Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2020

INFORMATION TECHNOLOGY P1

MARKS: **150**

TIME: **3 hours**

IINFTE1

This question paper consists of 15 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Candidates must answer ALL four 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. 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.
4. 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 this question paper.
5. Routines such as search, sort and selection must be developed from first principles. You may NOT use the built-in features of a programming language for any of these routines.
6. Save your work regularly. Ensure that all files can be read.
7. The files that you need to complete this question paper have been given to you. The files are provided in the form of password-protected executable files.

   Do the following:
   - Double click on the password-protected executable file.
   - Click on the 'Extract' button.
   - Enter the following password: **Nov20C#4d**

   Once extracted, the following list of files will be available in the folder **DataNov2020**:

Question 1:

Question1_u.pas
Question1_u.dfm
Question1_p.dpr
Question1_p.res
SAFlag.txt

Question 2:

Question2_u.pas
Question2_u.dfm
Question2_p.dpr
Question2_p.res
numbers.txt

Question 3:

Question3_u.pas
Question3_u.dfm
Question3_p.dpr
Question3_p.res
dbConnection_u.pas
CovidResearch.mdb
CovidResearchBackUp.mdb

Question 4:

Question4_u.pas
Question4_u.dfm
Question4_p.dpr
Question4_p.res

QUESTION 1: GENERAL PROGRAMMING SKILLS

SCENARIO:

Complete a program to create codes for patients when they are admitted to a hospital and display the total number of patients admitted to hospitals in the Eastern Cape and the Western Cape.

Do the following:

- Open the incomplete program in the **Question 1** folder.
- Enter your full name as a comment in the first line of the **Question1_u.pas** file.
- Compile and execute the program. The program currently has no functionality.
- Follow the instructions to complete the code for each Question 1.1, 1.2 and 1.3.

1.1 Button [Q1.1 Get Patient Code] on Question 1.1 tabsheet

Patients will enter their first name and surname into the edit box named **edtfullname**, choose a province (either Eastern Cape or Western Cape) from the combobox named **cmbprovince** and type in their year of birth (in the format 'YYYY') into the edit box named **edtyear**.

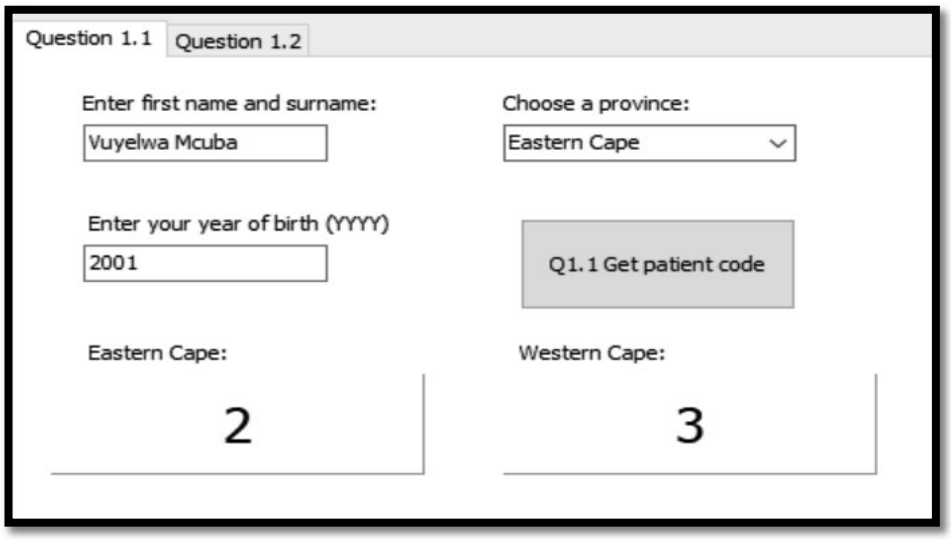
Write code to do the following:

- An error message must be displayed and the procedure must exit if a patient did not choose a province.

  Example of output:

- Every time the **Get Patient Code** button is clicked, the number of patients for the selected province must be increased by one. The total number of patients for each province must be displayed on the panels named **pnlEC** and **pnlWC.**

Example of output:



- The patient code must be compiled and displayed in a message component using the following algorithm:

  The 1st character of the first name and the 1st character of the surname must be joined to the 3rd and 4th characters of the year of birth and the first four characters of the province. A random number from 1000 to 60 000 (both included) must be added to the end of the code.

  Example: Vuyelwa Mcuba was born in 2001 and has been admitted to a hospital in the Eastern Cape. She will have a patient code of VM01East26099. (The random number is 26099).

  Example of output:

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1.2 **Button [Q1.2 Encryption] on Question 1.2 tabsheet**

The user will enter a sentence in the edit box named **edtinput** which must then be encrypted and displayed in a label named **lbldisplay**.

Write code to do the following:

- The input from the edit component named **edtinput** must be converted to all capital letters and then the sentence must be encrypted and displayed in the label named **lbldisplay** using the following cypher:
  - A space is represented as the number 1.
  - The characters from A to Z are represented as numbers from 2 to 27.
  - All symbols and numbers in the original sentence are represented as the number 0.
  - A star (*) must be added to the beginning and end of the encrypted string.
  - Every number of the encrypted string must be separated by a star (*).

