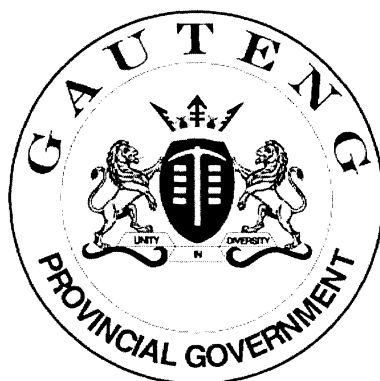




**GAUTENG DEPARTMENT OF EDUCATION
GAUTENGSE DEPARTEMENT VAN ONDERWYS**

**PREPARATORY EXAMINATION
VOORBEREIDENDE EKSAMEN**

2009

10821

**INFORMATION TECHNOLOGY
INLIGTINGSTEGNOLOGIE**

First Paper/Eerste Vraestel

16 pages /bladsye

INFORMATION TECHNOLOGY/INLIGTINGSTEGNOLOGIE P1
INFT (Practical)



108 2 1

12

GAUTENGSE DEPARTEMENT VAN ONDERWYS
VOORBEREIDENDE EKSAMENINLIGTINGSTEKNOLOGIE
(Eerste Vraestel: Prakties)

TYD: 3 uur

PUNTE: 120

Hierdie vraestel bestaan uit 16 bladsye.

INSTRUKSIES EN INLIGTING

1. Hierdie is 'n drie-uur-eksamen. As gevolg van die aard van hierdie eksamen is dit belangrik om kennis te neem dat jy nie toegelaat sal word om die eksamenlokaal voor die einde van die eksamensessie te verlaat nie.
2. Beantwoord AL die vrae.
3. Jy het die onderstaande lys lêers nodig om die vrae te beantwoord. Dit sal op jou eksamendisket aan jou verskaf word.

VRAAG 1:	VR1_U.pas; VR1_U.dfm; VR1_P.dpr; BABAINFO.mdb, {BABAS.TXT; DOKTERS.TXT; OUERS.TXT}
VRAAG 2:	VR2_U.pas; VR2_U.dfm; VR2_P.dpr
VRAAG 3:	VR3_U.pas; VR3_U.dfm; VR3_P.dpr INFO.TXT; ICU.TXT

4. Skryf jou naam en eksamennommer op die etiket van jou eksamendisket.
 5. Stoor jou werk met gereelde tussenposes as 'n voorsorgmaatreeël teen kragonderbrekings!
 6. Tik jou naam en/of eksamennommer as 'n kommentaarstelling in die eerste reël van elke program en unit.
 7. Lees AL die vrae aandagtig deur en doen slegs wat vereis word.
 8. Aan die einde van hierdie eksamensessie moet jy seker maak dat AL die lêers met jou werk op jou geëtiketteerde eksamendisket gestoor is soos deur die vraestel bepaal.
 9. Jy mag die HELP-funksies van die sagteware gedurende die eksamen gebruik. Jy mag NIE van enige ander hulpbron of inligting gebruik maak nie.
 10. Maak drukstukke van die programmeringskode van AL die vrae.
Die drukwerk kan reeds tydens die eksamen gedoen word, maar 30 minute na afloop van die eksamensessie sal vir drukwerk toegelaat word. Tydens hierdie druktyd mag GEEN kode verander word nie.
-
-

GAUTENG DEPARTMENT OF EDUCATION
PREPARATORY EXAMINATION

INFORMATION TECHNOLOGY
(First Paper: Practical)

TIME: 3 hours

MARKS: 120

This question paper consists of 16 pages

INSTRUCTIONS AND INFORMATION

1. This is a three-hour exam. Due to the nature of this exam it is important to take note that you will not be allowed to leave the examination venue before the end of the examination session.
2. Answer ALL the questions.
3. You need the following list of files to answer the questions. These files will be supplied on your examination disk / CD.

QUESTION 1:	Q1_U.pas; Q1_U.dfm; Q1_P.dpr; BABIESINFO.mdb, { <i>BABIES.TXT; DOCTORS.TXT; PARENTS.TXT</i> }
QUESTION 2:	Q2_U.pas; Q2_U.dfm; Q2_P.dpr
QUESTION 3:	Q3_U.pas; Q3_U.dfm; Q3_P.dpr INFO.TXT; ICU.TXT

4. Write your name / examination number on the exam disk label.
5. Save your work at regular intervals as a precaution against power failure!
6. Type your name / examination number as a comment on the first line of each program and unit.
7. Read ALL the questions carefully and do only what is required.
8. At the end of this exam session you must make sure that ALL the files containing your work is saved to your examination disk.
9. You may use the HELP-function of the software used during the exam. You may NOT make use of any other resource or information.
10. Make printouts of ALL the programming code of ALL the questions. Printing may already be done during the examinations.
After the examination 30 minutes will be allocated for printing, during which time you may NOT alter any code.

SCENARIO:

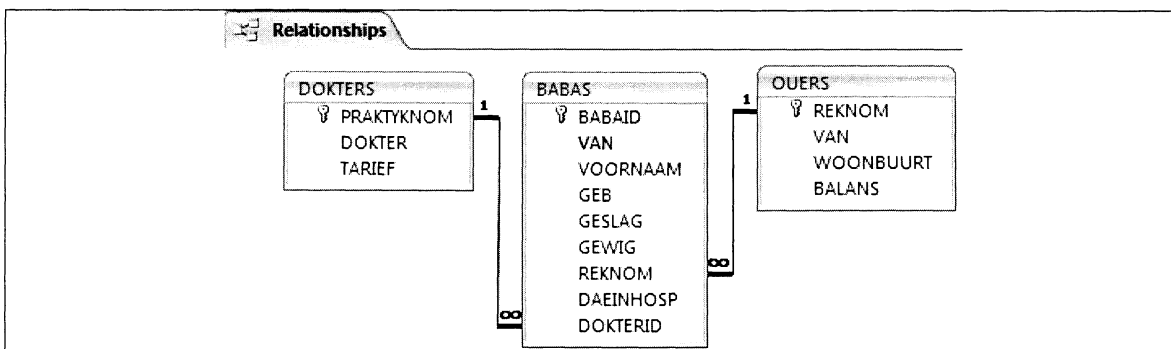
As deel van die Stigting vir Gesondheid en Welvaart in Afrika, se poging om verbeterde mediese dienste te verskaf, is die plaaslike kliniek se fasiliteite uitgebrei. Die pediatriese saal is uitgebrei, asook 'n aantal hoërsorg-eenhede is opgerig om in die groeiende behoeftes te voorsien.

