education

Department:
Education
PROVINCE OF KWAZULU-NATAL

GREENBURY SECONDARY SCHOOL

INFORMATION TECHNOLOGY

GRADE 11

PAPER 1: PRACTICAL

Date of examination: 05 June 2018

MARKS: **150**

TIME: **3 hours**

This paper consists of 10 pages including this cover page.

GENERAL INSTRUCTIONS AND INFORMATION

1. This is a three-hour examination.
2. Answer ALL the questions. Read them carefully and do only what is required.
3. A **Learnerdata** folder is supplied. It contains subfolders and data for the applications that you must develop. Change the name of this **Learnerdata** folder as instructed by your teacher.
4. Type in your name and surname as a comment in the first line of **each unit**.
5. Save ALL your solutions in the correct folders and sub folders.
6. Save your work at regular intervals as a precaution against power failures.
7. During the examination you may use the HELP function (F1) of Delphi. You may NOT make use of any other resources.
8. At the end of this examination session you must make sure that ALL the files with your work have been saved as explained to you by the invigilator/educator. Ensure that ALL files can be read.
9. Printouts of the programming code of the units will take place after the completion of this examination session as instructed by the invigilator.

Files Supplied:

The following files can be found in the **Data Folder**:

Q1xx:	**Q2xx:**
Q1_p.dpr	Q2_p.dpr
Q1_u.dfm	Q2_u.dfm
Q1_u.pas	Q2_u.pas
Candidates. txt	

GENERAL SCENARIO

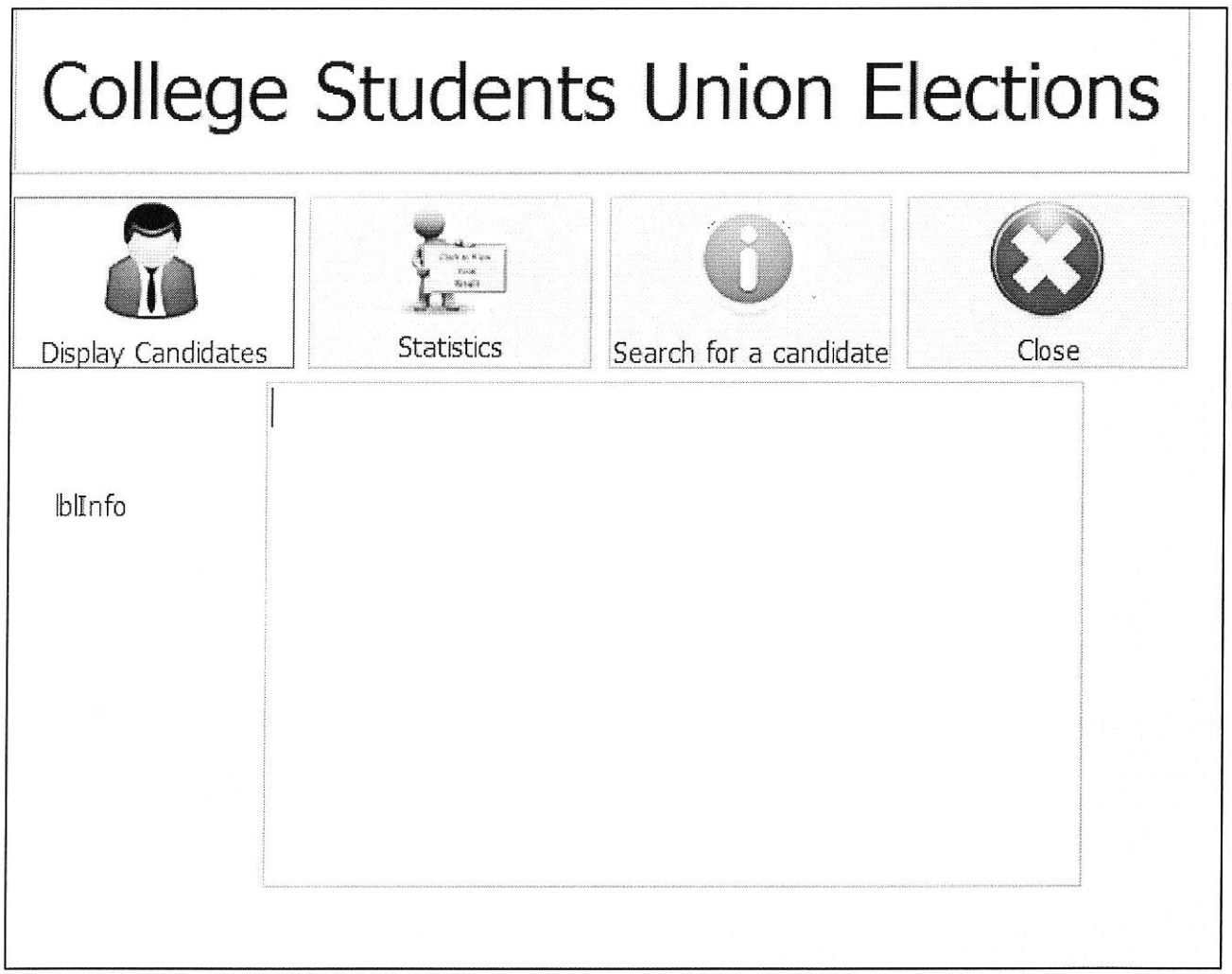
The Student Union asked you to use your problem-solving skills to develop a computer application for the election.

