# PROVINCE OF KWAZULU-NATAL DEPARTMENT OF EDUCATION



# **PINETOWN DISTRICT**

**GRADE 11** 

**INFORMATION TECHNOLOGY P1** 

**FINAL EXAMINATIONS 2016** 

**Marks: 150** 

Time: 3 hours

This question paper consists of 11 pages excluding this cover page.

#### INSTRUCTIONS AND INFORMATION

- 1. This question paper contains **THREE** questions.
- 2. Answer **ALL** the questions.
- 3. 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.
- 4. This question paper is set in programming terms that are specific to the **Delphi programming** language.
- 5. Make sure that you answer the questions according to the specifications that are given in each question. Marks will only be awarded based on the set requirements.
- 6. Only answer 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.
- 7. 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.
- 8. Make sure that you develop routines, such as search, sort and selection, from first principles and not use the built-in features of a programming language for any of these routines.
- 9. You, as the programmer, must define all data structures. You may not use components provided within the user interface to store and later retrieve data.
- 10. **Save your work regularly** on the disk (CD/flash disk/DVD, et cetera) that you have been given, or on the disk space allocated to you for this examination.
- 11. Make sure that your name appears as a comment in the first line of code you did to answer a question. Also include the question number as part of the comment.
- 12. If printouts are required make printouts of the code of all the programs/classes/units that you did and NOT of the code that is generated automatically.
- 13. Printing must be done after the examination within the timeframe provided for printing.
- 14. At the end of this examination session, you must hand in the disk/CD with all your work saved on it OR you must make sure that all your work has been saved on the disk space allocated to you. Ensure that all files can be read.
- 15. You have been supplied with either a disk or disk space containing files you need to complete this question paper.
- 16. Follow the instructions provided for each question to complete the question paper.

# **SCENARIO**

The owner of a newly opened computer sales store has appointed you to use your software development skills to help them with administrative tasks. Your main job is to design software to do the following:

- ✓ Calculate instalments for credit customers
- ✓ Work out interest rates
- ✓ Capture sales details and producing stats on salesmen and items sold.
- ✓ Control stock
- √ Manage suppliers

The following data files have been provided in a folder called **Nov2016P1Gr11Data**. All the necessary files are found in subfolders Q1, Q2 and Q3. Kindly ensure that you have these files.

<b>№</b> Q1
Q1_Project
Q1_Project
Q1_Project.dproj.local
Q1_Project.identcache
Q1_Project.res
Q1_Unit
C1_Unit
<b>№</b> Q2
Quest2_Unit
Quest2_Unit
Quest2Project
Quest2Project
Quest2Project.dproj.local
Quest2Project.identcache
Quest2Project.res
SalesData
-
<b></b> Q3
SalesTeam
SalesTeamProject
SalesTeamProject
SalesTeamProject.dproj.local
SalesTeamProject.identcache
SalesTeamProject.res
SalesTeamUnit
SalesTeamUnit

#### **QUESTION ONE**

# Clients are always accusing the salesman of adding hidden costs hence inflating the value of the item.

1.1. The owner has requested that you write simple code to help the sales team with the calculation of Hire Purchase details. The HP agreement allows the client to pay a deposit and pay the balance over a period of time in monthly instalments. A fixed interest rate of 18.5% per annum is charged.

Write code for the button FIND DEPOSIT.

- Name, Net salary and Item price must be obtained from the given edit boxes.
- The required deposit is worked out according to the given table using the net salary earned.
- Display a single string in a label which is dynamically instantiated when the button is clicked as shown in the Sample output. (12)

Net Salary	Deposit
Below R5000	25%
>=R5000 < R8000	15%
>=R8000 < R15000	10%
>=R15000 < R20000	5%
>=R20000	No Deposit

# Sample Output

1.1.		
Name	Mervin Reddy	
Net Salary	16000	
Item Price	14000	
Mervin Reddy Your deposit required is R 700,00		
	FIND DEPOSIT	

- 1.2. When the **CALCULATE INTEREST** button is clicked, the following should occur:
- 1.2.1. The period (in years) is to be selected from the combo box and sent to an identifier called **per**.

(2)

1.2.2. The new balance owing must be calculated and displayed in the relevant block. New Balance = Item Price - deposit

(3)

1.2.3. The interest must be calculated using the formula: SI = p.i.n where:

**p** = Principal amount, **i** = interest rate, **n** = number of years (2)(2)

Display the interest amount in the appropriate space provided.