As IT-lid van die opgraderingskomitee, is die bestuur van alle IT-verwante sake jou plig. Om hierdie taak suksesvol te voltooi, moet jy al die volgende vrae beantwoord.

VRAAG 1: DATABASIS EN DELPHI
(60 minute)
[40]

Die databasis, **BABAINFO.mdb**, is op jou eksamendisket gestoor. Die databasis bestaan uit drie tabelle, naamlik **BABAS**, **DOKTERS** en **OUERS**.

Die onderstaande een-tot-baie-verwantskappe met referensiële integriteit tussen die tabelle is aan jou verskaf in 'n lêergids genaamd **VRAAG 1**.



Die tabel, **BABAS** bevat die inligting oor al die babas wat sedert Januarie 2000 in die kliniek gebore is. Die velde in die tabel is soos volg gedefinieer:

VELD	DATATYPE	GROOTTE	BESKRYWING
BabaID	Autonumber		'n Unieke nommer toegeken aan elke baba.
Van	Text	30	Die baba se van
Voornaam	Text	20	Die baba se naam
Geb	Date/Time		Geboortedatum in die formaat: YYYY/MM/DD
Geslag	Text	1	M = seun; F = dogter
Gewig	Double Number	2 desimale	Die gewig van baba by geboorte
RekNom	Text	10	Die ouers se rekeningnommer.
DaeInHosp	Integer		Hoeveel dae baba in kliniek was.
DoktersID	Text	10	Die pediater se praktyk-nommer.

SCENARIO:

The foundation for Health and Wealth in Africa has decided to upgrade a clinic which started out as a rural health care centre. The paediatric ward was expanded and a number of intensive care units were erected to cope with the growing demand.

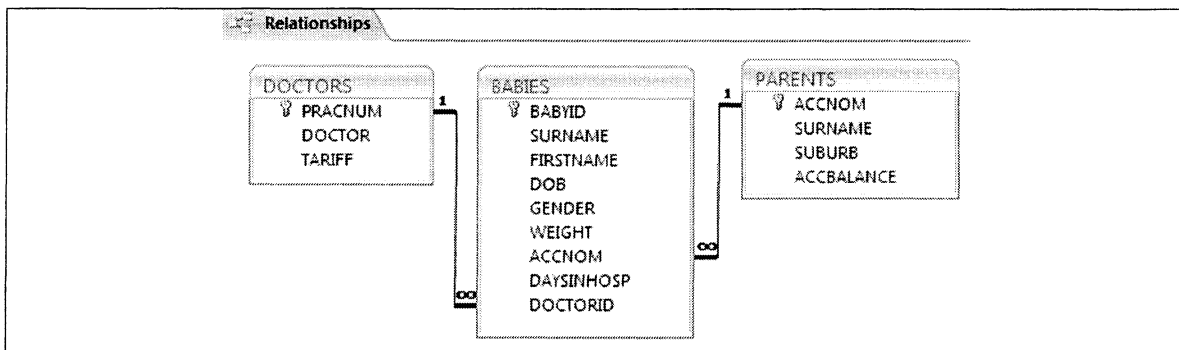
As the IT member on the upgrading committee you are required to oversee all the IT related issues. To complete the task, you must answer all the following questions.

QUESTION 1: DATABASE AND DELPHI

(60 minutes)

[40]

The database, **BABIESINFO.mdb**, is saved on your exam disk. The database contains three tables, namely **BABIES**, **DOCTORS** and **PARENTS**. The one-to-many-relationship with referential integrity between the three tables below has been supplied to you in a folder named **QUESTION 1**.



The table **BABIES** contains the information about all the babies born since January 2000 in the clinic. The fields in the table are defined as follows:

FIELD	DATA TYPE	SIZE	DESCRIPTION
BabyID	Autonumber		A unique number assigned to each baby
Surname	Text	30	The baby's surname
FirstName	Text	20	The baby's name
DOB	Date/Time		Date of birth in the format YYYY/MM/DD
Gender	Text	1	M = boy; F = girl
Weight	Double Number	2 decimals	The birth weight of the baby
AccNom	Text	10	The account number of the parents
DaysInHosp	Integer		The number of days the baby was in the clinic.
DoctorID	Text	10	Indicates the paediatrician's practice number.

Die volgende tabel is 'n voorbeeld van die data wat in die tabel, **BABAS**, voorkom.

