

GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION

COMPUTER STUDIES HG
(First Paper: Practical)

TIME: 3 hours

FEB / MAR 2006

MARKS: 100

INSTRUCTIONS:

- All questions must be answered.
 - Each question has a Delphi as well as a Pascal section. Answer only the sections applicable to you.
 - No components may be deleted from or added to the given Delphi forms.
 - Poor programming techniques will be penalised.
 - Save your work at regular intervals.
 - Your full examination number must appear on every page that is handed in.
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QUESTION 1

A certain sports club uses two data files for their members: one for the male members and one for the female members. The club manager only wants one data file that will contain the details of the male as well as the female members.

The following two files that contain the data of the male and female members are stored on your examination disk:

- `male.dat`
- `female.dat`

You are now going to write a program that will combine these two files into a single file called `AllMem.dat`.

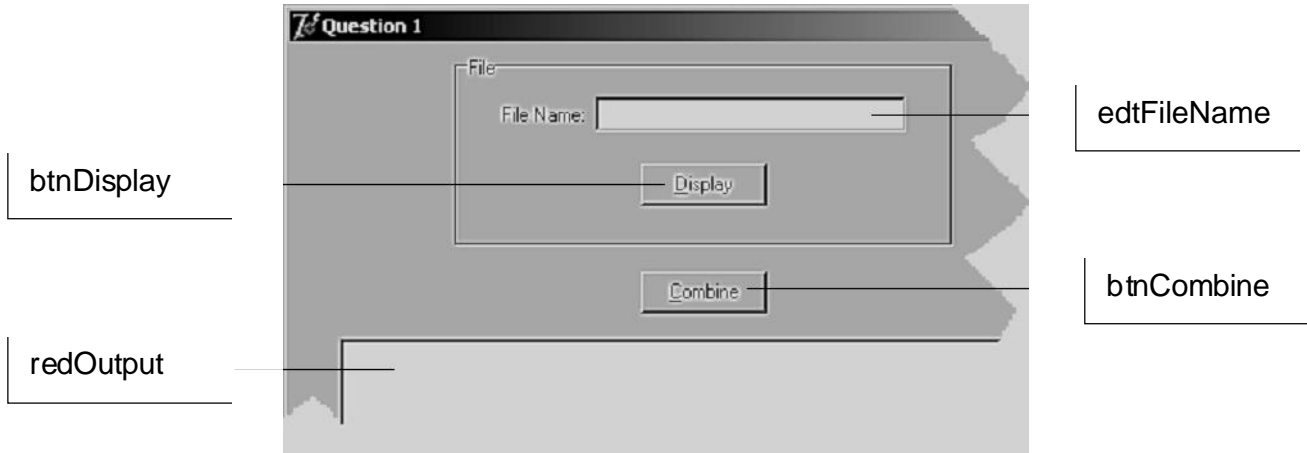
The structure of each record in the THREE files mentioned above is as follows:

MemNum String[6]	Gender Char	Initials String[4]	Surname String[30]
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Delphi: (Question 1)

Open the file '`Q1P.dpr`' in Delphi, go to File|Save As... and save the *unit* as '`Q1U_XXXX.pas`' (XXXX represents the last four digits of your examination number). Now go to File|Save Project As... and save the *project* as '`Q1P_XXXX.dpr`'.

- 1.1 Change **only** the *Caption* and *Name* properties of the different components on the form so that it corresponds with the figure below. Also add your examination number to the *Caption* of the form next to "Question 1". (3)



