



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

UMLAZI DISTRICT

INFORMATION TECHNOLOGY PAPER 1

TRIAL EXAMINATION 2014

29 AUGUST 2014

MARKS: 150

TIME: 3 hours

EXAMINER: Ms S.BENIMADHO

MODERATOR: Mrs R.PILLAY and Mr M. Gebreab

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the 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. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. Make sure that your **name and surname** 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.
9. Make use of the template to copy and paste your code in the appropriate space provided.
10. 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.
11. You have been provided with the following Netbeans Projects, JFrame Forms and Java class:

Project	EmployeeCode	Meals	Vaccines	RegularDonor
JFrame	GenerateCode	Food_Purchases	vaccinesGUI	Donated
Java Class			vaccines	
Text File			Vaccines2Month	AmountReceived

SCENARIO:

A Non Governmental Organisation (NGO), **KZN Child Care**, has been recently established, to serve a small community. At this facility:

- a basic meal can be bought daily,
- children under the age of 18 months can receive free vaccinations,
- regular donors make cash donations to help run this organization.

SECTION A : GENERAL PROGRAMMING SKILLS**QUESTION 1 [23 MARKS]****INSTRUCTIONS:**

The project **EmployeeCode** is provided to you in the Netbeans folder:

- Open the incomplete class named **GenerateCode.java**.
- Insert your name and surname in the first line of the class `GenerateCode.java`

1.1 Button : Generate Code

Write code that will extract the users surname from *txfSurname*, first name from *txfName* and his/her valid South African ID number from *txfID*.

Create a name tag, and display in *txaQ1*. The name tag contains the following information about the employee and his/her generated code:

Line 1: Surname and initial in capital letters

Line 2: Gender (Male or Female)

HINT: The four digits in the position 7 to 10 of an ID number indicates a person's gender.

The following applies:

>= 5000 : Male

< 5000 : Female

Line 3: Generated Employee code as follows:

- The employees surname in reverse, WITHOUT any vowels and spaces(if any)
- A three digit random number

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The screenshot shows a software window titled "KZN Child Care Register Employee". The window has a blue background and a standard Windows-style title bar with minimize, maximize, and close buttons. The main content area contains the following elements:

- Title:** "KZN Child Care" in a large, bold, black serif font, followed by "Register Employee" in a slightly smaller, bold, black serif font.
- Form Fields:** Three text input fields are arranged vertically. The first is labeled "Surname" and contains the text "Shoba Dlamini". The second is labeled "First Name" and contains the text "Alex". The third is labeled "ID number" and contains the text "7405235056082".
- Buttons:** There are two buttons. One is labeled "Generate Code" and is positioned to the right of the ID number field. The other is labeled "Exit" and is located in the bottom right corner of the window.
- Output Area:** A white rectangular box displays the generated information: "SHOBA DLAMINI A", "Male", and "Code : NMLDBHS304".

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QUESTION 2 [61 MARKS]**INSTRUCTIONS:**

The project **Meals** is provided to you in the Netbeans folder:

- Open the incomplete class named **Food_Purchases.java**.
- Insert your name and surname in the first line of the class Food_Purchases.java

Each household receives vouchers for the month that will entitle them to one free meal per voucher. Meals can also be bought, if needed.

2.1 Button : Enter Voucher Code(s)

Write code that will continuously prompt a JOptionPane Input Dialog box, for the user to enter meal voucher codes, until the word “stop” is entered.

Each meal voucher code must be validated and then stored into a one dimensional array provided, called *codearr*.

- The code must be seven characters long.
- The first five characters of each Meal Voucher code must consist of **KZNCC**.
- The sixth character must be a digit (0 – 9). (19)
- The seventh character must consist of a letter.

- 2.2 Write a method called **removeduplicates()**, that will remove all duplicate voucher codes from the one dimensional array. (16)

2.3 Button : Total Due

No more than ten meals can be bought at a time.

Write **code** to extract the number of meals to be purchased from the spinner, *spNumMealsP* and validate the number of meals to be purchased as :

- No more than ten meals.
- No less than zero meals.

NOTE: DO NOT CHANGE THE PROPERTIES OF THE SPINNER COMPONENT.

Meals cost R5 each, however, a discount of R3,50 is granted for every two meals purchased.

