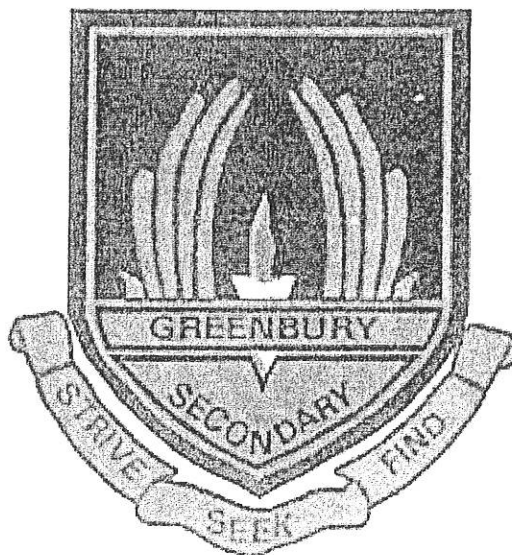


# GREENBURY SECONDARY SCHOOL



**INFORMATION TECHNOLOGY P1**

**GRADE 10**

**NOVEMBER 2018**

**MARKS: 120**

**EXAMINER(S): B.Govender**

**Y.Brijlall**

**TIME: 3 hours**










**MODERATOR(S): R.Pillay**

**This question paper consists of 22 pages.**









## INSTRUCTIONS AND INFORMATION

1. This paper is divided into FOUR sections. Sections one, two and three are compulsory. Candidates must choose to answer one question in Section 4 (Question 4(1) OR Question 4(2))
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. This question paper is set with programming terms that are specific to Delphi programming language. The Delphi programming language must be used to answer the questions.
4. Make sure that you answer the questions according to the specifications that are given in each question. Marks will be awarded according to the set requirements.
5. 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.
6. 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.
7. Routines, such as search, sort and selection, must be developed from first principles. You may NOT use the built-in features of the Delphi programming language for any of these routines.
8. All data structures must be defined by you, the programmer, unless the data structures are supplied.
9. You must save your work regularly on the disk/CD/DVD/flash disk you have been given, or on the disk space allocated to you for this examination session.
10. Make sure that your examination number appears as a comment in every program that you code, as well as on every event indicated.
11. If required, print the programming code of all the programs/classes that you completed. Your examination number must appear on all the printouts. You will be given half an hour printing time after the examination session.
12. At the end of this examination session you must hand in a disk/CD/DVD/flash disk 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 for this examination session. Ensure that all files can be read.
13. Programs may contain Global variables, check the top of the program before creating new variables.
14. The files that you need to complete this question paper have been provided to you on the disk/CD/DVD/flash disk or on the disk space allocated to you.







### Question1:

-  Double.jpg
-  quad.jpg
-  Queen.jpg
-  Question1\_p.dpr
-  Question1\_p.dproj
-  Question1\_p.res
-  Question1\_u.dfm
-  Question1\_u.pas
-  Triple.jpg

### Question2:






-  Question3\_p.dpr
-  Question3\_p.dproj
-  Question3\_p.dproj.local
-  Question3\_p.identcache
-  Question3\_p.res
-  Question3\_u.dcu
-  Question3\_u.dfm
-  Question3\_u.pas

### Question3:







-  img.jpg
-  img1.jpg
-  Question2\_p.dpr
-  Question2\_p.dproj
-  Question2\_p.exe
-  Question2\_p.res
-  Question2\_u.dcu
-  Question2\_u.dfm
-  Question2\_u.pas

### Question4:

(1)

-  Question4\_p.dpr
-  Question4\_p.dproj
-  Question4\_p.res
-  Question4\_u.dfm
-  Question4\_u.pas

(2)

-  Question4\_p.dpr
-  Question4\_p.dproj
-  Question4\_p.res
-  Question4\_u.dcu
-  Question4\_u.dfm
-  Question4\_u.pas