\*NB You must run 1.1 before 1.2

# **Sample Output:**



- 1.3. Write code for the **HP PROFILE** button to do the following when clicked:
- 1.3.1. Calculate the monthly Instalment over the time period selected by the user.
- 1.3.2. Calculate the total amount of money the client would have spent at the end of the payment period. (2)
- 1.3.3. Display the entire profile using all the inputs already given by the client, as shown below: (3)

# **Sample Output:**



[29]

(3)

#### **QUESTION TWO**

At the end of every month, the sales team compiles a sales report, in the form of a text file with the following format:

#### SaleID, Brand, Processor type, Salesman's name, Price

SalesID	A combination of 8 alphanumeric characters
Brand	Name of the brand of the product sold
Processor type	The processor model e.g. i3, i5, i7 or celeron
Name of Salesman	Initial and Surname of the salesman e,g. P.Reddy
Price	Price of the product sold

Below is a sample of the data in the text file called **SalesData.txt**.

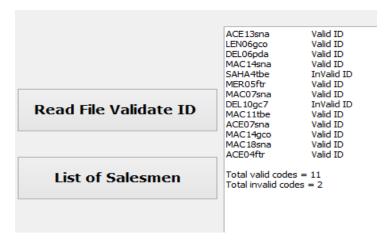
ACE13sna, ACER, i7, S Naidoo, 13000
LEN06gco, Lenovo Think, Dual core, G Colby, 6900
DEL06pda, Dell Future, i3, P Davis, 6100
MAC14sna, Macbook, Core Duo, S Naidoo, 14580
SAHA4tbe, Sahara, Celeron, T Bellion, 4100
MER05ftr, Mercer, Dual Core, F Tracey, 5295
MAC07sna, Mac2, i3, S Naidoo, 7230
DEL10gc7, Dell Vostro, G Colby, 10230
MAC11tbe, Mac4, Mot63080, T Bellion, 11600
ACE07sna, ACER, i5, S Naidoo, 7600
MAC14gco, Macbook Air, Core Duo, G Colby, 14700
MAC18sna, Unibody Macbook, i5, S Naidoo, 18000
ACE04ftr, ACER, Dual Core, F Tracey, 4200

Open the Delphi project found in the **Q2** folder. Complete the code according to the questions asked.

- 2.1. Declare an array called arrFilDat, with class scope, to store up to 25 strings at a time.Also declare a suitable counter variable to store the number of valid Sales ID's generated. (3)
- 2.2. Write a method called ValidateSaleID that will accept a string containing the Sales ID and tests for the validity of the ID. The method must return True if the ID is valid. The validity check is given below:
  - The ID must have a combination of a total number of eight alphanumeric characters.
  - The first three characters must be uppercase alphabets.
  - This is followed by two randomly generated digits.
  - The last three characters must be 3 lowercase characters. (11)
- 2.3. Write code for the **Read File Validate ID** button that will read data from the text file **SalesData.txt** by doing the following:
  - Check if the text file exists. If it does not exist, then return a suitable message. If it does exist, then read the data, line by line from the text file using an appropriate looping structure and store it in the array created.
  - Call the method to check if the ID is valid.
  - Display all valid ID's, the number of valid and invalid ID's as shown in the sample output below:

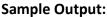
(14)

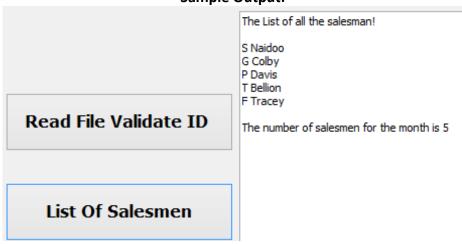
# Sample output



2.4. Write the code for the **List of Salesman** button that will list all the different salesmen for the month. You must store this list in an array. Display the number of salesmen for the month.