Examples:

Number of meals purchased	Cost
1	R5,00
2	R6,50
3	R11,50
4	R13,00
5	R18,00

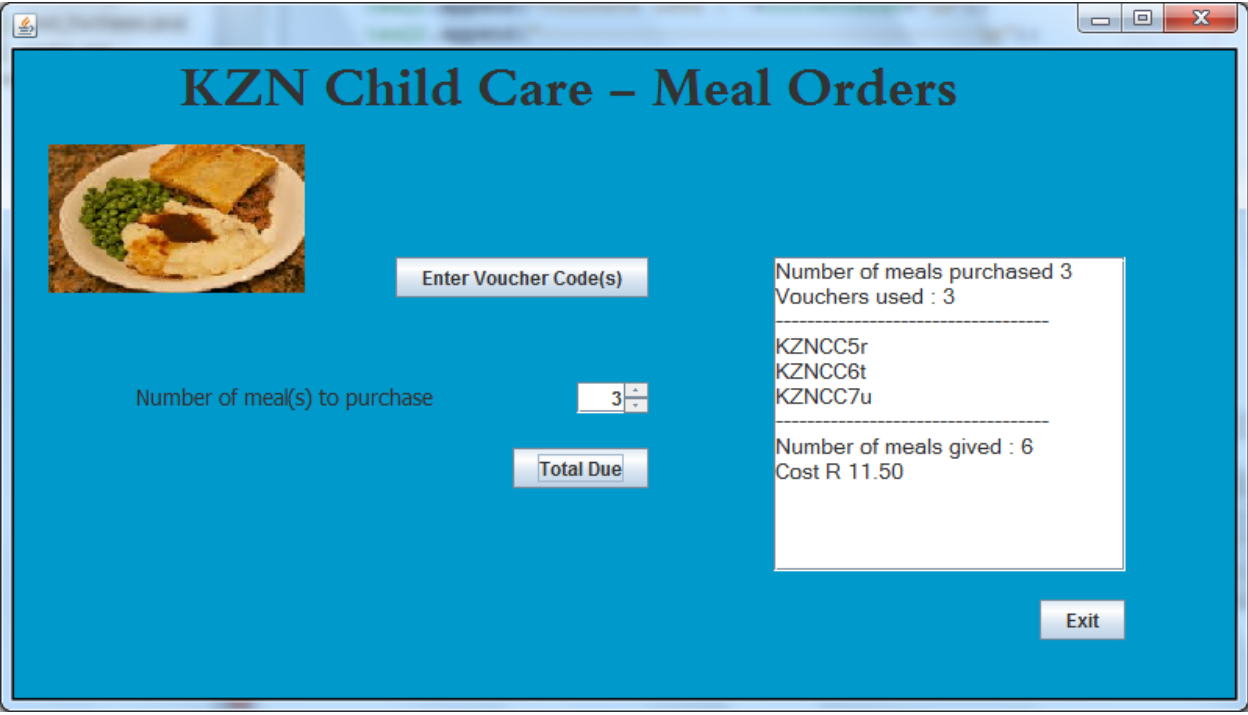
Display in the txaQ2

- Number of meals purchased.
- Number of vouchers used.
- All validated meal voucher codes, with no duplicate voucher code.
- Number of meals to be given.
- Total due, correct to two decimal places.

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Sample of Voucher Codes Entered:

KZNCC5r
KZNCC6t
KZNCC7u
KZN5s
Kzn55
KZNCC5r
Stop



KZN Child Care – Meal Orders



Number of meal(s) to purchase

3

Enter Voucher Code(s)

Total Due

Number of meals purchased 3
Vouchers used : 3

KZNCC5r
KZNCC6t
KZNCC7u

Number of meals gived : 6
Cost R 11.50

Exit

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SECTION B**QUESTION 3: OBJECT ORIENTATED PROGRAMMING [30 MARKS]****INSTRUCTIONS:**

The project **Vaccines** is provided to you in the Netbeans folder:

- Open the incomplete class named vaccinesGUI.java.
- Insert your name and surname in the first line of the class vaccinesGUI.java

At KZN Child Care, parents can inquire about the vaccines that their child needs at different ages. Children are required to take vaccines at different stages. For example when the child is within the two month age group, they must be vaccinated with three different vaccines, namely :
Infanrix Hexa, Rotarix and Prevanar 13.

3.1 An object class, **vaccines.java**, has been created and consists of:

- four attributes, namely; **month**, **vacc1**, **vacc2** and **vacc3**;
- a default constructor;
- a parameterized constructor and
- a toString method.