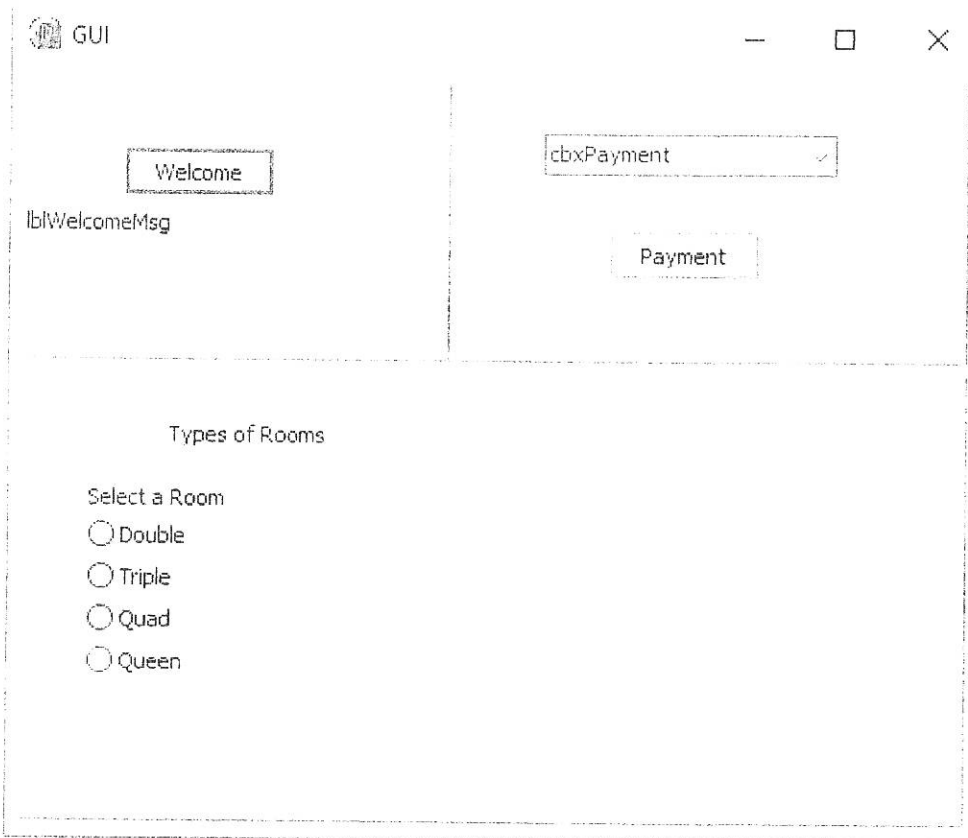
## SCENARIO

The KZN Grand Hotel is celebrating their 10-year anniversary and to celebrate it in style they are upgrading all their computers and electronic equipment. They are now looking for a programmer to develop various applications to make life easier for their guests.

## SECTION A

### QUESTION 1: GENERAL PROGRAMMING SKILLS

You are required to program the following GUI which will showcase information about guest rooms and provide an appropriate welcome to new guests.



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

- 1.1 **[Button - Welcome]:** the following needs to be done when the user clicks on the button using code only:
- a. Use a dialog box to get the person's name and surname.
  - b. Display a welcome message in **lblWelcomeMsg** with the information entered in **(a)**.
  - c. Change the font:
    - i. Size to 12
    - ii. Font text to Times New Roman.
    - iii. Font type to bold
    - iv. Font colour to Red
  - d. Change the label width to size 209
  - e. Set word-wrap to true
- (8)

- 1.2 **[Button – Radio clicked]**
- a. Retrieve the type of room selected and display the corresponding picture.  
  
The pictures are named as follows:  
Double.jpg  
Triple.jpg  
Quad.jpg  
Queen.jpg
  - b. Using code make sure the entire picture can be seen.
- (9)

- 1.3 **[Event – GUIOnCreate]**  
The combo box is currently empty, using code to add the payment type "Cash" and "Card"
- (2)

- 1.4 **[Button - Payment]**  
Display a message using a dialog box with the following format:  
<name> has booked <Room type> and is paying by <type of Payment>
- (6)

## Sample Output

The screenshot shows a program window with the following elements:

- A "Welcome" button.
- A text area displaying "Welcome to Books 2018 Jane Doe".
- A dropdown menu showing "Card".
- A "Payment" button.
- A section titled "Types of Rooms" with the prompt "Select a Room".
- Four radio button options: "Double", "Triple" (selected), "Quad", and "Queen".
- A photograph of a hotel room with three beds.
- A dialog box titled "Question1\_p" with a close button (X) in the top right corner. The dialog contains the text "Jane Doe is booking a Triple Room and is paying by Card" and an "OK" button.

- Enter your name as a comment in the first line of the program file.
- Save your program.
- Print the code if required.

TOTAL SECTION A: [25]

## SECTION B

### Question 2

In order to provide guests with better service, the hotel management is looking at creating an online booking service that would help guests book an appropriate room.

