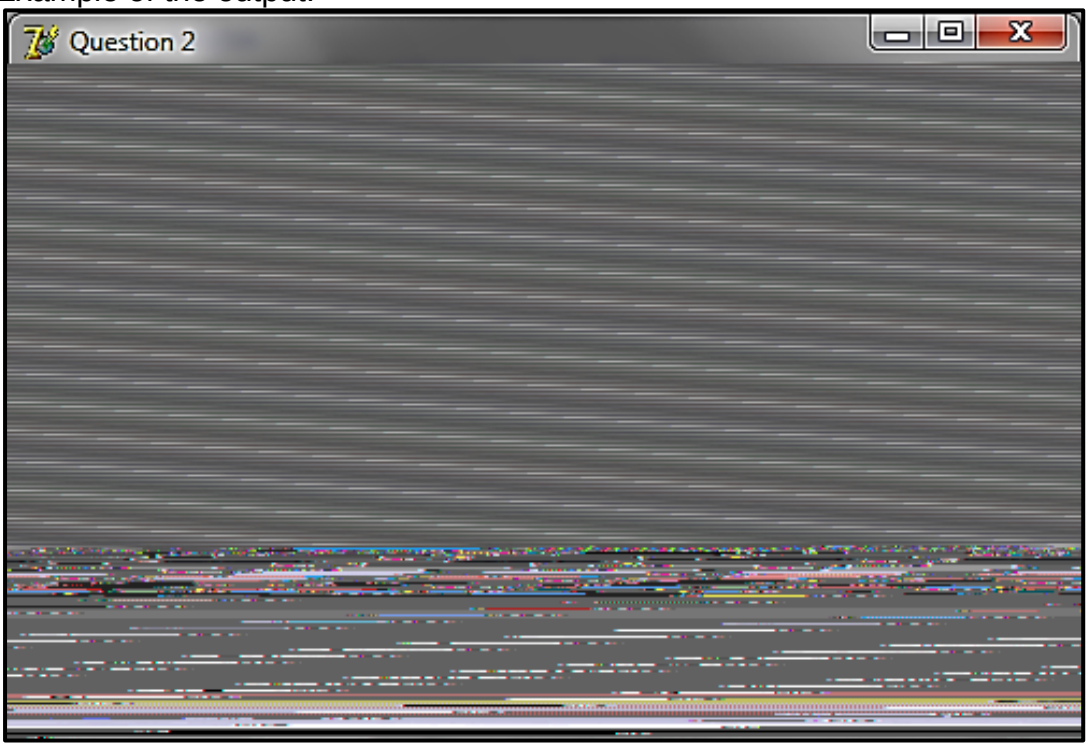


(19)

2.4 Write code for the **List of Sponsors** event handler. The last three characters of all the valid athlete codes indicate the sponsor of the athlete. For example, the code for athletes sponsored by FNB all end with the letters '*FNB'* and those sponsored by Spar with the letters '*SPA'*.

This procedure must display a list of all the sponsor codes as well as the total number of sponsors. (No duplicates)

Example of the output:



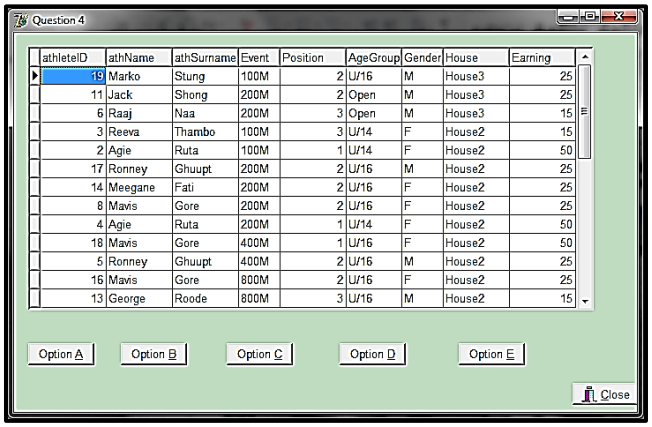
(11)

- Enter your name and surname as a comment line in the first line of the file named Question2_u.pas
- Save the program.
- Make a printout of the code of the Question2_u.pas file.

[48]

4.3 **Option C**: Write code to display the data sorted in the following order: The House field sorted in descending order and the event field in ascending order.

Example of output:



(3)

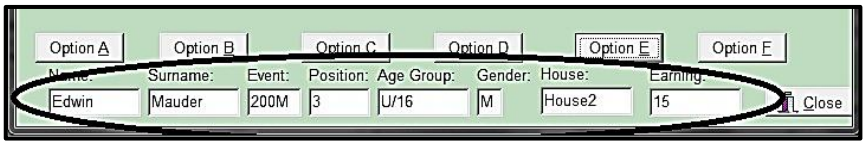
4.4 **Option D:** Write code to determine if a learner with a certain surname is in the database of winners. Make use of an inputbox to enter the surname. Display the athlete's name and surname as shown below. If the athlete is not found in the database, display a suitable message.

Example of output:

(7)

4.5 Adding a new athlete:

4.5.1 **Option E:** Write code in the Button E event handler, which will make all the Label Edits visible to the user.



(3)

4.5.2 **Option F:** Use the given data for the record and write code to insert the data into the table. (7)

- Enter your name and surname as a comment line in the first line of the file named Question4_u.pas.
- Save the program
- Make a printout of the code of the Question4_u.

[30]

TOTAL: 150

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