Write a method called **ValidateDOB()** that will receive the year as well as the month of the child's date of birth, and return a Boolean value if the child is within the *month attribute* age group. Use the system's date function to determine the current year and month. (12)

3.2 Open the class **vaccinesGUI.java**. An object of the class vaccines with the following values has been created.

```
month : 2
vacc1 : Infanrix Hexa
vacc2 : Rotarix
vacc3 : Prevanar 13
```

3.2.1 Button: ValidateDOB

Write code to extract the child's surname and name from *txaSurnameName*, as well as the year and month of birth from *spYear* and *spMonth*, respectively. Call the method **validateDOB()** from the class *vaccines.java(object)*. If the child falls within the age group of two months, dynamically instantiate a button with the following specifications and functionality:

Specifications:

Name of Panel:	jPanel1
Name of the Button:	newButton
Text on the Button:	View Vaccines
Bounds:	30,350,170,30

Functionality:

- Make use of the `toString` method of the **vaccines** class, and display in *txaQ3*.
- Write the child's surname and name to an existing text file called **Vaccines2Month.txt**.
- Display a message, "Details Written to file", if the details have been correctly written to the text file.

(Date of Run: 12 August 2014)

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QUESTION 4: PROBLEM SOLVING [36 MARKS]**INSTRUCTIONS:**

The project **RegularDonor** is provided to you in the Netbeans folder:

- Open the incomplete class named **Donated.java**.
- Insert your name and surname in the first line of the class **Donated.java**

There are nine regular donors to this organization. A text file called *AmountReceived.txt*, has been created with the details of the transactions from the regular donors for 2014.

Sample of the *AmountReceived.txt*:

Transaction number,DonorID,Transaction Date,Amount Donated#EFT/CASH Transaction

140203001,KHA103,03-Feb-14,200#EFT
140203002,SMA678,03-Feb-14,50#EFT
140211001,DOJ654,11-Feb-14,150#EFT
140211002,SIR654,11-Feb-14,250#CASH
140219001,BOE145,19-Feb-14,300#CASH

....

....

4.1 Button: DisplayDonorCode

Write code to:

- Extract a donor ID from the combo box, *cbxDonorCode*.
- Test if the text file exists. Display a suitable message if the file does not exist and terminate the program. Continue with the remainder of the steps if the file exists.
- Read the line from the text file.
- Split the line into five attributes, according to the heading of the text file.

Display in *txaQ4*

- The date and amount of all the transactions for the selected donor ID.
- The donor's total amount donated.
- Indicate all cash transactions with a '*' at the end of the amount donated.

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- 4.2 The Donor ID's have been stored in a one dimensional array called *DonorArr*. The years 2014, 2015 and 2016 are stored another 1 dimensional array called *YearArr*. In a two dimensional array called *futureD*, is the total donated by each regular donor as well as the total for 2015 and 2016 set as zero.

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4.2.1 **Button: Display Table of Donors**

Write code to display the donor ID array, the year array as well as the futureD array, neatly.

4.2.2 **Button: EstimatedDonations**

Write code to increase each donor's current 2014 total by 10% per year, for the next two years, (5)
i.e. 2015 and 2016.

The screenshot shows a software application window with a blue background. On the left, there is a dropdown menu showing 'BOE145' and a 'Display' button. The main area displays a list of donations for BOE145: 19-Feb-14 R 300.00*, 25-Mar-14 R 85.00, 02-Apr-14 R 200.00*, and 11-Jul-14 R 300.00, with a 'Total Donated : R 885.00'. Below this is a section titled 'Current and Estimated Donations for 2015 and 2016' which contains a table with columns for 2014, 2015, and 2016. The table lists donors and their donation amounts for each year. At the bottom, there are buttons for 'Display Table of Donors', 'Calculate Estimated 2015/2016 donations per Donor', and 'Exit'.

	2014	2015	2016
BEK709	R1550.00	R1705.00	R1875.50
BOE145	R885.00	R973.50	R1070.85
DOJ654	R905.00	R995.50	R1095.05
KHA103	R1420.00	R1562.00	R1718.20
MKS867	R1880.00	R2068.00	R2274.80
NAA854	R3500.00	R3850.00	R4235.00
SAL980	R1050.00	R1155.00	R1270.50
SIR654	R1800.00	R1980.00	R2178.00
SMA678	R230.00	R253.00	R278.30

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Total :150