  Example of output if **'Do IT'** is entered:

  ```
  *5*16*1*10*21*
  ```

  Example of output if **'Do IT 2#'** is entered:

  ```
  *5*16*1*10*21*1*0*0*
  ```

(13)

1.3 **The rgppicture onclick event:**

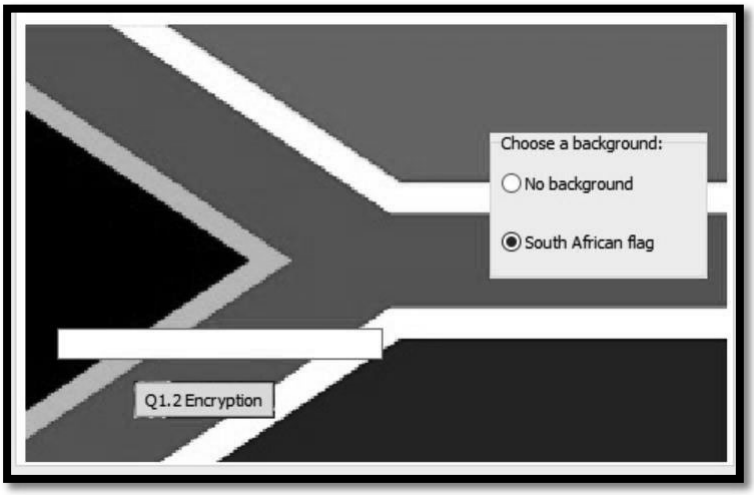
The user will choose an option from the radio group named **rgppicture.**

Write code to do the following:

If the user clicks on the radio button for 'No background', then the picture of the image component named **imgdisplay** must be set to invisible.

If the user clicks on the 'South African Flag' radio button, then the picture named ***SAFlag.jpg*** must be displayed as the background and the picture in the image component must be set to visible.

Example of output:



(7)

- Enter your name and surname as a comment in the first line of the program file.
- Save your program.
- A printout of the code may be required.

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QUESTION 2: ARRAYS AND TEXT FILES

Do the following:

- Compile and execute the program in the Question 2 folder. The program currently has limited functionality.
- Enter your full name as a comment in the first line of the **Question2_u.pas** file.
- Complete the code for each question as described in Question 2.

2.1 Button [Q2.1 Display]

A global array named **arrqty** has been declared which contains 10 integers. The numbers in this array represent the total number of positive cases of the first 10 days of April.

Another global array named **arrdays** has been declared which contains strings representing the first 10 days of April and this array is parallel to **arrqty**.

Below is a diagrammatical representation of the array named **arrqty:**

1	2	3	4	5	6	7	8	9	10
1505	1934	1380	2003	1686	1655	1845	1462	1749	1585

Below is a diagrammatical representation of the array named **arrdays:**

1	2	3	4	5	6	7	8	9	10
3 April	9 April	1 April	10 April	6 April	5 April	8 April	2 April	7 April	4 April

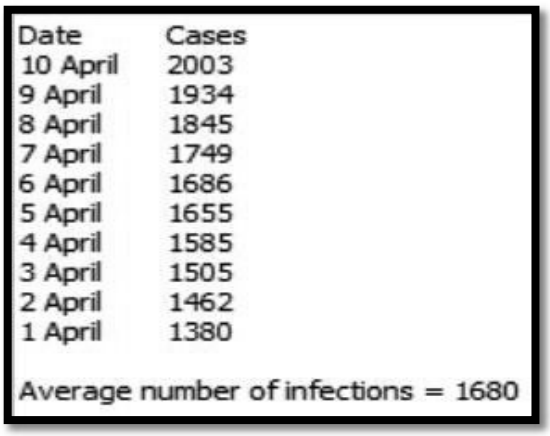
Write code to do the following:

- Sort the array named **arrqty** (as well as the array named **arrdays**) in descending order from the highest value to the lowest value of the array named **arrqty.**

- Display the contents of the two global arrays in the richedit named **redout** using neat spacing. *(Code has been provided for headings and a tab stop.)*

- Calculate and display the average of all infections in the richedit, rounded to a whole number.