BABAS									
BABAID	VAN	VOORNAAM	GEB	GESLAG	GEWIG	REKNOM	DAEINHOSF	DOKTERID	
1	Brooder	Andrew	2008/05/07	M	3.58	BRO1824		6 BOY956	
2	Lomas	Victoria	2004/10/19	F	4.3	LOM8626		9 END496	
3	Fetherwell	Carroll	2008/09/01	M	3.5	FET1801		7 GAH568	
4	Brockley	Maria	2004/08/10	F	3.82	BRO2007		5 HIA268	
5	Jones	Kevin	2006/05/29	M	3.9	JON6645		6 JOH597	
6	Earnshaw	Kayleigh	2004/10/02	F	3.18	EAR3234		13 KOI222	
7	Tucker	Jayde	2006/12/01	F	3.18	TUC8243		19 MOF519	

Die tabel **DOKTERS**, bevat die name van al die pedieters wat gebruik maak van die kliniek. Die velde in die tabel is soos volg gedefinieer:

VELD	DATATPE	GROOTTE	BESKRYWING
PraktykNom	Text	10	Die unieke kode van elke dokter se praktyknommer.
Dokter	Text	40	Die van en voorletter van die dokter.
Tarief	Currency	2 desimale	Die tarief van die dokter per dag.

Die volgende is 'n voorbeeld van die data in die tabel, **DOKTERS**.

DOKTERS			
	PRAKTYKNC	DOKTER	TARIEF
+	ADV140	ADAMS V	R 543.21
+	ASV148	ASTUR V	R 460.67
+	ATC815	ATTFIELD C	R 181.91
+	BOJ728	BOSCH J	R 568.41
+	BOS673	BOTHA S	R 2,050.62
+	BOY956	BOOLEY Y	R 608.64
+	END496	ENNIS D	R 500.01

Die tabel, **OUERS** bevat die inligting oor die ouers van al die babas. Die velde in die tabel is soos volg gedefinieer.

VELD	DATATPE	GROOTTE	BESKRYWING
RekNom	Text	10	Die unieke rekeningnommer van die ouers.
Van	Text	40	Die van van die ouers.
Woonbuurt	Text	50	Voorstad waar ouers woon.
Balans	Currency	2 desimale	Die balans van die ouers se kliniek-rekening.

The following table is an example of the data appearing in the table **BABIES**.

BABYID	SURNAME	FIRSTNAME	DOB	GENDER	WEIGHT	ACCNUM	DAYSINHOSP	DOCTORID
1	Brooder	Andrew	2008/05/07	M	3.58	BRO1824	6	BOY956
2	Lomas	Victoria	2004/10/19	F	4.3	LOM8626	9	END496
3	Fetherwell	Carroll	2008/09/01	M	3.5	FET1801	7	GAH568
4	Brockley	Maria	2004/08/10	F	3.82	BRO2007	5	HIA268
5	Jones	Kevin	2006/05/29	M	3.9	JON6645	6	JOH597
6	Earnshaw	Kayleigh	2004/10/02	F	3.18	EAR3234	13	KOI222
7	Tucker	Jayde	2006/12/01	F	3.18	TUC8243	19	MOF519

The table **DOCTORS** contains the names of all the paediatricians who make use of the clinic. The fields in the table are defined as follows:

FIELD	DATA TYPE	SIZE	DESCRIPTION
PracNum	Text	10	The paediatrician's unique practice number.
Doctor	Text	40	The surname and initial of the doctor
Tariff	Currency	2 decimals	The doctor's tariff per day

The following is an example of the data in the table, **DOCTORS**.

PRACNUM	DOCTOR	TARIFF
ADV140	ADAMS V	R 543.21
ASV148	ASTUR V	R 460.67
ATC815	ATTFIELD C	R 181.91
BOJ728	BOSCH J	R 568.41
BOS673	BOTHA S	R 2,050.62
BOY956	BOOLEY Y	R 608.64
END496	ENNIS D	R 500.01

The table, **PARENTS** contains the information about the parents of all the babies. The fields in the table are defined as follows:

FIELD	DATA TYPE	SIZE	DESCRIPTION
AccNom	Text	10	The unique account number of the parents
Surname	Text	40	The surname of the parents
Suburb	Text	50	Suburb where the parents are staying
AccBalance	Currency	2 decimals	The balance of the parents' clinic account

Die volgende is 'n voorbeeld van die data in die tabel, **OUERS**.

OUERS							
REKNOM	VAN	WOONBUUR	BALANS				
GRA5042	Grace	Clydedale	R 3,536.00				
GRA9321	Grant	Helderkruin	R 1,025.00				
BABAID	VAN	VOORNAAM	GEB	GESLAG	GEWIG	DAEINHOSP	DOKTERID
135	Grant	Michael	2003/05/04	M	3.66	13	NAT985
65	Grant	Laura	2004/05/23	F	3.82	4	ATC815
*	(New)						
GRA9890	Graham	Wilropark	R 2,889.00				
BABAID	VAN	VOORNAAM	GEB	GESLAG	GEWIG	DAEINHOSP	DOKTERID
1112	Graham	George	2007/03/06	M	3.82	19	PRK495
*	(New)						
GRE1023	Green	Dorandia X15	R 3,085.00				
BABAID	VAN	VOORNAAM	GEB	GESLAG	GEWIG	DAEINHOSP	DOKTERID
1122	Green	Thomas	2004/10/22	M	3.03	9	SMA811
1015	Green	Teresa	2008/04/11	F	2.39	13	BOJ728
566	Green	Sahara	2008/04/11	F	2.13	20	BOJ728
392	Green	Emily	2006/12/26	F	3.58	10	WIT497
156	Green	Nichola	2008/04/11	F	2.03	11	BOJ728
111	Green	Claire	2003/06/15	F	4.22	15	NAT985
*	(New)						
GRE1202	Greig	Kenmare	R 0.00				

Jy word ook voorsien van drie tekslêers, *BABAS.TXT*, *DOKTERS.TXT* en *OUERS.TXT* wat gebruik kan word om die databasis self te skep, indien jy nie die voorsiene databasis kan gebruik nie.

Jy word ook voorsien van 'n onvoltooide Delphi-program, **VR1_P.dpr**.
Maak die lêer "**VR1_P.dpr**" (in die *VRAAG 1 lêergids*) in Delphi oop.