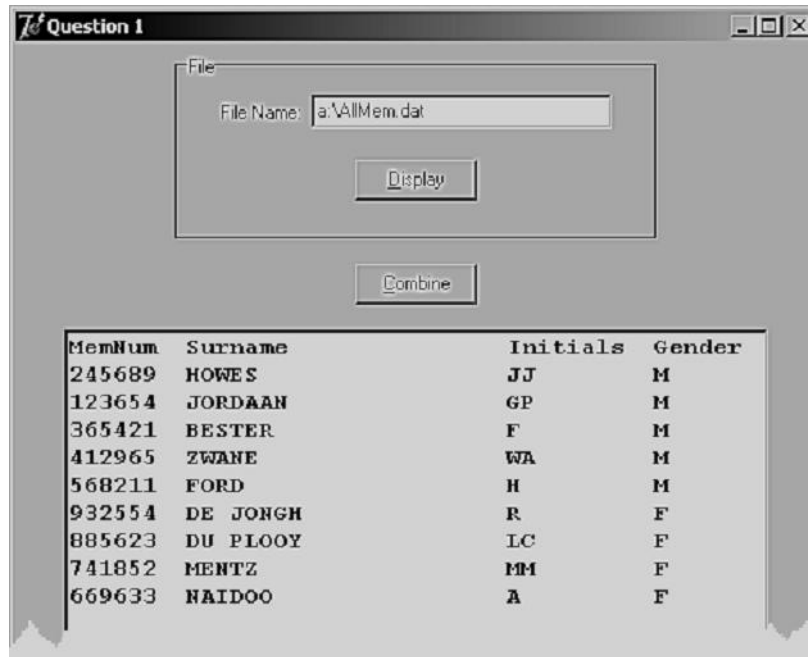
- 1.2 Whenever the user clicks on **[Display]**, the file typed into `edtFileName` must be displayed in `redOutput` as follows: (15)



Test your program by displaying the contents of `'a:\male.dat'` or `'a:\female.dat'`.

- 1.3 When the user clicks on **[Combine]**, the two files, `'male.dat'` and `'female.dat'` must be combined to form ONE new file called `'AllMem.dat'`. (20)

After the files have been combined, you must again use **[Display]** to display the contents of 'AllMem.dat' in *redOutput*. It should display as follows:



The following must be handed in for Question 1.1 to 1.3 (Delphi):

- A printout of **Q1U_XXXX.pas**.
- An "Alt | Print Scrn" while either the male **or** female members are displayed.
- An "Alt | Print Scrn" while all members are displayed.

1.4 Start a new application in Delphi and save the *unit* as **AmountU_XXXX.pas** and the *project* as **AmountP_XXXX.dpr** (**XXXX** represents the last four digits of your examination number). Design a form like the one below and add your examination number next to "Question 1.4" to the *Caption* of the form:



The membership fee for the club, per annum, is R599.99 for men and R499.99 for women.

Expand Question 1.4 so that it will read 'AllMem.dat' and determine the total amount of membership fees to be collected for the year.

- The name of the file that has to be read, must be entered into the *Edit*.
- After the user has entered the name of the file into the *Edit* and has clicked on **[OK]**, the output of the program must appear on the *Panel*, similar to the form given above.
- No extra subroutines must be written. (12)

The following must be handed in for Question 1.4 (Delphi):

- A printout of **AmountU_XXXX.pas**.
- An "Alt | Print Scrn" of the form displaying the output.

QUESTION 1: [50]

Pascal: (Question 1)

Start with a new program in Turbo Pascal and save it as 'Q1_XXXX.pas' (XXXX represents the last four digits of your examination number). The program must adhere to the following:

1.1 The menu below must be displayed **repeatedly** until the user chooses option 3:

1. Display the contents of a data file.
2. Combine.
3. Quit. (3)

1.2 For Option 1, write a procedure, *DisplayFile*, that will do the following:

- When Option 1 is chosen, the contents of a specific data file must be displayed on screen.
- The user must first be prompted for the name of the file to be displayed. (15)

Test Option 1 by entering either 'a:\male.dat' or 'a:\female.dat' when prompted for the file name.

The output of 'male.dat' should appear as follows:

MemNum	Surname	Initials	Gender
245689	HOWES	JJ	M
123654	JORDAAN	GP	M
365421	BESTER	F	M
412965	ZWANE	WA	M
568211	FORD	H	M

- 1.3 For Option 2, write a procedure, *CombineFiles*, that will combine the two files, 'male.dat' and 'female.dat', to form ONE new file called 'AllMem.dat'. (20)

After the files have been combined, Option 1 must again be used to display the contents of 'AllMem.dat' as follows:

MemNum	Surname	Initials	Gender
245689	HOWES	JJ	M
123654	JORDAAN	GP	M
365421	BESTER	F	M
412965	ZWANE	WA	M
568211	FORD	H	M
932554	DE JONGH	R	F
885623	DU PLOOY	LC	F
741852	MENTZ	MM	F
669633	NAIDOO	A	F

The following must be handed in for Question 1.1 to 1.3 (Pascal):

- A printout of `Q1_XXXX.pas`.