QUESTION 1

The files needed for this question can be found in the folder named **Q1.**

You have been provided with an incomplete program. Open the project file **Q1_p** and complete the program.

User interface:



1.1 The text file **Candidates.txt** contains the information of the election candidates. The candidates' information is stored in the following format:

IDnumber%Name and Surname %cell-phone number %Email Address

Example of the information for Delaan Glory:

8801198585081%Delaan Glory%0775896589%delaanglory@nowitwiz.co.za

Follow the guidelines 1.1.1 to 1.1.5 to complete the code of the '*Display Candidate*'-button:

1.1.1 Declare 3 global arrays, **arrName**, **arrId** and **arrTel**.

Create a global variable to keep track of the total number of people extracted from the text file. (4)

1.1.2 **FormCreate-Event:**

Test whether the file exists or not. Display an appropriate message if the file doesn't exist and close the program.

Read the candidate's information from the text file, split the information to get the ID number, name and cell-phone number. Save the candidates' information in appropriate **arrays** for later use. There are only 9 candidates for the election. (21)

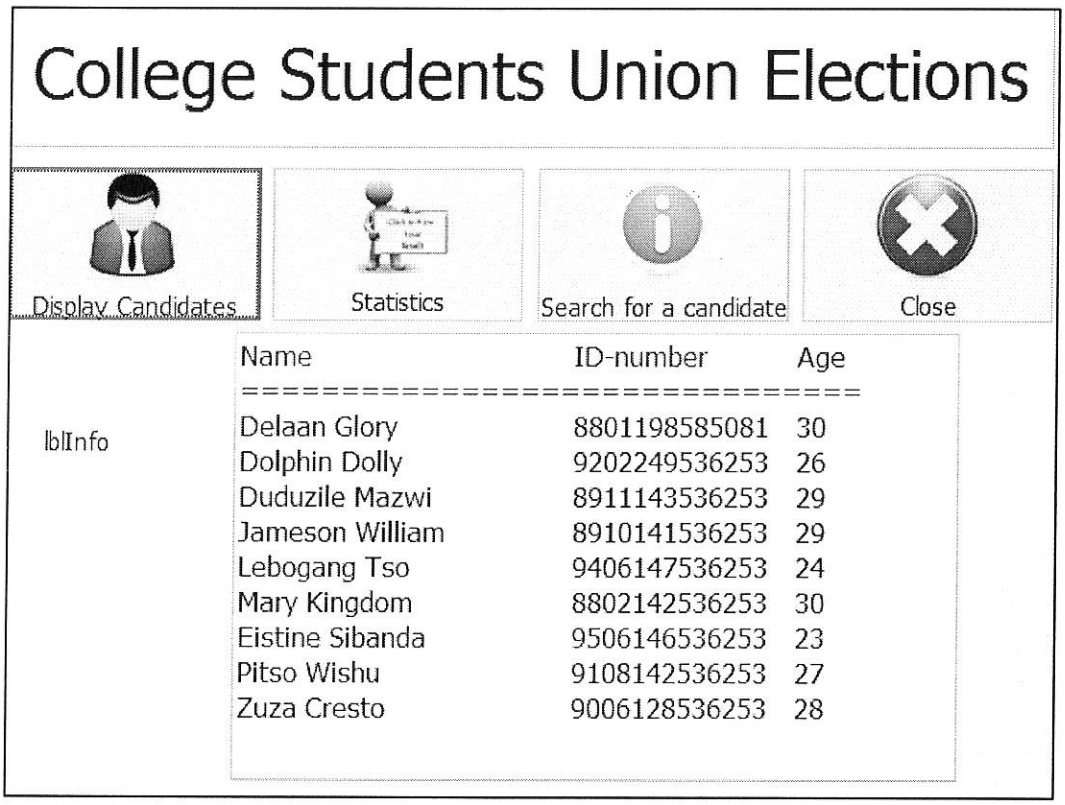
1.1.3 **DisplayCandidates-Button:**

- Extract the following information from the arrays:
  Display only the name and surname, ID-number and the age of the candidate in neat columns with an appropriate heading.

  NOTE: You have to set appropriate tabs for the Display Area.

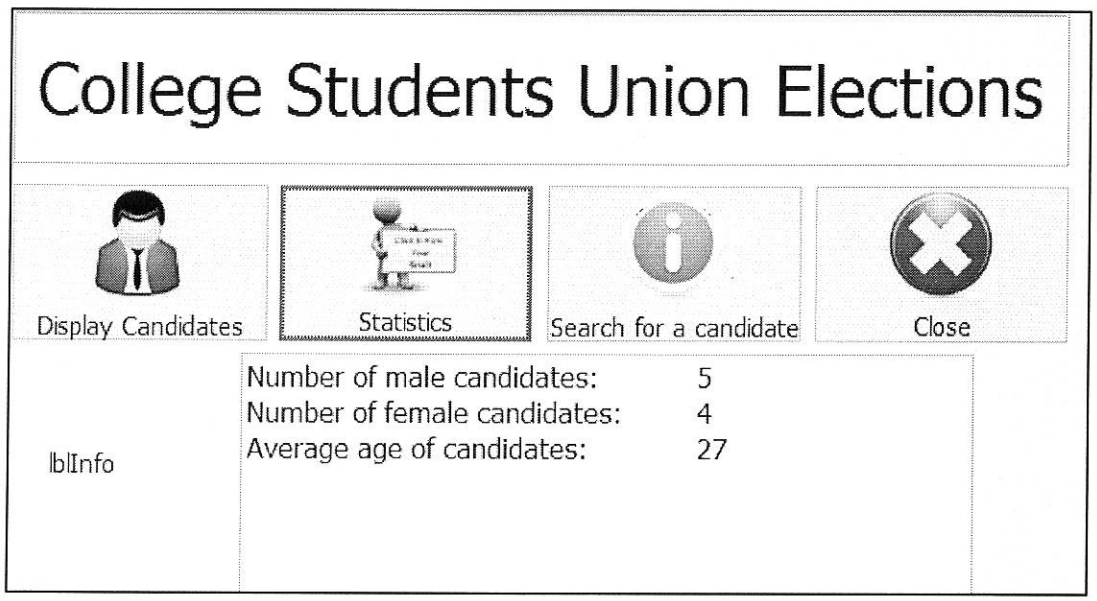
- Calculate the age by subtracting the candidates birth year from the current year (2018). Assume that all candidates were born in the 20th century (1900's). Calculate the total age of all the candidates, this value will be used at a later stage to calculate the average of all the candidates.

- Determine if the candidate is Male or Female by using the seventh digit of the ID-number. Values larger than 4 is Male. Keep track of the total for each gender as you will need the values to be displayed.



(24)

1.1.4 **Statistics-button**:
This button will be used to display some interesting statistics on the election. Display the number of Male and Female candidates as well as the average age of the candidates make use of the totals calculated in 1.1.3.