- Gaan na "**File | Save As...**" en stoor die *unit* as **VR1_XXXX_U.pas**.
- Gaan na "**File | Save Project As...**" en stoor die *project* as **VR1_XXXX_P.dpr**.
waar **XXXX** die eerste vier letters van jou naam is.
- Verander slegs die *Caption*-eienskappe van die button-komponente op die vorm sodat dit met die onderstaande figuur ooreenstem.
- Voeg jou naam, by die *Caption* van die vorm tussen die {} in.

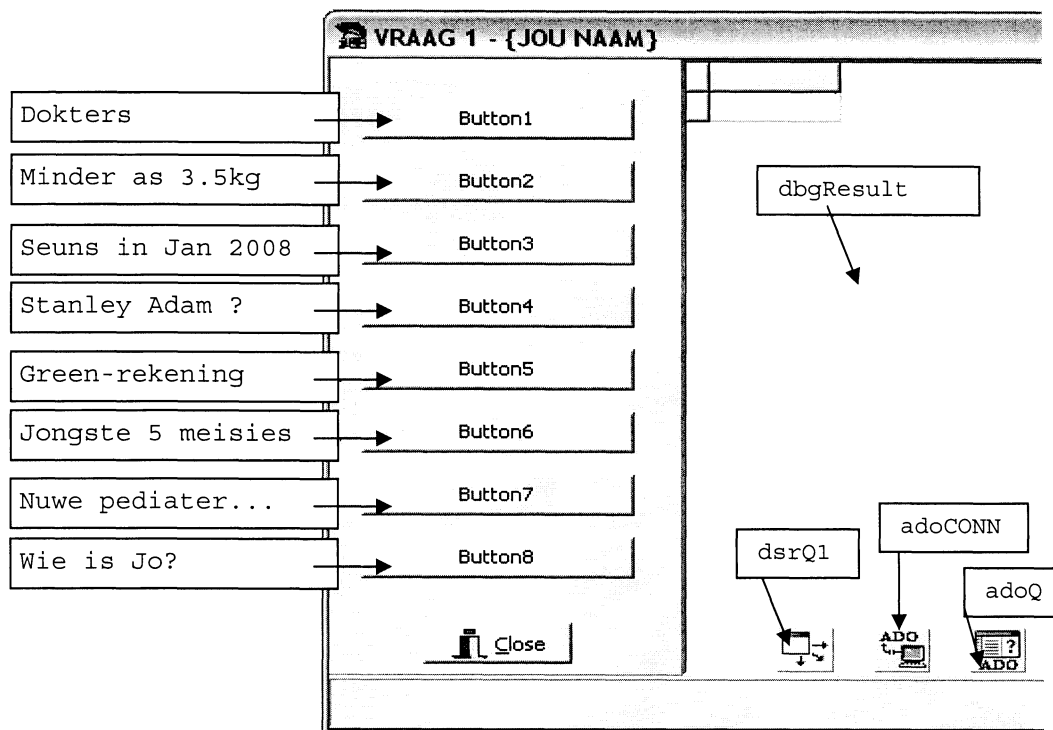
The following is an example of the data in the table **PARENTS**.

PARENTS							
ACCNO	SURNAME	SUBURB	ACCBALANCE				
GRA5042	Grace	Clydedale	R 3,536.00				
GRA9321	Grant	Helderkrui	R 1,025.00				
BABYID	SURNAME	FIRSTNAME	DOB	GENDEI	WEIGHT	DAYSINHO	DOCTORI
135	Grant	Michael	2003/05/04	M	3.66	13	NAT985
65	Grant	Laura	2004/05/23	F	3.82	4	ATC815
*	(New)						
GRA9890	Graham	Wilropark	R 2,889.00				
BABYID	SURNAME	FIRSTNAME	DOB	GENDEI	WEIGHT	DAYSINHO	DOCTORI
1112	Graham	George	2007/03/06	M	3.82	19	PRK495
*	(New)						
GRE1023	Green	Dorandia X15	R 3,085.00				
BABYID	SURNAME	FIRSTNAME	DOB	GENDEI	WEIGHT	DAYSINHO	DOCTORI
111	Green	Claire	2003/06/15	F	4.22	15	NAT985
1122	Green	Thomas	2004/10/22	M	3.03	9	SMA811
392	Green	Emily	2006/12/26	F	3.58	10	WIT497
1015	Green	Teresa	2008/04/11	F	2.39	13	BOJ728
566	Green	Sahara	2008/04/11	F	2.13	20	BOJ728
156	Green	Nichola	2008/04/11	F	2.03	11	BOJ728
*	(New)						
GRE1202	Greig	Kenmare	R 0.00				

You are also supplied with three text files, *BABIES.TXT*, *DOCTORS.TXT* and *PARENTS.TXT* which you may use to create the database if you cannot use the database provided.

You are also supplied with an incomplete Delphi program, **Q1_P.dpr**.
Open the file "**Q1_P.dpr**" (in the *QUESTION 1* folder) in Delphi.

- Go to "**File | Save As...**" and save the *unit* as **Q1_XXXX_U.pas**.
- Go to "**File | Save Project As...**" and save the *project* as **Q1_XXXX_P.dpr**.
where **XXXX** represents the first four letters of your name.
- Change only the *Caption*-properties of the button components on the form so that it corresponds with the figure below.
- Add your name to the *Caption* of the form between the {}.