Example of output:



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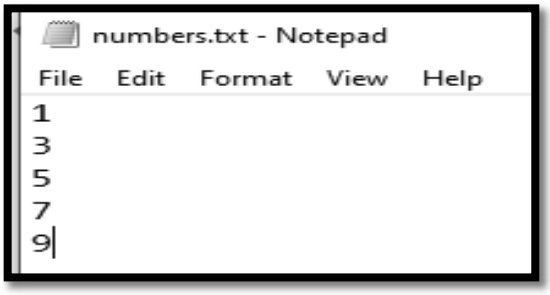
2.2 Button [Q2.2 Multiples]

You are provided with the text file named **numbers.txt** which contains FIVE lines representing the following data:



You are also provided with a constant array named **arradd.**

```
CONST  arradd : array [1..5] of integer = (8,6,4,2,0);
```

You are going to calculate the multiples of 18 by using the diagram below:

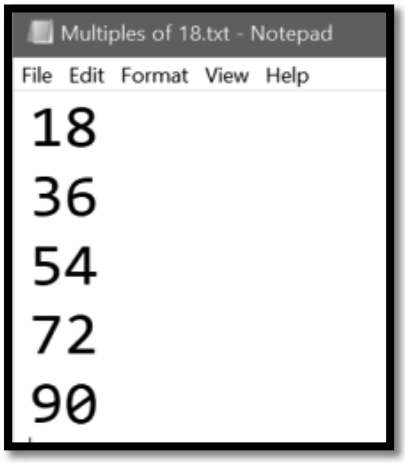
Numbers from the text file:	1	3	5	7	9
Numbers to append:	**8**	**6**	**4**	**2**	**0**
Multiples of 18:	18	36	54	72	90

Do the following:

- Write code to display a message and exit the procedure if the text file does not exist.
- Read the lines from the text file into an array and append the numbers 8,6,4,2 and 0 using the constant array named **arradd** to each of the corresponding numbers 1,3,5,7 and 9 from the text file, as shown in the diagram above, using a looping structure.
- Create a text file named '**Multiples of 18.txt'**.
- Write to this text file, the five multiples of 18 (18,36,54,72,90) which you compiled using the method above. Use a looping structure.
- Display a message indicating that the file was successfully written.

NOTE: If you do not use a loop, you will lose marks.

Example of output to the text file:



(21)

- Enter your name and surname as a comment in the first line of the program file.
- Save your program.
- A printout of the code may be required.

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QUESTION 3: DATABASE MANIPULATION

This question consists of sub-questions 3.1 to 3.5. The following important notes are applicable to all questions:

- You are NOT allowed to modify or add to the supplied data or supplied programming code.
- Good programming techniques from first principles only must be applied.
- NO marks will be assigned for hardcoding. Use control structures and variables where necessary
- **Do NOT use filter, sort, locate, recordcount, etc.**

There are thousands of research articles based on the 'Covid-19' disease. A database has been designed to store details of a few of these research papers and they are recorded in one table.

A table named **Articles** has been supplied in the database named **CovidResearch.mdb.**

A sample of records in this table is displayed below:

Title	Author	Publisher	Pages	Source	Language
Are we at the beginning of a new pandemic?	Bogner, JR	MMW Fortschritte der Medizin	162	Embase	German
Characteristics and Mechanism of Liver Injury	Li, JF, Jian-Gao	Clinical and Translational Hepatology	8	PMC	eng
Consensus on emergency surgery		Jie Fang Jun Yi Xue Za Zhi	45	ProQuest Central	Chinese
Does the direct renin inhibitor have a role to play	Lin, C-WH, Yu-Yao	Therapeutic Advance	11	PMC	eng
Dr. Li Wenliang, whistleblower, hero and martyr	Nau, JY	Revue Medicale Suisse	16	Embase	French
Drug repurposing strategies for COVID-19	Senanayake, SL	Future Drug Discovery	10	PMC	eng
Editorial	Castañeda, V	Innovar	30	ProQuest Central	Spanish
Emergency Medicine Physician Empowered	Gaeta, CB, Ryan	Cureus	12	PMC	eng
Expert consensus on clinical management		Jie Fang Jun Yi Xue Za Zhi	45	ProQuest Central	Chinese
Factors influencing iranians' risk perception	Samadipour, EG, F.	Journal of Military Medicine	22	Scopus	Persian

The design view of the table named Articles, which includes the field data types, is displayed below:

Field Name	Data Type	Description (Option
Title	Short Text	The Title of the research article in order to identify it as a unique title (primary key)
Author	Short Text	The main author of the research article
Publisher	Short Text	The publisher/organization that published the research article
Pages	Number	The number of pages in the research article
Source	Short Text	The source of the data that was used to create the research article
Language	Short Text	The language in which the research article was originally written

NOTE:

- Connection code to connect the database has been provided.
- When the **Restore Database** button is clicked, the data in the database will be restored to the original data.
- The name of the table to be used in your code, is **tblResearch.**

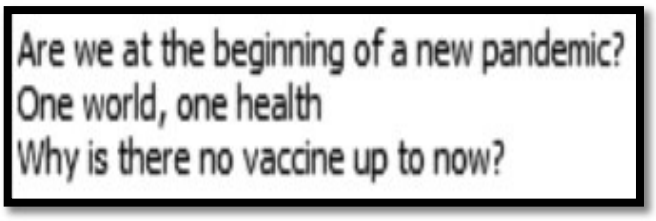
Do the following:

- Compile and execute the program in the Question 3 folder. The program currently has limited functionality.
- Enter your full name as a comment in the first line of the **Question3_u.pas** file.
- Complete the code for each question as described in Question 3.