(14)

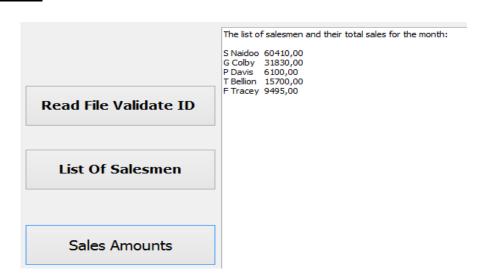




2.5. Write the code for the button **Sales Amounts** that will display each salesman and his total sales for the month.

(8)

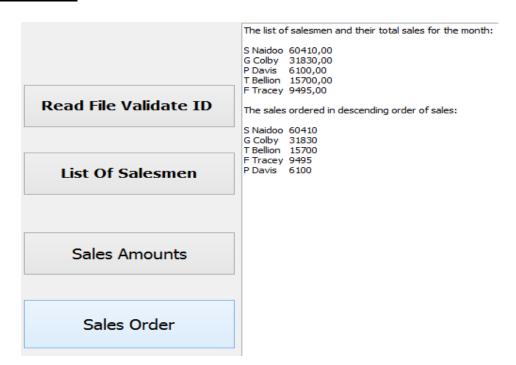
# **Sample Output:**



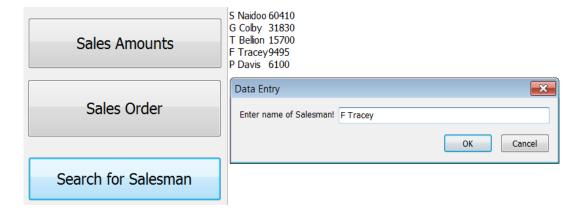
2.6. Code the button Sales Order to display the name of the salesman and his total Sales in columns with suitable headings. Your code must ensure that data is displayed in descending order of sales amount of each salesman. Use a Selection or Bubble sorting technique

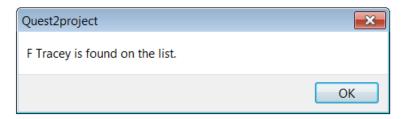
(8)

# Sample Output:



2.7. The salesmen on the current list are only those who have made sales for this month. If a salesman does not make any sales then he is not listed. Some months, there are many salesmen that make the list. Therefore it becomes very difficult to carry out a manual search for a certain salesman in the current list. Write code for the Search for Salesman button to allow the user to check if the salesman made the list. Write a procedure called SalesmanSearch to carry out the search and display a suitable message in a message dialog box. The user must be prompted for a search name. (11)





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#### **QUESTION THREE**

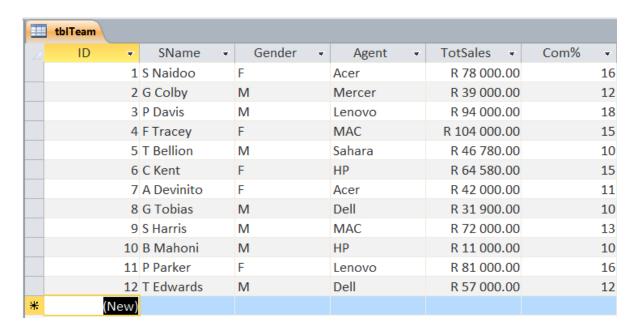
The sales manager is trying to manage his sales team with the limited knowledge he has of database tables in Access.

You are required to write code to help him manage the table by writing code to manipulate the data. The details of the database is given as follows:

Name of database : SalesTeam

Location of database: Inside the folder called Q3.

Name of the table: tblTeam



The program should be able to connect to the database named medals.mdb. If you find that the connectivity is not in place, use the following steps to establish connection with the database:

- Click on the TADOTable component named adoCon.
- Click on the Ellipse 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.
- The connection string is already defined. You may have to change the provider. Select Microsoft Jet 4.0 OLE DB if the database extension is .mdb. If the extension of your database is .accdb then select Microsoft.ACE.OLEDB.12.0.
- Click on Next.
- ➤ The first option on the Connection tabsheet allows you to browse and find the **SalesTeam.accdb** file.
- > Remove the user name Admin.

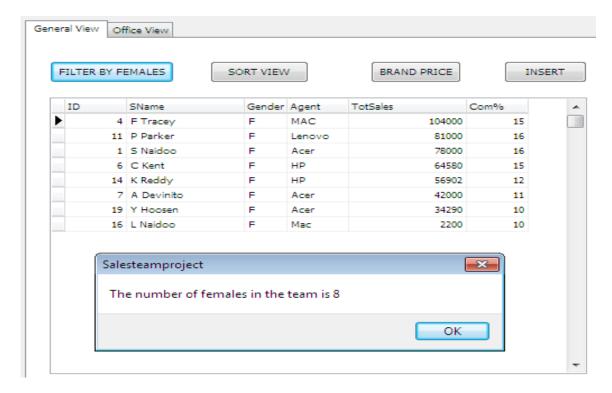
- Click on the Test Connection button. Click OK on each one of the open dialogue windows.
- **NB.** If you cannot establish connectivity with the database at all when you execute the program you must still code and submit the programming code for marking.