The screenshot shows a web browser window titled "Booking" with standard window controls (minimize, maximize, close). The page is divided into two main sections. The left section contains a registration form with three input fields: "Enter in your Name", "Enter in your Surname", and "Enter in your Email Address". Below these fields are a "Register" button and a label "lblRegister". The right section contains a booking form. It starts with a "Select Booking" header, followed by a "Select Number of Adults" dropdown menu showing "0". Below this is a "Rooms Required" label and an "lblNumberOfRooms" input field. Further down is a "Select Number of days you will be staying" dropdown menu showing "0". At the bottom of the right section are a "Total Cost" label and an "lblTotalCost" input field, a "Confirm Booking" button, and a "New Booking" button. The left section also includes a "Select Room Type" section with radio buttons for "Double", "Triple", "Quad", and "Queen", and an "lblCostPerRoom" label.

Booking

Enter in your Name

Enter in your Surname

Enter in your Email Address

Register lblRegister

Select Booking

Select Number of Adults 0

Rooms Required lblNumberOfRooms

Select Number of days you will be staying 0

Total Cost lblTotalCost Confirm Booking

Select Room Type

Double

Triple

Quad

Queen

lblCostPerRoom

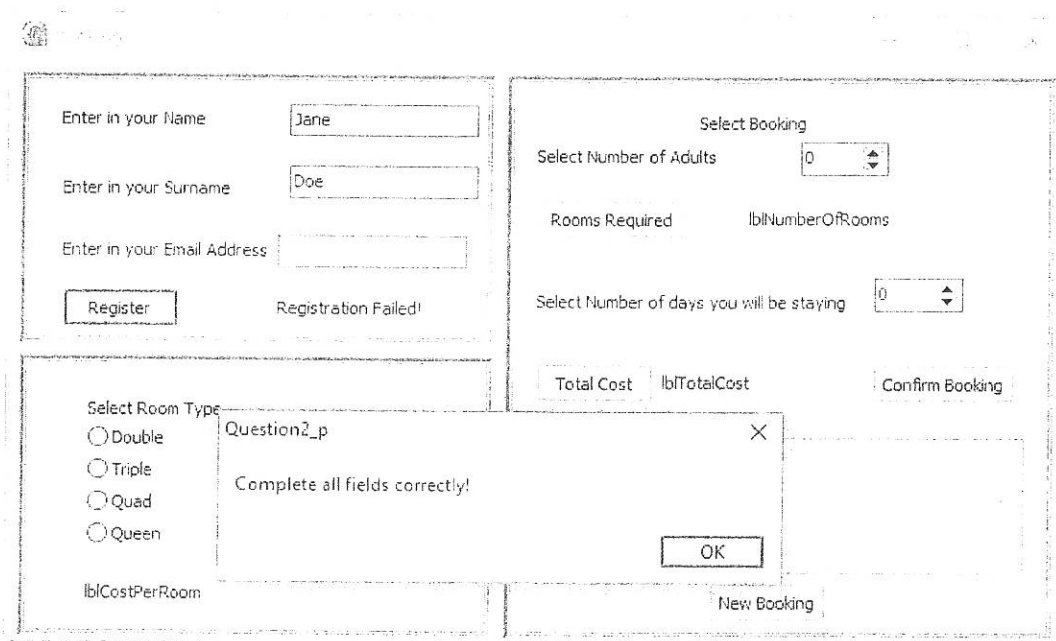
New Booking

2.1. Make use of GLOBAL VARIABLES that have been declared for questions 2.1 to 2.5.

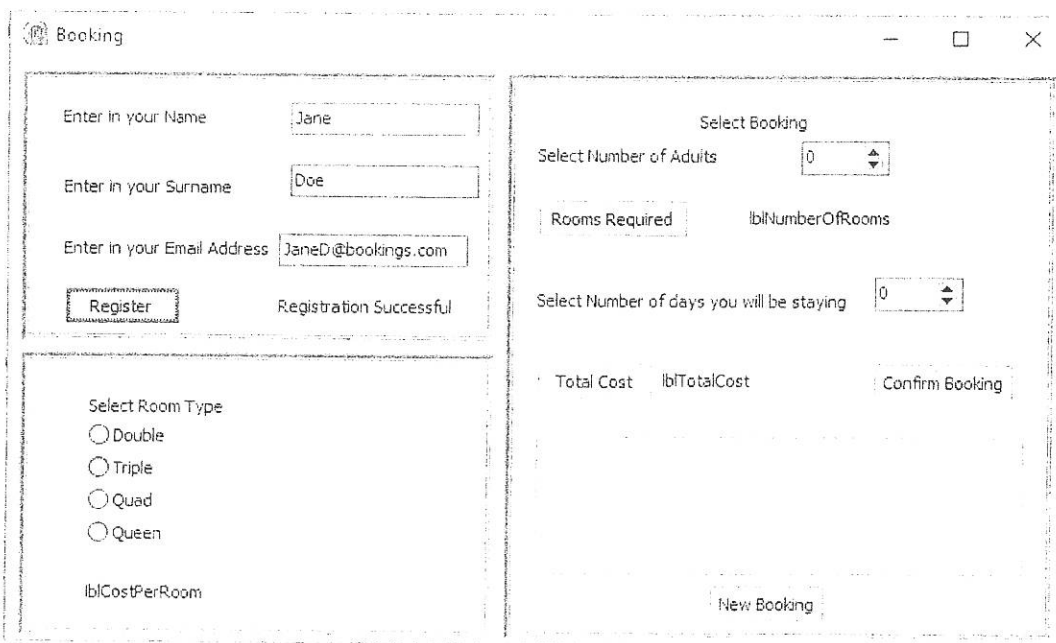
**[Button – Register]**

- a. When the user clicks on this button read in the name, surname and email from the corresponding fields.
- b. Display a message in lblRegister informing the user if he or she has been registered. If any of the fields are blank show a message “Complete all fields correctly!” using a dialog box.
- c. When the user is registered then enable pnlSelectRoom and pnlSelectBooking

**Sample Output- Missing Fields**



**Sample Output- Successful registration**





2.2 **[RadioButtonGroup – Select Room Type]**

There are 4 rooms available at the hotel. (Double, Triple, Quad and Queen) when the user selects a room display the price of that room in the lblCostPerRoom.

The cost per rooms are:

Room	Cost Per Night
Double	R600
Triple	R750