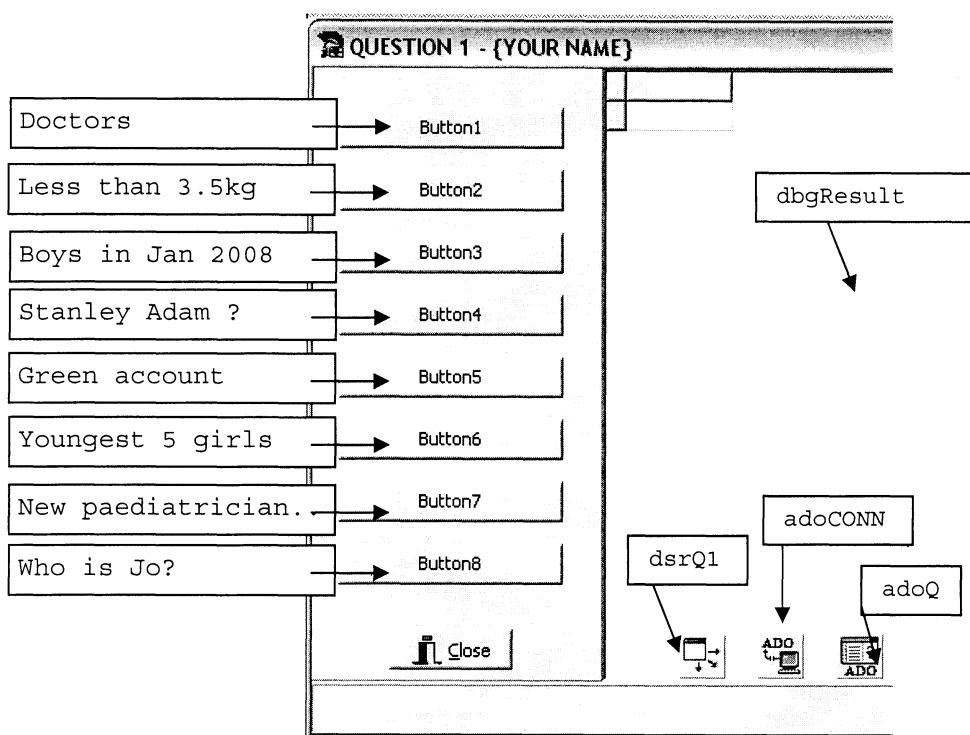
Die program behoort dadelik met die databasis, **BABAINFO.mdb**, te koppel, sodra die vorm geskep word. *Indien die koppeling nie plaasvind nie, bevestig net die OnCreate-event van die vorm.*

Die volgende gegewe kode in die **OnCreate-event** van die vorm bewerkstellig die koppeling:

```
IF FileExists(ExtractFilePath(Application.ExeName) + 'BABAINFO.mdb')
then
begin
    adoCONN.ConnectionString := 'Provider=Microsoft.Jet.OLEDB.4.0;' +
        'Data Source=' + ExtractFilePath(Application.ExeName) +
        'BABAINFO.mdb;Persist Security Info=False';
    adoCONN.Open;
    stbQ1.SimpleText := 'Databasis is gekoppel.';
end
else
    stbQ1.SimpleText := 'Databasis NIE gekoppel NIE!';
```

LET WEL: Selfs as die koppeling met die databasis nie bewerkstellig kan word wanneer die program uitvoer nie, **MOET jy steeds die programmeringskode doen en inlewer om nagesien te word.** Punte word slegs toegeken vir die programmeringskode in die *unit* wat die SQL-stellings bevat.

Voltooi die Delphi-program deur die “*event handlers*” vir al die *buttons* (gemerk *Button1* tot *Button8*) te voltooi. Maak gebruik van SQL-stellings om die navrae (m.b.v. die **adoQ**-komponent) vanuit die databasis, **BABAINFO.mdb**, te doen, soos in elk van Vraag 1.1. tot 1.8 verlang word. Alle afvoer moet in *dbgResults*-grid vertoon word.



The program should connect automatically with the database, **BABIESINFO.mdb** as soon as the form is created. *If the connection doesn't take place, just confirm the OnCreate-event of the form.* The following given code in the **OnCreate-event** of the form effects the connection.

```
IF FileExists(ExtractFilePath(Application.ExeName) + 'BABIESINFO.mdb')
then
begin
    adoCONN.ConnectionString := 'Provider=Microsoft.Jet.OLEDB.4.0;' +
        'Data Source=' + ExtractFilePath(Application.ExeName) +
        'BABIESINFO.mdb;Persist Security Info=False';
    adoCONN.Open;
    stbQ1.SimpleText := 'Database is connected.';
end
else
    stbQ1.SimpleText := 'Database not connected!';
```

PLEASE NOTE: Even if the connection with the database cannot be created when the program is executed, **you must still create and hand in the programming code so it may be marked**. Marks are only awarded for the programming code in the unit containing the SQL-statements.

Complete the Delphi-program by completing the *event-handlers* for all the buttons (*marked Button1 to Button8*). Make use of SQL statements to do the queries (through the **adoQ**-component) from the database, **BABIESINFO.mdb**, as required in each of Questions 1.1 to 1.8. All results must be displayed in the *dbgResults* grid.

1.1 “**BUTTON 1: Dokters**”

Voltooi die kode in die [**Dokters**]-knoppie deur 'n SQL-stelling te formuleer wat al die dokters in dalende alfabetiese volgorde sal vertoon. Vertoon slegs die dokters se naam en tarief.

(4)

1.2 “**BUTTON 2: Minder as 3.5 kg**”

Voltooi die kode in die [**Minder as 3.5 kg**]-knoppie deur die gebruiker te vra om die jaartal, bv. 2007 vanaf die sleutelbord in te sleutel. Formuleer 'n SQL-stelling wat die naam, van, geboortedatum en gewig van al die babas wat in daardie jaar gebore is en minder as 3.5 kg weeg, sal vertoon.

Let Wel: Om te bepaal in watter jaar die baba gebore is, **MOET** jy van die YEAR-funksie gebruik maak!