The two tabs in the form Q3 represents two views requested by the administration department. The General View tab requires results from the table onto a grid while the Office View requests information on a simple text area.

#### Write the necessary code for the buttons as described below in the General View section:

3.1. Create a filter to display the data of female team members. Indicate in a ShowMessage how many entries are recorded. Write the respective codes in the **FILTER BY FEMALES** button. (6)

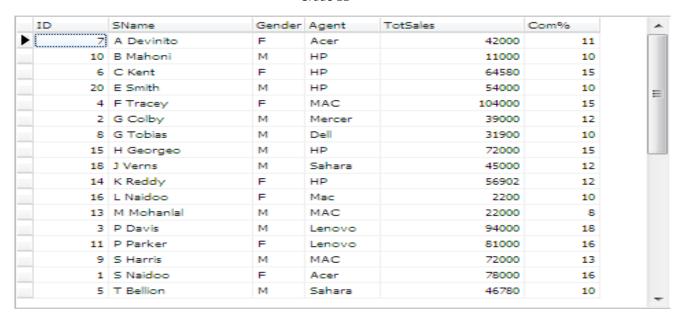
# Sample Run:



3.2. Write the code for the button **SORT VIEW** that displays the data sorted alphabetically by name and then in descending order of total sales. (5)

#### **Sample Output:**

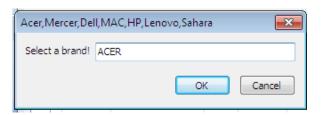
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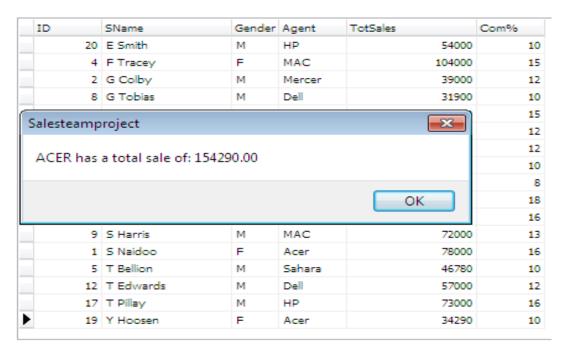


3.3. Write code for the **BRAND PRIC**E button to calculate the total Rand value of that particular computer brand as entered by the user (use an inputbox component). If the brand entered is not found, display a suitable message.

(12)

# **Sample Output:**





3.4. Code the **INSERT** button which allows a user to enter the different values using the Input Box dialog. Once the details have been input, insert the data into the database table.

(7)

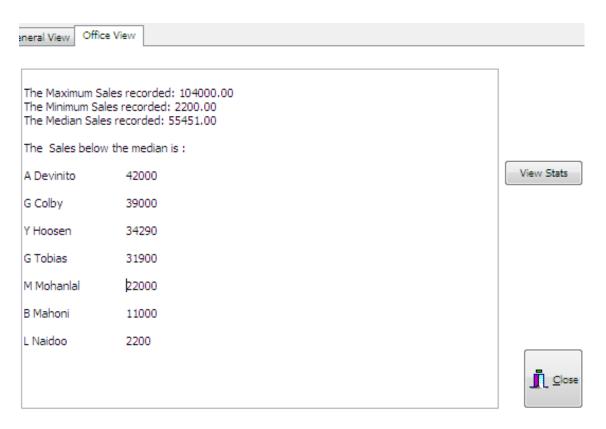
#### Write the necessary code for the View Stats button as described below in the Office View section:

The office has to produce reports to the owner at the end of every month. The owner uses these statistical reports to project future sales figures, budget assessments, prospective salary restructuring and all other criteria that supports a growing business.

The office team needs to use the monthly sales figures to determine some of the data requested shown below:

- 1. Highest sales figure by a salesman.
- 2. Lowest sales figure by a salesman.
- 3. The median of sales figures.
- 4. A list of salesmen who fall below the median. These sales figures must be less than 80% of the median.

Write the code using the database table to produce the data mentioned above in the format shown below:



(22)

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# **GRAND TOTAL = 150**