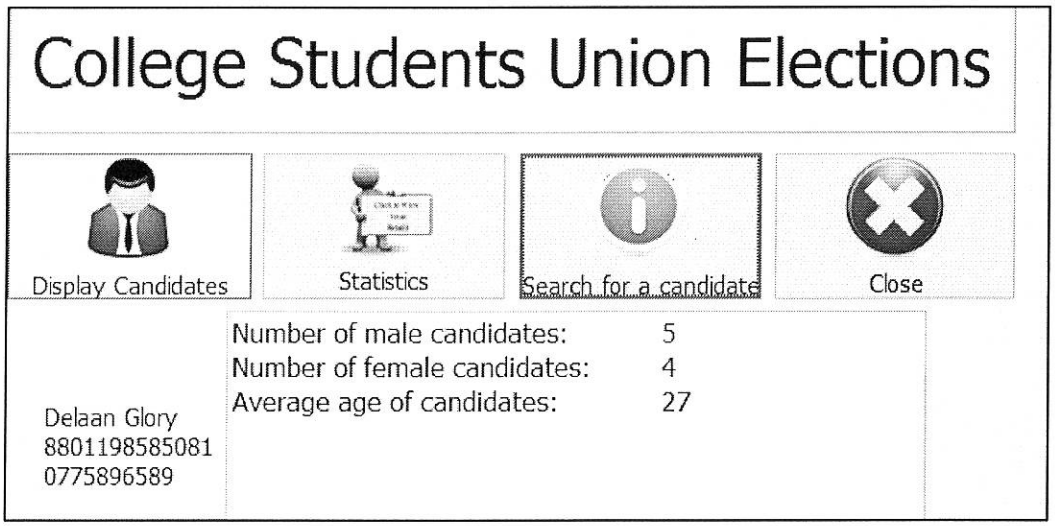
(8)

1.1.5 When the voter clicks on the '*Search for a candidate'-button*, the appropriate candidate must be located by searching the ID number.

The voter must enter the ID-number using an *inputbox*. Make use of a flag to stop the search process when the number is located.

If the number is found, the information must be displayed on the *lblInfo*. If not found an appropriate message in a *showmessage* must be displayed informing the voter that the candidate is not on the list.

Example of output of an existing ID-number 8801198585081:



(17)