3.1 **Button [Q3.1 Display Pages]**

Display the **Title** of all articles which contain more than 100 **Pages.**
Display the results in the richedit named **reddisplay.**

Example of output:



(7)

3.2 **Button [Q3.2 Change to English]**

There exists more than one article which was written in English but the **Language** has been saved as **'eng'** in the table. This was a result of errors when data entry occurred.

You must write code to change the **Language** of those articles from **'eng'** to **'English'.**

Example of output of the first few records:

Title	Author	Publisher	Pages	Source	Language
Are we at the beginning of a new pandemic?	Bogner, JR	MMW Fortschritte der Medizin	162	Embase	German
Characteristics and Mechanism of Liver Injury	Li, JF, Jian-Gao	Clinical and Translational Hepatology	8	PMC	English
Consensus on emergency surgery		Jie Fang Jun Yi Xue Za Zhi	45	ProQuest Central	Chinese
Does the direct renin inhibitor have a role to play	Lin, C-WH, Yu-Yao	Therapeutic Advance	11	PMC	English
Dr. Li Wenliang, whistleblower, hero and martyr	Nau, JY	Revue Medicale Suisse	16	Embase	French
Drug repurposing strategies for COVID-19	Senanayake, SL	Future Drug Discovery	10	PMC	English
Editorial	Castañeda, V	Innovar	30	ProQuest Central	Spanish
Emergency Medicine Physician Empowered	Gaeta, CB, Ryan	Cureus	12	PMC	English
Expert consensus on clinical management		Jie Fang Jun Yi Xue Za Zhi	45	ProQuest Central	Chinese

(7)

3.3 **Button [Q3.3 Delete PMC articles]**

Write code to delete all articles with the **Source** field named '**PMC'.**

Example of output:

Title	Author	Publisher	Pages	Source	Language
Are we at the beginning of a new pandemic?	Bogner, JR	MMW Fortschritte der Medizin	162	Embase	German
Consensus on emergency surgery		Jie Fang Jun Yi Xue Za Zhi	45	ProQuest Central	Chinese
Dr. Li Wenliang, whistleblower, hero and martyr	Nau, JY	Revue Medicale Suisse	16	Embase	French
Editorial	Castañeda, V	Innovar	30	ProQuest Central	Spanish
Expert consensus on clinical management		Jie Fang Jun Yi Xue Za Zhi	45	ProQuest Central	Chinese
Factors influencing iranians' risk perception	Samadipour, EG, F.	Journal of Military Medicine	22	Scopus	Persian
Flying	Lodi, G	Dental Cadmos	88	Embase	Italian
Lessons of uncertainty and globalization	Matter, M	Revue Medicale Suisse	16	Scopus	French
Novel coronavirus infection	Ciftci, EC, F.	Flora	25	Embase	Turkish
One world, one health	Trilla, A	Medicina Clinica	154	MEDLINE	Spanish
Potential use of rumen digesta as ruminant diet	Cherdthong, A	Tropical Animal Health & Production	52	PubMed	English
The Challenges and Responsibilities	Li, G	Chinese General Practice	23	Scopus	Chinese
Why is there no vaccine up to now?	Furst, RZ, I.	Deutsche Apotheker Zeitung	160	Embase	German

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3.4 **Button [Q3.4 Percentage of Chinese articles]**

Write code to calculate and display the percentage of **Chinese** articles that exist in the table.

Display the total number of articles in the table as well as the percentage of Chinese articles in the richedit named **reddisplay**. Display the percentage of Chinese articles rounded to a whole number.

Example of the display in redDisplay (after PMC articles are deleted (Q3.3)):

```
Total number of articles = 13
Percentage of Chinese articles = 23 percent
```

(13)

3.5 **Button [Q3.5 Add Article]**

Add a new article with the title, 'Vaccine trials'. This article consists of 43 pages and was written in English by the author 'Watson M' and published by 'Cureus'.

Example of output:

Title	Author	Publisher	Pages	Source	Language
Are we at the beginning of a new pandemic?	Bogner, JR	MMW Fortschritte der Medizin	162	Embase	German
Consensus on emergency surgery		Jie Fang Jun Yi Xue Za Zhi	45	ProQuest Central	Chinese
Dr. Li Wenliang, whistleblower, hero and martyr	Nau, JY	Revue Medicale Suisse	16	Embase	French
Editorial	Castañeda, V	Innovar	30	ProQuest Central	Spanish
Expert consensus on clinical management		Jie Fang Jun Yi Xue Za Zhi	45	ProQuest Central	Chinese
Factors influencing iranians' risk perception	Samadipour, EG, F.	Journal of Military Medicine	22	Scopus	Persian
Flying	Lodi, G	Dental Cadmos	88	Embase	Italian
Lessons of uncertainty and globalization	Matter, M	Revue Medicale Suisse	16	Scopus	French
Novel coronavirus infection	Ciftci, EC, F.	Flora	25	Embase	Turkish
One world, one health	Trilla, A	Medicina Clinica	154	MEDLINE	Spanish
Potential use of rumen digesta as ruminant diet	Cherdthong, A	Tropical Animal Health & Production	52	PubMed	English
The Challenges and Responsibilities	Li, G	Chinese General Practice	23	Scopus	Chinese
Vaccine trials	Watson M	Cureus	43		English
Why is there no vaccine up to now?	Furst, RZ, I.	Deutsche Apotheker Zeitung	160	Embase	German

(7)

- Enter your name and surname as a comment in the first line of the program file.
- Save your program.
- A printout of the code may be required.