- 1.4 Start a new program in Turbo Pascal and save it as `XXXXamnt.pas` (`XXXX` represents the last four digits of your examination number).

The membership fee for the club, per annum, is R599.99 for men and R499.99 for women.

Expand the program so that it will read 'AllMem.dat' and determine the total amount of membership fees to be collected for the year.

- The user must be prompted for the file name as soon as the program is run.
- No subprograms must be written.
- Output of the program must only be the following:

Total amount: R4999.91

(12)

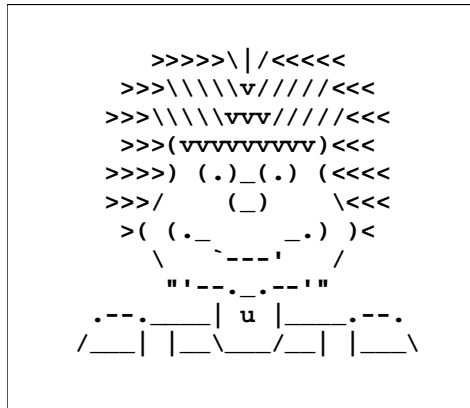
The following must be handed in for Question 1.4 (Pascal):

- A printout of `XXXXamnt.pas`.

QUESTION 1: [50]

QUESTION 2

The following is an example of a picture composed of ASCII characters:



The lines of the picture above are hidden within the lines of a text file. You are given the task to extract this picture from the text file.

You are given the following:

- An *input sentence* that will aid you in extracting the picture.
- A text file, '**eng.txt**', containing a list of English words.
- A text file, '**foreign.txt**', containing foreign strings (as well as the hidden picture).

An extract from each of the two files mentioned above will appear as follows:

eng.txt

```
MOST
IT
HERE
EASY
GOAT
WRITE
COMPUTER
VERY
THIS
IS
OTHER
TO
.
.
.
```

foreign.txt

```
>( (._ <> _.) )<
>>>\\\\\\\\\\vvv/////<<<<
\\ . . . `---' . . . /
>>>>>|/<<<<<
>>>><<<< ( )_( ) (>>><<<<
/_ | | _ \\ _ / _ | | _ \\
/_ . . . . . . . . . | _
.---.____| u |____.---.
'"---_---'---"
>>>\\\\\\\\\\v/////<<<<
\\ . . . `---' . . . /
'"---_---'---"
.
.
.
```

- Each line in '**eng.txt**' contains only ONE word and each word consists only of capitals.
- Each line in '**eng.txt**' has a corresponding string in '**foreign.txt**'. In other words: the first word in '**eng.txt**' corresponds with the first line in '**foreign.txt**', the second word with the second line, etc.