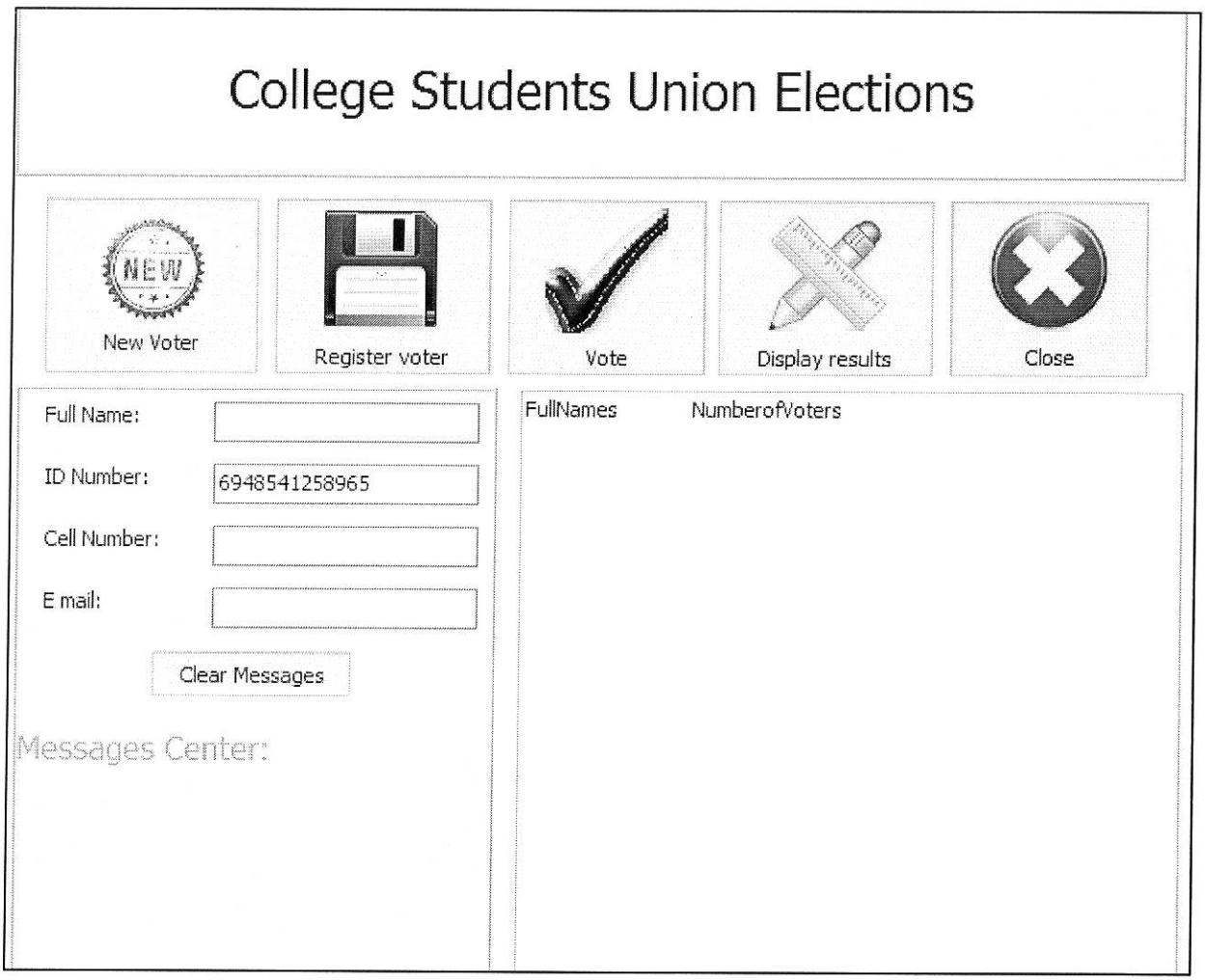
TOTAL QUESTION 1: 74

QUESTION 2

As preparation for the elections, new voters must be able to register. The information has to be tested for validity before it is written to the file that contains the information of all these prospective voters.

The files needed for this question can be found in the folder named **Q2**.

User interface:



2.1 An array ArrNames is declared and already populated with electoral candidates. These values will be used at a later stage.

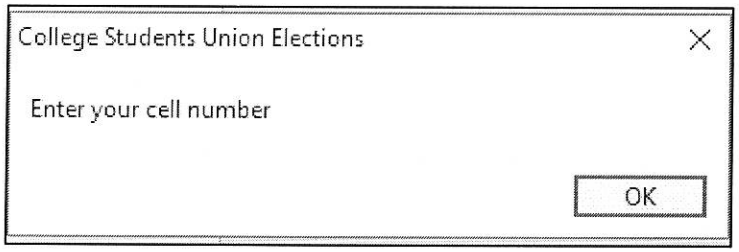
The voters registering will be saved in a text file.

2.1.1 **Register-button:**

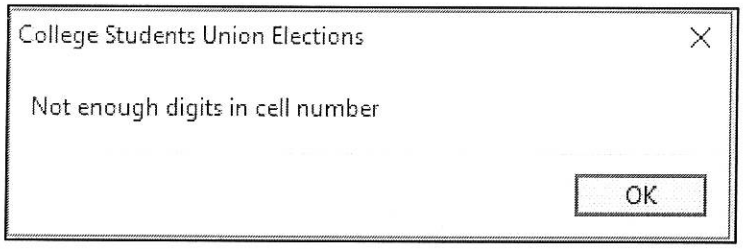
The full name, ID, cell number and email is extracted from the edit components.

Store these values in variables.

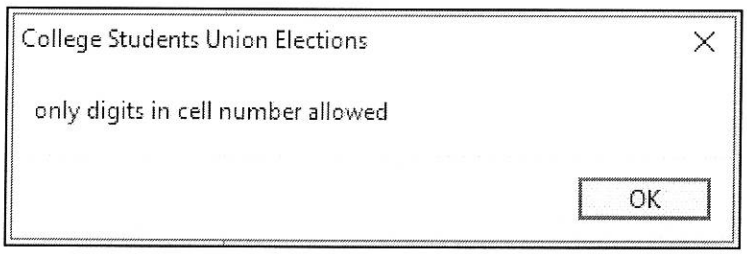
The cell phone number editbox is a compulsory item. If no number is entered the following error message must be displayed:



The cell phone number must also be tested to ensure it contains 10 characters. If not the following error message must be displayed.



The cell phone number must only consist of digits. If not the following error must be displayed.



If any of the above errors occur in the program, clear the edit box and allow the user to correct the error.

Test if the file exists, if not the file must be created. If there is an existing file, the information must be added to the existing data at the end of the file.