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QUESTION 4: GENERAL PROBLEM SOLVING

Do the following:

- Compile and execute the program in the Question 4 folder. The program currently has limited functionality.
- Enter your full name as a comment in the first line of the **Question4_u.pas** file.
- Complete the code for each question as described in Question 4.

Button [Q4 Request for Test]

Write code to do the following:

- Get the name and the age of a patient from the input components named **edtname** and **sedage**.

- If the age of the person is greater than or equal to 60, then a string variable must consist of the following: **'Your test is on '** ***joined to the system date.***

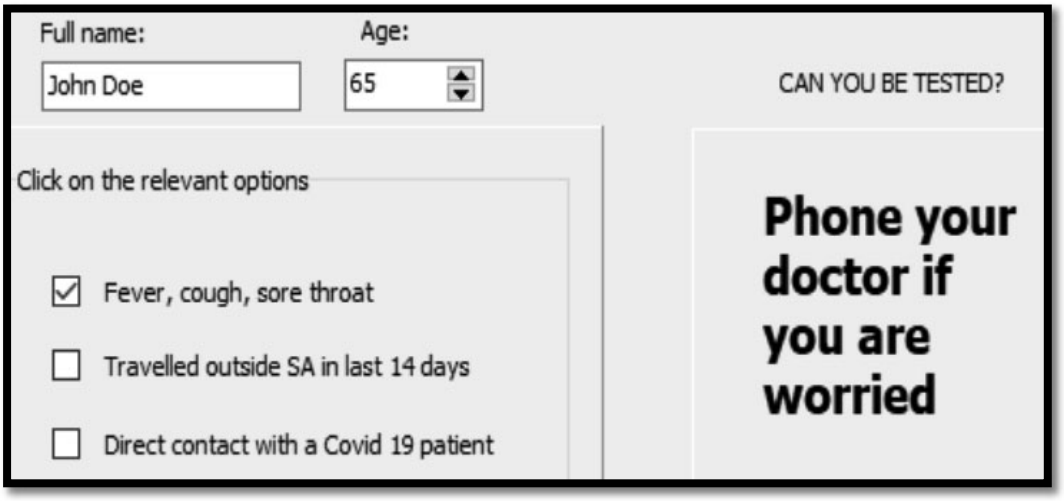
Example of the compiled string if today's date is 6 November 2020:
'Your test is on 2020/11/06'

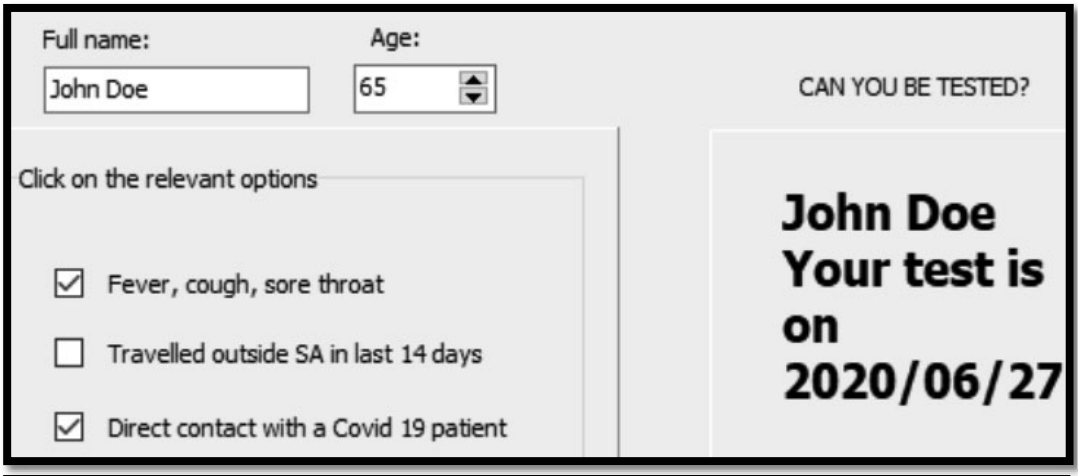
- If the age of the person is less than 60, then the string must be set to the following: **'Your test is on '** ***joined to the system date + 1 day*****.**