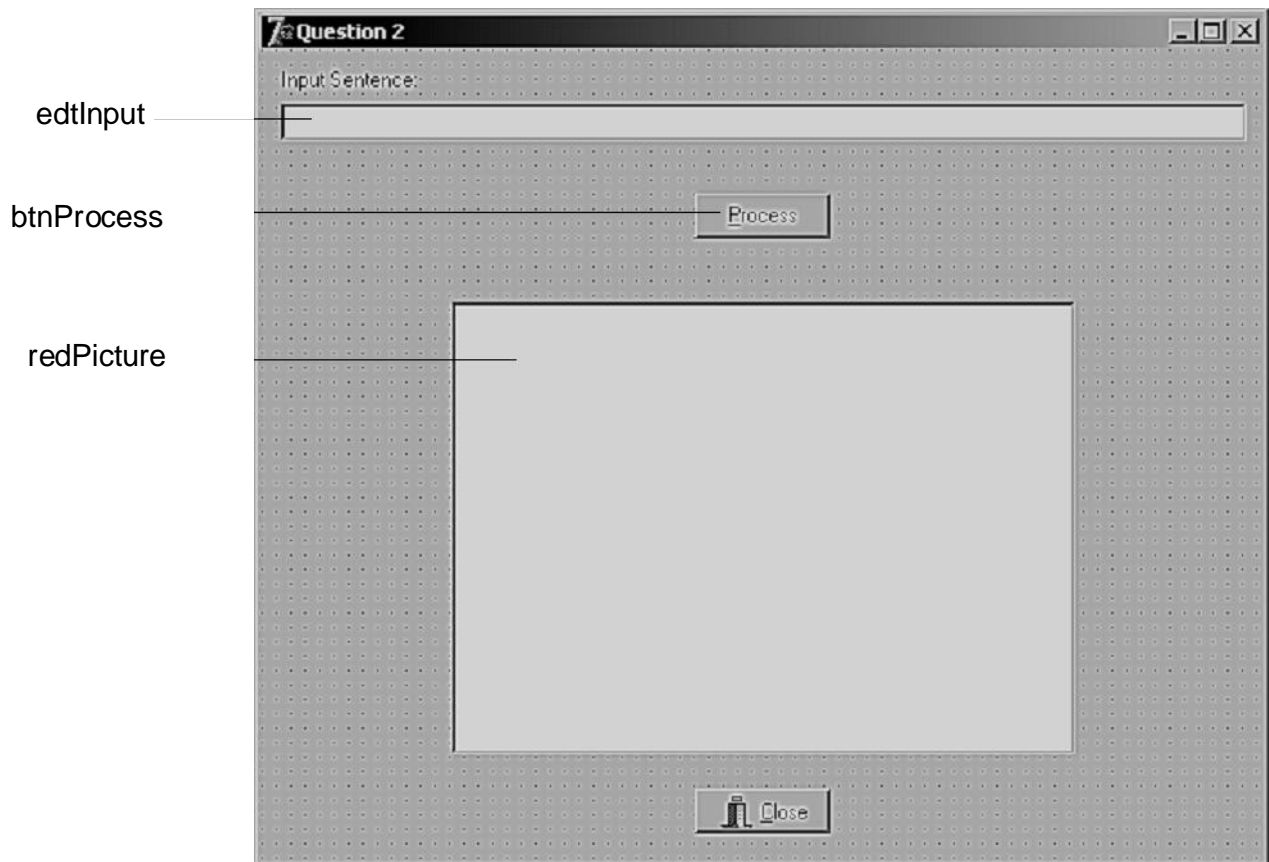
The hidden picture must be extracted from 'foreign.txt' in the following way:

- Sort the words of the *input sentence* alphabetically (A to Z) by using a **procedure with parameter passing**. The input sentence will never contain more than 20 words.
- Start with the first word from the sorted list of words and get each word's corresponding line from 'foreign.txt'.
- Put all the corresponding lines underneath each other to form the picture.
- The input sentence to test the program is:
 - *It is really very easy to write these kinds of programmes*

Delphi: (Question 2)

Start with a new application in Delphi, go to File|Save As... and save the *unit* as 'Ques2U_XXXX.pas' (XXXX represents the last four digits of your examination number). Now go to File|Save Project As... and save the *project* as 'Ques2P_XXXX.dpr'.

Design a form like the one below to be used for the program. Also add your examination number to the *Caption* of the form next to "Question 2".



IMPORTANT:

- The *input sentence* must be typed into **edtInput**.
- When [**Process**] is clicked, the hidden picture must be extracted from '**foreign.txt**' and displayed in **redPicture**.
- The input sentence may contain both lower and uppercase letters but no punctuation.

(50)

Test your program by entering the following sentence:

`It is really very easy to write these kinds of programmes`

The following must be handed in for Question 2 (Delphi):

- A printout of `Ques2U_XXXX.pas`.
- An "Alt | Print Scrn" while the picture is being displayed in *redPicture*.

QUESTION 2: [50]

Pascal: (Question 2)

Write a Turbo Pascal program and save it as '`XXXX_Q2.pas`' (`XXXX` represents the last four digits of your examination number). The program must adhere to the following criteria:

- When the program is run, the user must immediately get the chance to enter the *input sentence*.
- The *input sentence* may contain both lower and uppercase letters but no punctuation.
- After the *input sentence* has been entered, the picture must be displayed on screen until the user presses the <Enter> key, whereafter the program must end.

(50)

Test your program by entering the following sentence:

`It is really very easy to write these kinds of programmes`

The following must be handed in for Question 2 (Pascal):

- A printout of `XXXX_Q2.pas`.

QUESTION 2: [50]

TOTAL: 100

END