Quad	R1100
Queen	R1500

(4)

2.3 **[Button - Rooms Required]**

Determine the number of rooms required for the booking. Obtain the number of people that will be staying from the spinner sedAdults.

Double Room – 2 Sleeper

Triple Room – 3 Sleeper

Quad Room – 4 Sleeper

Queen Room – 2 Sleeper

Number of rooms are calculated by dividing the number of adults by the number of people that can sleep in the room. . Display on lblRooms rounded to the next whole number.

(8)

2.4 **[Button - Total Cost]**

Determine the total cost that would be needed to be paid to the hotel.

Total cost is determined by:

***(Number rooms \* Cost of rooms) \* number of days***

Display on lblTotalCost formatted as currency to 2 decimal places.

(7)

2.5 **[Button – Confirm Booking]**

Display the booking details in the rich edit box. Using the following format.

<Name> <Surname>

Email: <Email>

Type of Room: <Room type>

Number of Rooms

Total Cost: <Total Cost>

Sam Dean

Email: S\_D@SuperN.wec

Type of Room: Double

Rooms Needed is 3

Total cost: R 21 600.00

(5)

2.6 **[Button – New Booking]**

Clear all components and disable pnlSelectRoom and pnlSelectBooking

(6)

## Sample Output:

The screenshot shows a window titled "Booking" with a registration form on the left and booking details on the right. The registration form includes fields for Name (Jane), Surname (Doe), and Email Address (JaneD.@Bookings.com), with a "Register" button and a "Registration Successful" message. Below this is a "Select Room Type" section with radio buttons for Double, Triple, Quad (selected), and Queen, and a price of R 1100. The booking details section includes "Select Booking" with a dropdown for "Select Number of Adults" (3), "Rooms Required" (3), and "Select Number of days you will be staying" (2). It shows a "Total Cost" of R 6 600.00 and a "Confirm Booking" button. A summary box contains: "Jane Doe", "Email: JaneD.@Bookings.com", "Type of Room: Quad", "Rooms Needed is 3", and "Total cost: R 6 600.00". A "New Booking" button is at the bottom.

- Enter your name as a comment in the first line of the program file.
- Save your program.
- Print the code if required.

TOTAL SECTION B: [40]

## SECTION C

### Question 3

The Hotel will be offering WIFI to the guest at discount prices.