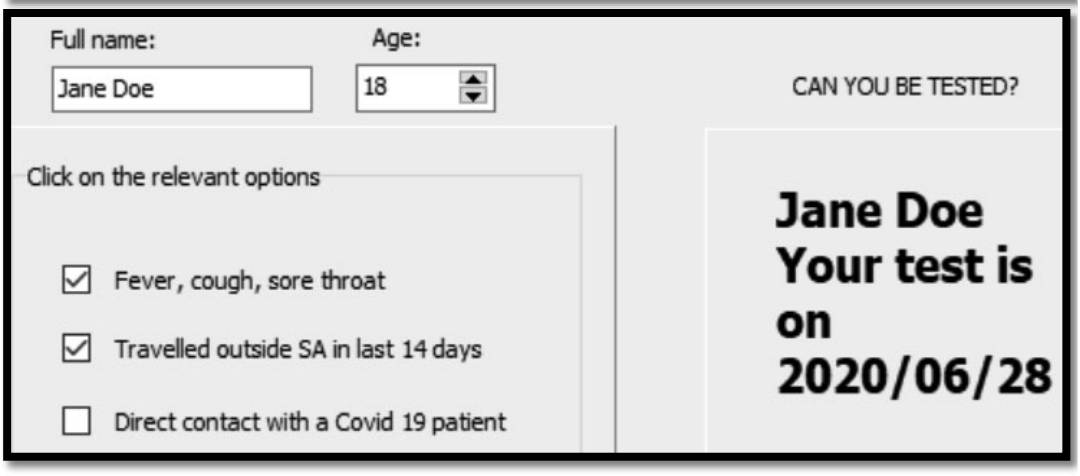
Example of the compiled string if today's date is 6 November 2020:
'Your test is on 2020/11/07'

- If the check box named **chksymptoms** is checked AND one of either **chktravel** or **chkcontact** is checked, then display the patient's name and the date to be tested on two separate lines on the label named **lbldisplay,** else display the message *'Phone your doctor if you are worried*' on the label named **lbldisplay**.

Example of output for Question 4 if today's date is 27 June 2020 and if the different checkboxes are selected:







- Enter your name and surname as a comment in the first line of the program file.
- Save your program.
- A printout of the code may be required.

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TOTAL: 150

Province of the
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NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2020

INFORMATION TECHNOLOGY P1 MARKING GUIDELINE

MARKS: 150

This marking guideline consists of 11 pages.

NAME OF LEARNER:				
TOTAL QUESTION 1	**TOTAL QUESTION 2**	**TOTAL QUESTION 3**	**TOTAL QUESTION 4**	**TOTAL**
/46	**/42**	**/40**	**/22**	**/150**

QUESTION 1		MAX MARKS	MARKS ACHIEVED
1.1	**Button [Q1.1 Get patient code]** Get full name from edtfullname ✓ Get year from edtyob ✓ Get province from cmbprovince ✓ If itemindex of combobox = 0 ✓ add 1 to counter for EC ✓ Else✓ if itemindex = 1 ✓ add 1 to counter for WC ✓ Else✓ Showmessage ✓ and exit ✓ *Alternative no 1:* *Case structure ✓* *Itemindex = 0 ✓add 1 to counter for EC ✓* *Itemindex = 1 ✓add 1 to counter for WC ✓* *Else ✓* *Showmessage ✓and exit ✓* Compile code: Get first name initial ✓ Get surname initial ✓ using pos ✓ 1st character of first name ✓ 1st character of surname ✓ Characters 3 and 4 from year ✓ First 4 characters ✓ from province ✓ Random number ✓ in correct range ✓ (randomrange(1000,60001) using inttostr ✓ Showmessage component to display code ✓ pnlEC caption = counter for EC ✓ pnlWC caption = counter for WC ✓ using inttostr for both ✓	**26**	

1.2	**Button [Q1.2 Encryption]** get input from edtinput ✓ and set to uppercase ✓ initialise new string to a star ✓ use a loop ✓ from 1 to length of the input string ✓ get the correct encrypted number (using any method) ✓✓✓ ✓ add the character number to the new string ✓and add a star ✓ display compiled ✓ string in label lbldisplay ✓	**13**	
1.3	**The rgpbackground onclick event:** If radiogroup box itemindex = 0 ✓ then set imgbackground visible property ✓ = false ✓ If radiogroup box itemindex = 1 ✓ then set imgbackground picture to 'SAFlag.jpg' ✓ **and** ✓ set imgbackground visible property = true ✓	**7**	
	Question 1 Total	**46**	

QUESTION 2		MAX MARKS	MARKS ACHIEVED
2.1	**Button [Q2.1 Display]** Sorting two arrays outer loop from 1 to 9 ✓ Inner loop from outer loop counter + 1 to 10 ✓ If arrqty[outer] < arrqty [inner] then ✓ set temp = arrqty [outer] ✓ set arrqty [outer] = arrqty [inner] ✓ set arrqty [inner] = temp ✓ do the same swap algorithm for arrdays ✓ using string temp variable ✓ Display arrays loop from 1 to 10 ✓ use richedit ✓ display contents of arrdays, ✓ arrqty ✓ using tab stop ✓ using inttostr for arrqty ✓ Calculate and display average initialise total variable ✓ loop from 1 to 10 ✓ set total variable = total ✓ + arrqty using loop index ✓ calculate average = total/10 ✓ display average in richedit ✓with a message rounded to a whole number ✓	**21**	
2.2	**Button [Q2.3 Multiples]** If file does not exist then ✓ Show message ✓ exit ✓ Assignfile ✓and reset text file ✓ Set counter = 0 Loop to end of text file ✓ Add 1 to counter (initialised) ✓ Read line ✓Add to an array using counter ✓ *(subtract 1 mark if the same text file variable is used to write to text file in next operation and the text file was not closed after reading)* Loop from 1 to counter (or 5) ✓ append number ✓ from constant array ✓using loop index to end of array using loop index ✓ and store into same array ✓ Assignfile with correct file name ✓and Rewrite statement ✓ Loop from 1 to counter or 5 ✓ Write content of array using loop index ✓ to text file ✓ Closefile statement after loop ✓ Display a message that the file was written ✓ *Alternative solution* *for loop from 1 to 5 ✓* *Read line ✓ into an array ✓* *using for loop counter ✓*	**21**	
	Question 2 Total	**42**	