(6)

1.3 “**BUTTON 3: Seuns in Jan 2008**”

Voltooi die kode in die [**Seuns in Jan 2008**]-knoppie deur 'n SQL-stelling te formuleer om aan te dui hoeveel seuns in Januarie 2008 gebore is. Vertoon die antwoord as deel van 'n gebruikersvriendelike boodskap.

Voorbeeld van die afvoer:

Seuns gebore in Jan 2008
5

(4)

1.4 “**BUTTON 4: Stanley Adam?**”

Voltooi die kode in die [**Stanley Adam?**]-knoppie wat 'n administratiewe fout sal regstel deur 'n SQL-stelling te formuleer.

Baba, Stanley Adam is gebore op 16 Junie 2007.

Vertoon na die regstelling al die inligting vir baba Stanley Adam.

(5)

1.5 “**BUTTON 5: Green-rekening**”

Mnr. Green bevraagteken die akkuraatheid van die kliniek se rekening wat hy ontvang het.

Voltooi die kode in die [**Green-rekening**]-knoppie deur 'n SQL-stelling te formuleer om 'n lys van al meneer Green se babas en 'n berekende veld (genoem **Koste per kind**) te vertoon.

Die koste per kind word bepaal deur die getal dae wat die baba in die hospitaal deurgebring het te vermenigvuldig met die tarief van die dokter wat die bevalling behartig het.

Voorbeeld van die afvoer:

(7)

	Voornaam	Geb	Dokter	Koste per kind
▶	Claire	2003/06/15	NAIK T	R 7,999.95
	Nichola	2008/04/11	BOSCH J	R 6,252.51
	Emily	2006/12/26	WILLEMSE T	R 3,132.10
	Sahara	2008/04/11	BOSCH J	R 11,368.20
	Teresa	2008/04/11	BOSCH J	R 7,389.33
	Thomas	2004/10/22	SMITH A	R 4,212.72

1.1 “**BUTTON 1: Doctors**”

Complete the code in the [**Doctors**] button by formulating an SQL statement that will list all the doctors in descending alphabetical order. Display only the name and tariff of the doctors.

(4)

1.2 “**BUTTON 2: Less than 3.5 kg**”

Complete the code in the [**Less than 3.5 kg**] button by asking the user to enter the year, e.g. 2007 from the keyboard. Formulate an SQL statement that will display the name, surname, date of birth and weight of all the babies born in that particular year and who weighed less than 3.5 kg.

Please Note: To determine the year in which the baby is born you **MUST** make use of the YEAR-function!

(6)

1.3 “**BUTTON 3: Boys in Jan 2008**”

Complete the code in the [**Boys in Jan 2008**] button by formulating an SQL statement to indicate the number of boys born in January 2008. Display the answer as part of a user-friendly message.

Example of the output:

Boys born in Jan 2008	5
-----------------------	---

(4)

1.4 “**BUTTON 4: Stanley Adam?**”

Complete the code in the [**Stanley Adam?**] button to rectify an administrative error by formulating an SQL statement.

Baby Stanley Adam was born on 16 June 2007.

After the correction, display all the information for baby Stanley Adam.

(5)

1.5 “**BUTTON 5: Green account**”

Mr. Green is questioning the accuracy of the account he received.

Complete the code in the [**Green account**] by formulating an SQL statement to display all of Mr. Green’s babies along with a calculated field (called **Cost per child**).

The cost per child is calculated by multiplying the number of days a baby stays in the clinic with the doctor’s tariff handling the confinement.

Example of the output:

(7)

	FirstName	DOB	Doctor	Cost per child
▶	Claire	2003/06/15	NAIK T	R 7,999.95
	Nichola	2008/04/11	BOSCH J	R 6,252.51
	Emily	2006/12/26	WILLEMSE T	R 3,132.10
	Sahara	2008/04/11	BOSCH J	R 11,368.20
	Teresa	2008/04/11	BOSCH J	R 7,389.33
	Thomas	2004/10/22	SMITH A	R 4,212.72

1.6 “**BUTTON 6: Jongste 5 meisies**”

Voltooi die kode in die [**Jongste 5 meisies**]-knoppie deur 'n SQL-stelling te formuleer om die vyf jongste meisies waarvan die ouers in Sinoville of Rooihuiskraal woon, te vertoon.

Voorbeeld van die afvoer:

	Van	Voornaam	Geboortedatum	Woonbuurt
▶	Dorn	Shelly	2000/07/26	Rooihuiskraal
	Alsam	Samia	2000/09/08	Rooihuiskraal
	Bailey	Mellisa	2001/01/23	Sinoville
	Wing	Jane	2001/03/30	Rooihuiskraal
	Flow	Louise	2001/05/09	Sinoville

(7)

1.7 “**BUTTON 7: Nuwe pediater**”

Voltooi die kode in die [**Nuwe pediater**]-knoppie deur 'n SQL-stelling te formuleer om die nuwe pediater, Dr. G. Bell (praktyknommer: BEL763) te registreer. Dr. Bell is gekontrakteer teen R550.00 per dag.

Vertoon daarna 'n alfabetiese lys van al die dokters.

(4)

1.8 “**BUTTON 8: Wie is Jo?**”

Voltooi die kode in die [**Wie is Jo?**]-knoppie deur 'n SQL-stelling te formuleer om 'n lys van al die babaseuns te wys wie se voornaam met die letters “Jo” begin.

(3)

LEWER DIE VOLGENDE IN VIR VRAAG 1:

- 'n Drukstuk van die *unit*, **VR1_XXXX_U.pas**. Gebruik die volgende as riglyn:

Options:	
☒ Header/page number	☐ Use color
☒ Line numbers	☒ Wrap lines
☐ Syntax print	Left margin: 5

Die volgende lêers moet op die eksamendisket gestoor word:

- die *unit*, **VR1_XXXX_U.pas**,
- die *vorm*, **VR1_XXXX_U.dfm**,
- die *projek*, **VR1_XXXX_P.dpr**,
- die *databasis*, **BabalInfo.mdb**.