3.1 [Button – Calculate amount of data needed]

- Retrieve the hours per day that the guest will be using the internet as well as the number of emails sent. (4)

To determine how much data the guest would need the following formula's must be used.( The data below represents MB)

- Internet browsing data= Number of hours browsing \* 450
- Email data= (number of emails/25) \* 2048
- Media data = number of hours on media sites \* 1024
- Stream data= number of hours streaming \* 5120 (5)

Determine and display the number of GB the user would need (1 GB =1024MB). The hotel only sells data per GB, so the amount of data need would need to be rounded up. (2)

The hotel charges R49.99 per GB display the cost of the data in currency format and enable the button **Display Discount** (2)

Question 3

### Hotel DATA Cost and Discount Calculator

**Cost of DATA**

How much time do you spend browsing the internet?  
1 Hours a day

How many emails do you send and receive each day?  
25 Emails a day

How much time do you spend streaming or downloading music?  
3 Hours a day

How much time do you spend on social media sites?  
2 Hours a day

Calculate amount of data needed

**Discount Calculator**

Choose Hotel: [dropdown]

Number of Nights: [input]

Show

20 GB needed  
To use the internet at our hotel will cost you R 1 199.80

3.3. Display Discount

Close

### 3.2. [Button 3.2. Display Discount]

Hotels offer discounts based on the number of nights a guest is staying at their premises. A combo box **cmbHotel** contains 5 popular hotels that guests could stay at.

3.2.1. Extract the selected hotel from the combo box and the number of nights the guest plan on staying over. The cost of a night at each hotel is as follows: (5)

- The Oyster Box Hotel – R6215
- Tsogo Sun Elangeni Hotel – R2245
- Fairmont Zimbali Lodge – R1627
- Beverly Hills Hotel – R4071
- Hilton Durban Hotel – R1429

3.2.2. Write code which will determine the discounts obtained for a guest based on certain criteria.

- **1 to 2 nights - does not qualify for a discount.** Display a message dialog to the user to indicate that they do not qualify for any discounts. (3)

- **3 to 4 nights - once off 15% discount** from the cost of their stay. Display the discount of the guest's stay and their final total cost. All monetary figures must be formatted as currency to 2 decimal places. (6)

- **5 nights or more - 10% discount that is deducted each day.** The first day of a guests stay has the 10 % discount deducted. Every day after is charged at the previous discount amount with a further 10% deduction. This is done for every day of the guest's stay. Clear the TRichedit. (Use a for loop to calculate and display the cost of each night's stay). All monetary figures must be formatted as currency to 2 decimal places. (8)

### Sample run: 1 night selected

**Hotel DATAv Cost and Discount Calculator**

**Cost of DATA**

How much time do you spend browsing the internet?  
1 Hours a day

How many emails do you send and receive each day?  
25 Emails a day

How much time do you spend streaming or downloading music?  
3 Hours a day

How much time do you spend on social media sites?  
2 Hours a day

Calculate amount of data needed

20 GB needed  
To use the internet at our hotel will cost you R 1 199.80

**Discount Calculator**

Choose Hotel: The Oyster Box Hotel

Number of Nights: 1

Show 3.3. Display Discount

Close

**Question3\_p**

Sorry, you do not qualify for any discounts

OK

### Sample run: 3 nights selected

**Hotel DATAv Cost and Discount Calculator**

**Cost of DATA**

How much time do you spend browsing the internet?  
1 Hours a day

How many emails do you send and receive each day?  
25 Emails a day

How much time do you spend streaming or downloading music?  
3 Hours a day

How much time do you spend on social media sites?  
2 Hours a day

Calculate amount of data needed

20 GB needed  
To use the internet at our hotel will cost you R 1 199.80

Your 15% discount earned on your stay is: R 1 010.30  
The total cost of your stay: R 5 724.80

**Discount Calculator**

Choose Hotel: Tsogo Sun Elangeni Hotel

Number of Nights: 3

Show 3.3. Display Discount

Close

## Sample run: 7 nights selected

Question 3

### Hotel DATA Cost and Discount Calculator

**Cost of DATA**

How much time do you spend browsing the internet?  
1 Hours a day

How many emails do you send and receive each day?  
50 Emails a day

How much time do you spend streaming or downloading music?  
3 Hours a day

How much time do you spend on social media sites?  
3 Hours a day

Calculate amount of data needed

Day	Original Price	Discounted Balance
1	R 4 071.00	R 3 663.90
2	R 3 663.90	R 3 297.50
3	R 3 297.50	R 2 967.80
4	R 2 967.80	R 2 671.00
5	R 2 671.00	R 2 403.90
6	R 2 403.90	R 2 163.50
7	R 2 163.50	R 1 947.10

**Discount Calculator**

Choose Hotel: Beverly Hills Hotel

Number of Nights: 7

3.3. Display Discount

Close

- Enter your examination name as a comment in the first line of the program file.
- Save your program.
- Print the code if required.