QUESTION 3		MAX MARKS	MARKS ACHIEVED
3.1	**BUTTON: [Q3.1 Display Pages]** Go to first record ✓ Loop to end of the table ✓ If Pages ✓ > 100 ✓ Then display Title ✓ in richedit ✓ Go to next record before end of loop ✓	**7**	
3.2	**BUTTON: [Q3.2 Change to English]** Go to first record ✓ Loop to end of the table ✓ If Language = 'eng' ✓ Then Edit ✓ Set Language = 'English' ✓ Post ✓ Go to next record before end of loop ✓	**7**	
3.3	**BUTTON: [Q3.3 Delete PMC articles]** Go to first record ✓ Loop to end of the table ✓ if Source = 'PMC' then ✓ Delete ✓ else ✓ Go to next record before end of loop ✓	**6**	
3.4	**BUTTON: [Q3.4 Percentage of Chinese articles]** Set counter to 0 ✓ and total to 0 ✓ Go to first record ✓ Loop to end of the table ✓ If Language = 'Chinese' ✓ Then Add 1 to counter ✓ Add 1 to total variable ✓ Go to next record before end of loop ✓ Display in richedit ✓ Total of all articles converted to string ✓ Percentage calculated correctly ✓ and converted to string ✓with no decimal places ✓	**13**	
3.5	**BUTTON: [Q3.5 Insert Article]** tblresearch.Insert; ✓ tblresearch['Title'] := 'Vaccine trials'; ✓ tblresearch['Author'] := 'Watson M'; ✓ tblresearch['Publisher'] := 'Cureus'; ✓ tblresearch['Pages'] := 43;✓ tblresearch['Language'] := 'English'; ✓ tblresearch.Post; ✓	**7**	
	Question 3 Total	**40**	

	QUESTION 4	MAX MARKS	MARKS ACHIEVED
	Button [Q4 Request for test] Get full name ✓and age ✓ from input components Get system date ✓ If age >= 60 ✓then string = 'your test date is on' ✓ joined to system date converted to string ✓ Else ✓ string = 'your test date is on' ✓ joined to system date ✓ + 1 day ✓ converted to string ✓ if chksymptoms.Checked ✓ **and** ✓ (chktravel.Checked ✓**or** ✓chkcontact.Checked ✓) then lbldisplay.Caption ✓ = name ✓+ #13 ✓ + compiled string ✓ else✓ lbldisplay.Caption = 'Phone your doctor if you are worried'; ✓	**22**	
	Question 4 Total	**22**	

SAMPLE SOLUTIONS

QUESTION 1

```
procedure TQuestion1.btnQ1_1Click(Sender: TObject);
var
 sfull, sfirst, ssur, scode : string;
 sdate, sprov : string;
begin
// enter your code here
 case cmbprovince.itemindex of
  0 : inc(inumec);
  1 : inc(inumwc)
  else
  begin
  showmessage('Please choose a province');
  exit;
  end;
 end;
 sfull := edtfullname.Text;
 sfirst := sfull[1];
 delete(sfull,1,pos(' ',sfull));
 ssur := sfull[1];
 sdate := edtyob.text;
 sprov := cmbprovince.Text;
 scode := sfirst + ssur + copy(sdate,3,2) + copy(sprov,1,4) +
inttostr(randomrange(1000,60001));

showmessage('Your patient code is ' + scode);
pnlec.Caption := inttostr(inumec);
pnlwc.Caption := inttostr(inumwc);
end;

procedure TQuestion1.btnQ1_2Click(Sender: TObject);
var k, ipos : integer;
snew, SSENT : string;
const
salpha = ' ABCDEFGHIJKLMNOPQRSTUVWXYZ';
begin
// enter your code here
 ssent := uppercase(edtinput.Text);
 snew := '*';
 for k := 1 to length(ssent) do
    begin
      ipos := pos(ssent[k],salpha);
      snew := snew + inttostr(ipos) + '*';
    end;
 lbldisplay.Caption := snew;
end;
```



```
procedure TQuestion1.rgbpictureClick(Sender: TObject);
begin
// enter your code here
case rgbpicture.itemindex of
 0 : imgdisplay.Visible := false;
 1 : begin
      imgdisplay.Visible := true;
      imgdisplay.Picture.LoadFromFile('SAFlag.jpg');
     end;

 end;
end;
```