TOTAAL: VRAAG 1 = 40

1.6 “**BUTTON 6: Youngest 5 girls**”

Complete the code in the [Youngest 5 girls] button by formulating an SQL statement that will list the five youngest girls whose parents are staying in Sinoville or Rooihuiskraal.

(7)

Example of the output:

	Surname	FirstName	Date of Birth	Suburb
▶	Dorn	Shelly	2000/07/26	Rooihuiskraal
	Alsam	Samia	2000/09/08	Rooihuiskraal
	Bailey	Mellisa	2001/01/23	Sinoville
	Wing	Jane	2001/03/30	Rooihuiskraal
	Flow	Louise	2001/05/09	Sinoville

1.7 “**BUTTON 7: New paediatrician**”

Complete the code in the [New paediatrician] button by formulating an SQL statement that will register the new paediatrician, Dr. G. Bell (practice number: BEL763). Dr. Bell is contracted at R550.00 per day. Display an alphabetical list of all the doctors.

(4)

1.8 “**BUTTON 8: Who is Jo?**”

Complete the code in the [Who is Jo?] button by formulating an SQL statement to list all the baby boys whose first name starts with the letters “Jo”.

(3)

HAND IN THE FOLLOWING FOR QUESTION 1:

- A printout of the *unit*, **Q1_XXXX_U.pas**. Use the following as a guideline:

Options:

☒ Header/page number	☐ Use color
☒ Line numbers	☒ Wrap lines
☐ Syntax print	Left margin: 5

The following files need to be saved on your examination disk:

- the *unit*, **Q1_XXXX_U.pas**,
- the *form*, **Q1_XXXX_U.dfm**,
- the *project*, **Q1_XXXX_P.dpr**,
- the *database*, **BABIESINFO.mdb**.

TOTAL: QUESTION 1 = 40

VRAAG 2 – OOP – DELPHI-PROGRAMMERING

(66 minute)

[44]

Die doel van hierdie vraag is om objek-georiënteerde programmeringsvaardighede (OOP) te toets.

Daar word van jou verwag om 'n oplossing saam te stel wat al die klasse ("classes") en objekte insluit wat in die instruksies gespesifiseer word.

Indien jou oplossing nie gebruik maak van gebruikergedefinieerde klasse en objekte nie – sal alle relevante klas en objek-punte verbeur word.

Die dagsorgeenheid van die kliniek kan slegs 50 pasiënte per dag akkommodeer.

Die eenheid bied die volgende rehabilitasiedienste aan:

- Fisioterapie
- Radiologie
- Behandeling deur 'n spesialis

Omdat die kliniek nie pasiënte volgens afspraak behandel nie, moet pasiënte geregistreer word soos wat hulle by die kliniek opdaag.

Jy word voorsien van 'n onvoltooide Delphi-program, **VR2_P.dpr**.

Maak die lêer "**VR2_P.dpr**" in Delphi oop.

- Gaan na "**File | Save As...**" en stoor die *unit* as **VR2_XXXX_U.pas**.
- Gaan na "**File | Save Project As...**" en stoor die *project* as **VR2_XXXX_P.dpr**.

waar **XXXX** die eerste vier letters van jou naam is.

- Die komponente is reeds benoem.
- Voeg jou naam by die *Caption* van die vorm tussen die {} in.

Daar word van jou verwag om die volgende te doen:

- 2.1 Skep 'n nuwe unit (Gaan na "**File | New | Unit**") en stoor hierdie unit as **DAGSORG_XXXX_U.pas**, waar **XXXX** die eerste vier letters van jou naam is.

2.1.1 Definieer 'n klas genoem, **TPasient**, met die volgende datavelde:

- fVolleNaam (30 karakters)
- fFisio (Boole-waarde)
- fRadio (Boole-waarde)
- fSpesialis (Boole-waarde)
- fBalans (reële getal)

 $4 \div 2 = (2)$

2.1.2 Skryf 'n **constructor** met 'n parameterlys ("*parameterised constructor*") wat die waardes vir al die velde (fBalans uitgesluit) in die klas sal ontvang.

Hierdie parameters moet gebruik word om al die velde van die klas te inisieer. Die balans is nul.

 $5 \div 2 = (2\frac{1}{2})$

QUESTION 2 – OOP – DELPHI PROGRAMMING
(66 minutes)
[44]

The aim of this question is to test object-orientated programming (OOP) skills.

You are required to produce a solution that includes all classes and objects specified in the instructions.

If your solution doesn't make use of user-defined classes and objects all the relevant class and object marks will be forfeited.

The day care unit of the clinic can accommodate only 50 patients a day.
The unit provides the following rehabilitation services:

- Physiotherapy
- Radiology
- Treatment by a specialist

Because the clinic doesn't treat patients by appointment, patients need to be registered as they arrive at the clinic.

You are supplied with an incomplete Delphi program, **Q2_P.dpr**.

Open the file "**Q2_P.dpr**" in Delphi.

- Go to "**File | Save As...**" and save the *unit* as **Q2_XXXX_U.pas**.
- Go to "**File | Save Project As...**" and save the *project* as **Q2_XXXX_P.dpr**.

where **XXXX** represents the first four letters of your name.

- The components are already named.
- Add your name to the *Caption* of the form between the {}.

You are required to do the following:

- 2.1 Create a new unit (Go to "**File | New | Unit**"), and save this unit as **DAYCARE_XXXX_U.pas**, where **XXXX** represents the first four letters of your name.