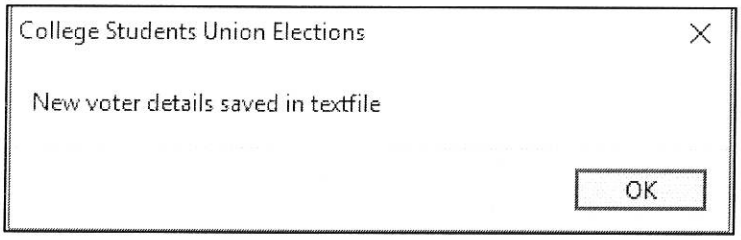
The information is stored in a file, Voters.txt, in the following format:

IDNumber%Full name%Cell number%E-mail address

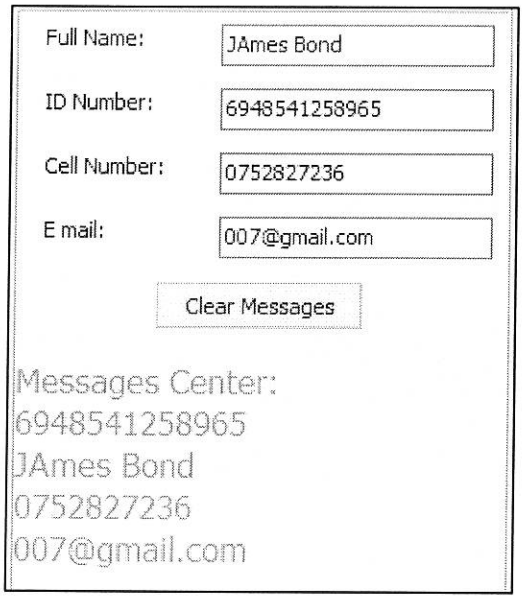
Example:

6948541258965%James Bond%0752827236%007@gmail.com

An information message must be displayed confirming that the data is saved:



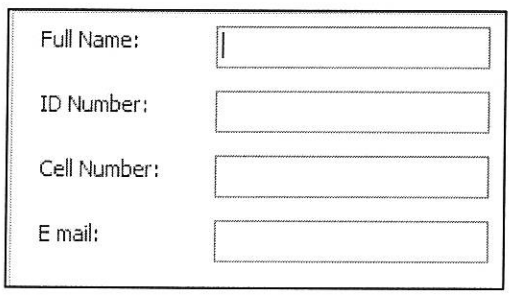
The information must be displayed on lblMessage as follows:



(37)

2.1.2 **New-button:**

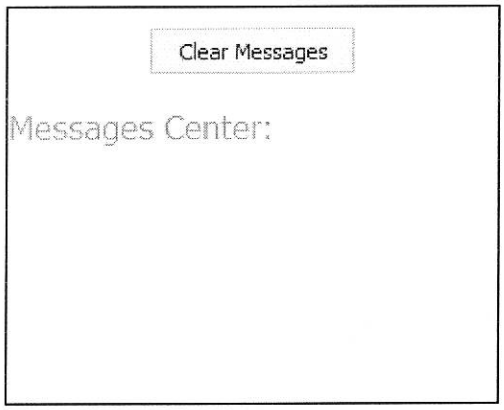
Clear the information in the edit boxes, and ensure the cursor is placed in the edit box where the name is entered



(5)

2.1.3 **Clear Messages-button:**

Only display 'Message centre' on the label, lblMessages:



(1)

2.1.4 **FormActivate event:**

Sort the arrayNames alphabetically. Simultaneously place/replace the values of the arrVotes with a 0 (zero). (15)

2.1.5 **Vote-Button**:

Obtain the number of the candidate being voted for with an input box. The number 1 represents the first candidate. Update the number of votes cast in ArrVotes for that specific candidate.

If 5 is selected then the vote count for the 5th candidate must be increased in ArrVotes. . (5)

2.1.5 **Display results-Button:**

Display the information in the arrays as follows:

The names of the candidates with the number of votes must be displayed next to one another, as in the example. An @ sign must also be displayed for every vote cast. See screenshot below.

FullNames	NumberofVoters	
Dolphin Dolly	0	
Glory Delaan	1	@
Jameson William	0	
Kingdom Mary	0	
Lebogang Tso	3	@@@
Mazwi Duduzile	0	
Sibanda Eistine	0	
Wishu Pitso	0	
Zuza Cresto	0	

(13)

TOTAL Question 2: 76

TOTAL for paper 150