TOTAL SECTION C: [35]

## SECTION D

### QUESTION 4:

Choose between Question 4(1) or 4(2)

#### Question 4

Every room in the hotel comes with a safe that requires a passcode to be used. The owners of the hotel have noticed that their guests seem to use weak passcodes when securing their safes. They have asked you to develop a program to create a passcode for their guests based on a certain set of rules. Answer the questions that follow to implement a more secure passcode.

Pass Code

Enter in your Full Name

Enter in your ID Number

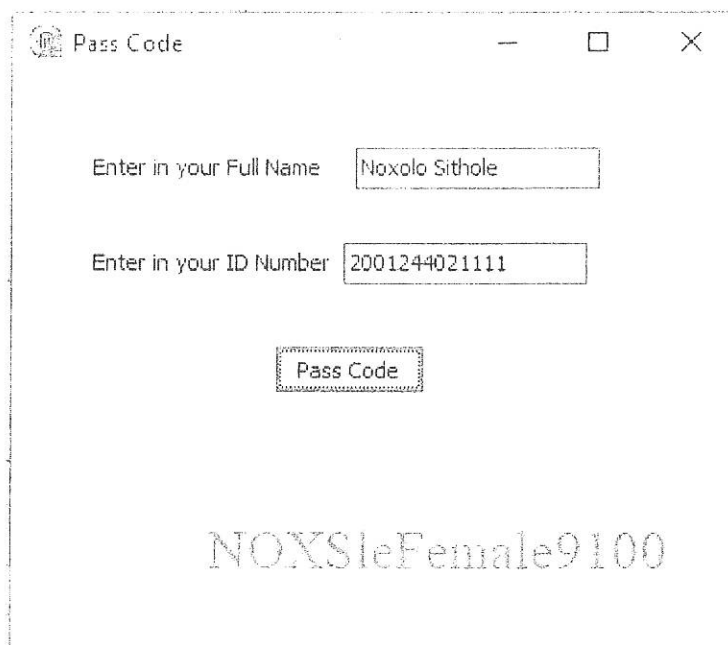
Pass Code

ibiPassCode

- 4.1 Retrieve the guests name, surname and ID number. Extract and join (concatenate) the elements explained below: (2)
- a. Extract the first 3 characters of the guest's name. Convert to uppercase. (3)
  - b. Extract the first character of the guest's surname. Convert to uppercase. (3)
  - c. Extract the last 2 letters of the guest's surname. Convert to lowercase. (2)
  - d. Determine the Gender of the guest by extracting characters at position 7 to 10 of the ID number. If the number is from 0000 to 4999 then the guest is female otherwise the guest is male. (5)
  - e. Randomly generate a 4 digit number. (3)
  - f. Display the generated code on lblPasscode. (2)

**N.B** The code will not be the same as the sample as the random number will be different.

**Sample Output 1:**



The screenshot shows a window titled "Pass Code" with a standard Windows title bar (minimize, maximize, close buttons). Inside the window, there are two text input fields. The first is labeled "Enter in your Full Name" and contains the text "Noxolo Sithole". The second is labeled "Enter in your ID Number" and contains the text "2001244021111". Below these fields is a button labeled "Pass Code". At the bottom of the window, the output string "NOXSleFemale9100" is displayed in a large, light-colored font.



**Sample Output 2:**

Pass Code

Enter in your Full Name

Enter in your ID Number

FANMincMale8907

- Enter your examination name as a comment in the first line of the program file.
- Save your program.
- Print the code if required.

**TOTAL SECTION D: [20]**

#### Question 4 (2)

The hotel is celebrating their 10-year anniversary. The hotel management has decided to give all their guests a 35% discount on their final bill amount. . There are 2 arrays declared, arrNames and arrBill. There are 15 guests currently staying at the hotel. ArrNames has been populated with the names of these guests. Use the interphase provided to code the following. Click on the Display button after each question to see results.