QUESTION 2

```
procedure TfrmQuestion2.btnQ2_1Click(Sender: TObject);
var k, l, itemp, inum, icount, itotal : integer;
stemp, snum : string;
rpercent : real;
bfound : boolean;
begin
// provided code do not delete////////
redout.Paragraph.TabCount := 1;
redout.Paragraph.tab[0] := 40;
redout.Lines.Add('Date' + #9 + 'Cases');
for k := 1 to 9 do
    for l := k + 1 to 10 do
       begin
         if arrqty[k] < arrqty[l] then
            begin
              itemp := arrqty[k];
              arrqty[k] := arrqty[l];
              arrqty[l] := itemp;

              stemp := arrdays[k];
              arrdays[k] := arrdays[l];
              arrdays[l] := stemp;
            end;
       end;
itotal := 0;
for k  := 1 to 10 do
 itotal := itotal + arrqty[k];

for k  := 1 to 10 do
 redout.Lines.Add(arrdays[k]  + #9 + inttostr(arrqty[k]));

redout.Lines.Add('');
redout.Lines.Add('Average number of infections = ' + floattostrf(itotal/10,fffixed,8,0));


end;
```



```
procedure TfrmQuestion2.btnQ2_2Click(Sender: TObject);
// provided code do not delete///////
const
arradd : array [1..5] of integer = (8,6,4,2,0);
////////////////////////////////////////////////
var myfile, tfile : textfile;
sline : string;
k  : integer;
arrnumbers : array[1..6] of string;
icount : integer;
begin
if not fileexists('numbers.txt') then
begin
  showmessage('file not found');
  exit;
end;
assignfile(myfile,'numbers.txt');
reset(myfile);
icount := 0;
while not eof(myfile) do
   begin
   inc(icount);
   readln(myfile,sline);
   arrnumbers[icount]:= sline;
  end;
//closefile(myfile);

for k := 1 to icount do
    begin
      arrnumbers[k] := arrnumbers[k]
                +  inttostr(arradd[k]);
     end;

assignfile(tfile,'Multiples of 18.txt');
rewrite(tfile);
for k := 1 to 5 do
  writeln(tfile, arrnumbers[k]);

closefile(tfile);
end;
```


QUESTION 3

```
procedure TfrmQuestion3.btnQ3_1Click(Sender: TObject);
begin
reddisplay.Clear;
tblresearch.First;
while not tblresearch.eof do
   begin
     if tblresearch['Pages'] > 100 then
          reddisplay.Lines.Add(tblresearch['Title']);
     tblresearch.Next;
   end;
end;

procedure TfrmQuestion3.btnQ3_2Click(Sender: TObject);
begin
tblresearch.First;
while not tblresearch.eof do
   begin
     if tblresearch['Language'] = 'eng' then
        begin
          tblresearch.Edit;
          tblresearch['Language'] := 'English';
          tblresearch.Post;
        end;
     tblresearch.Next;
   end;
end;

procedure TfrmQuestion3.btnQ3_3Click(Sender: TObject);
begin
tblresearch.First;
while not tblresearch.eof do
   begin
     if tblresearch['Source'] = 'PMC' then
       tblresearch.Delete
      else
     tblresearch.Next;
   end;
end;

procedure TfrmQuestion3.btnQ3_4Click(Sender: TObject);
var inum , itotal : integer;
begin
  inum := 0;
  itotal := 0;
reddisplay.Clear;
tblresearch.First;


while not tblresearch.eof do
   begin
```



```
      if tblresearch['Language'] = 'Chinese' then
           inc(inum);
      inc(itotal);
      tblresearch.next;
     end;
reddisplay.Lines.Add('Total number of articles = ' + inttostr(itotal));
reddisplay.Lines.Add('Percentage of Chinese articles = ' + floattostrf(inum/itotal
*100,fffixed,8,0) + ' percent');
end;

procedure TfrmQuestion3.btnQ3_5Click(Sender: TObject);
begin
  tblresearch.insert;
  tblresearch['Title'] := 'Vaccine trials';
  tblresearch['Author'] := 'Watson M';
  tblresearch['Publisher'] := 'Cureus';
  tblresearch['Pages'] := '43';
  tblresearch['Language'] := 'English';
  tblresearch.Post;
end;
```

QUESTION 4

```
procedure TfrmQuestion4.btnQ4Click(Sender: TObject);
var sname : string;
 iage : integer;
stestdate : string;
begin
// enter your code here//
sname := edtname.Text;
iage := sedage.Value;

if iage >= 60 then
 stestdate := 'Your test is on ' + datetostr(date)
else
 stestdate := 'Your test is on ' + datetostr(date + 1);

if cbxsymptoms.Checked and (cbxtravel.Checked or cbxcontact.Checked) then
 lbldisplay.Caption := sname + #13  + stestdate
else
 lbldisplay.Caption := 'Phone your doctor if you are worried';

Showmessage('File has been written');
end;
```