**Globel Variable: rAverage : real has been created.**



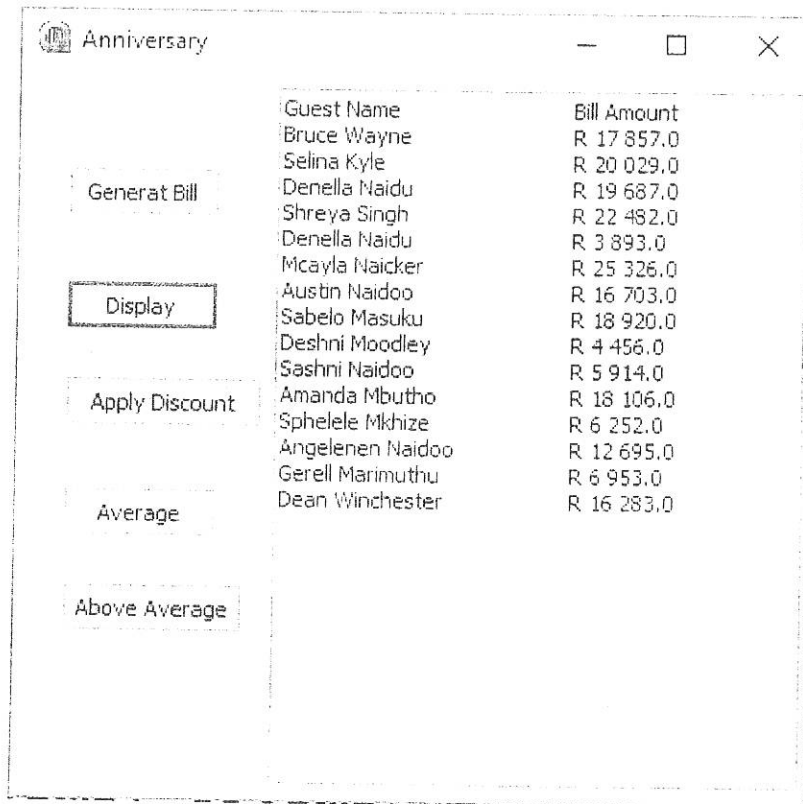
- 4.1 **[Button: Generate Bill]** - Randomly generate bill amounts for each guest from R1000- R27000. Store the bill amount in arrBill.

(4)

**[Button: Display]** – When this button is clicked, all values in arrNames and arrBill must be displayed with appropriate headings and formatted as currency to 1 decimal place.

(4)

### Sample Output

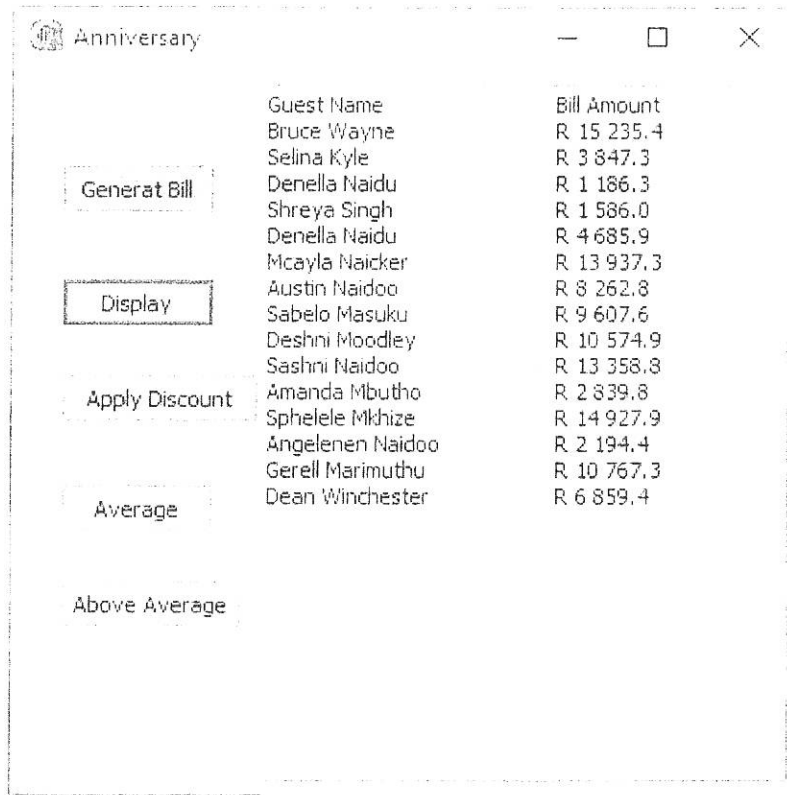


**NB:** All outputs will differ to sample outputs since the bill amounts are randomly generated.

4.3 **[Button: Apply Discount]** - When the Apply Discount button is clicked, give all guests a discount of 35% on their current bill generated in 4.1. Populate arrBill with the new discounted amount.

(4)

**Sample Output**

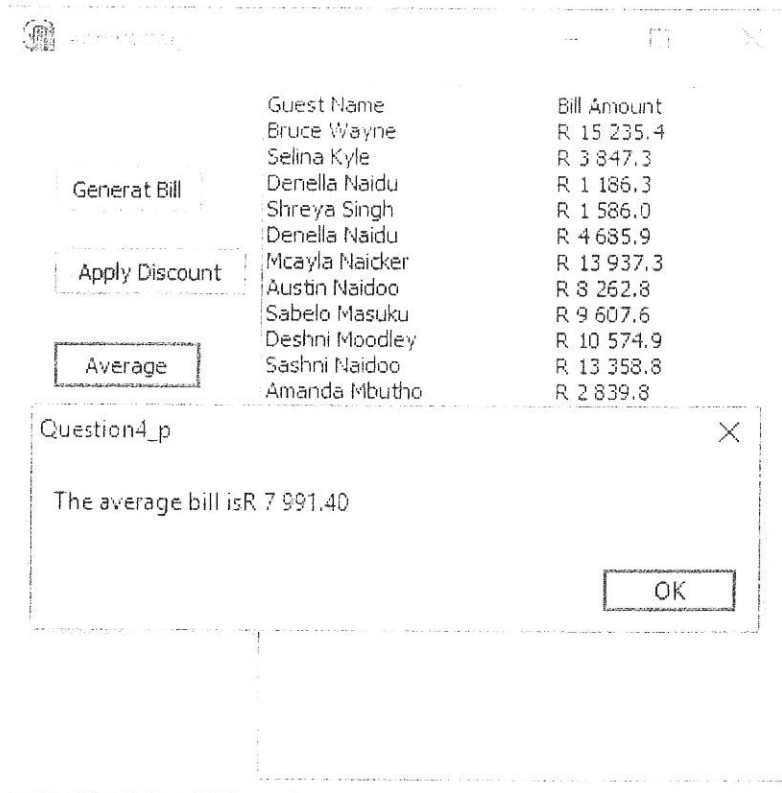


*To Check if the discount has been applied click on 4.2. Display button.*

4.4 [Button: Average] - A global variable *rAverage* has been declared. Determine the average of all the bill amounts. Using a dialog box display the average amount with a suitable message and formatted as currency to 2 decimal places.

(4)

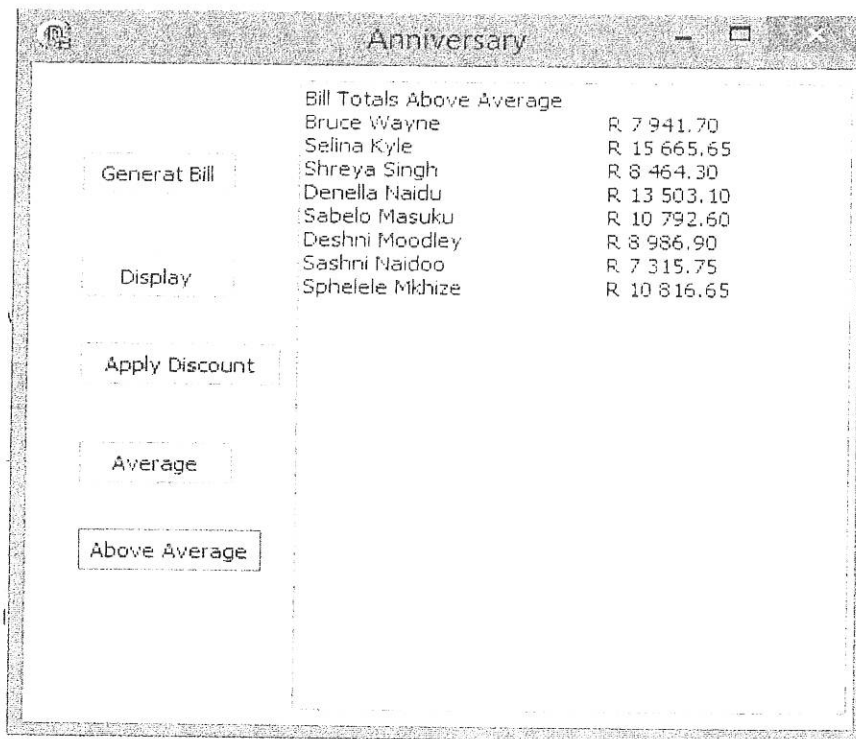
### Sample Output



4.5 **[Button: Above Average]** – Display all Guests that have a bill amount that is more than the average amount calculated in Question 4.4.

(4)

**Sample Output**



- Enter your examination name as a comment in the first line of the program file.
- Save your program.
- Print the code if required.

**TOTAL SECTION D: 20  
TOTAL: 120**