- 2.1.1 Define a class, **TPatient**, with the following data fields:

- fFullName (30 characters)
- fPhysio (Boolean value)
- fRadio (Boolean value)
- fSpecialist (Boolean value)
- fBalance (real number)

4÷2=(2)

- 2.1.2 Write a parameterised **constructor** that will pass values for all the fields in the class (except fBalance).

These parameters should be used to initialise the fields of the class. The balance is zero.

5÷2=(2½)

2.1.3 Skryf die volgende toegangsmetodes ("accessor (get)") vir die klas.
{GetVolleNaam; GetBalans}

4÷2=(2)

2.1.4 Wysig die *constructor*-metode om die balans van die pasiënt te wysig.

Indien die waarde van 'n rehabilitasie-parameter *TRUE* is, beteken dit dat die pasiënt vir daardie behandeling geregistreer is en daarvoor moet betaal. Die koste daaraan verbonde moet by sy balans gevoeg word.

Die kostes vir behandeling is soos volg:

- Fisioterapie beloop R 325.00 per dag;
- Radiologie beloop R 423.00 per dag; en
- Om 'n spesialis te besoek, beloop R 876.00 per dag.

5÷2=(2½)

2.2 *Doen die volgende in die VR2_XXXX_U-lêer (die hoofteenheid) deur gebruik te maak van die metodes van die klas wat in Vraag 2.1 geskep is.*

2.2.1 [REGISTRASIE]

Die pasiënt daag in die oggend by ontvangs op en vul 'n registrasievorm in. Die pasiënt vul sy/haar naam in en dui met 'n **kruisie** aan vir watter behandeling hy/sy wil registreer.

Hy/sy mag vir meer as een tipe behandeling registreer.

Registrasie

Naam

Rehabilitasie ?

☐ Fisioterapie

☐ Radiografie

☐ Spesialis

✓ Registreer

Voltooi die kode in die [REGISTRASIE]-knoppie deur die volgende voorwaardes in ag te neem:

Die pasiënt kan slegs geregistreer word, indien

- die naam van die pasiënt ingevul is;
- die maksimum van 50 pasiënte nie oorskry is nie; en
- die pasiënt ten minste vir een rehabilitasie registreer.

16÷2=(8)

Indien 'n pasient nie geregistreer kan word nie, moet 'n gepaste gebruikersvriendelike boodskap vertoon word.

2.1.3 Write the following accessor methods (*get*) for the class.
 {GetFullName; GetBalance}

4÷2=(2)

2.1.4 Modify the constructor method to modify the balance of the patient.

If the value of a rehabilitation parameter is TRUE, it means that the patient is registered for that treatment and must therefore pay for the treatment. The cost of the treatment must be added to his/her balance.

The cost for treatment is as follows:

- Physiotherapy costs R 325.00 per day
- Radiology costs R 423.00 per day, and
- Visit to a specialist costs R 876.00 per day.

5÷2=(2½)

2.2 Do the following in the **Q2_xxxx_U** file (the main unit) by making use of the methods of the class created in Question 2.1.

2.2.1 [REGISTRATION]

The patient arrives in the morning at reception and fills in a registration form. The patient fills in his/her name and with a **cross** indicates for which treatment he/she wants to register.

He/She may register for more than one treatment.

Registration

Name

Rehabilitation ?

☐ Physiotherapy

☐ Radiology

☐ Specialist

Complete the code in the **[REGISTER]** button by taking the following requirements into consideration:

The patient may only be registered if

- the name of the patient is filled in;
- the maximum number of 50 patients is not exceeded; and
- the patient is registering for at least one treatment.

16÷2=(8)

If a patient cannot be registered, a suitable user-friendly message must be displayed.

Wanneer die program uitgevoer word, moet ten minste VIER van die volgende pasiënte geregistreer word as **toetsdata** vir die projek:

	Pasiënt	Rehabilitasie			Verwyder	
		Fisioterapie	Radiologie	Spesialis	Waakeenheid	Ontslaan
1	S Johnson			X		X
2	C Downey	X		X		X
3	H Latimer		X	X		X
4	J Nedpod			X		X
5	P Pham	X		X	Waakeenheid	
6	N Byrne	X		X		X
7	L Ullah	X	X		Waakeenheid	
8	O Murphy			X	Waakeenheid	
9	F Phil		X	X		X
10	J Harrison		X	X		X

2.2.2 [ONTSLAG]

Aan die einde van die dag moet die pasiënt sy/haar rekening kan betaal voor hy/sy ontslaan kan word.

Die volgende GUI is beskikbaar:

Ontslag

Naamlys

Aantal = ?

Wie moet oorgeplaas / ontslaan word na die ?

#

0

Verwyder

Waakeenheid

Ontslaan

- (a) Indien die [NAAMLYS]-knoppie gedruk word, moet
- al die name met die rekeningbalanse van al die pasiënte in 'n genommerde lys (beginnde by 1) vertoon, die balans moet regs inlyn geformateer tot 2 desimale syfers afgerond wees.
 - die totale getal pasiënte wat daardie dag geregistreer het, moet op [IbIAantal] in die plek van die ? vertoon word.

$$11 \div 2 = (5\frac{1}{2})$$

- (b) Voltooi die kode in die [VERWYDER]-knoppie, deur die volgende voorwaardes in ag te neem:
- Die verpleegpersoneel moet aandui watter pasiënt ontslaan / oorgeplaas moet word na die waakeenheid en moet die pasiënt se nommer in die [edtNr] redigeer-blokkie invul.
 - Jou program moet enige ongeldige toevoer vanaf die gebruiker voorkom deur:
 - Insleuteling van slegs numeriese waardes in die redigeer-blokkie toe te laat
Wenk: ASCII vir *backspace* is #8.
 - Toets of die nommer in die geldige interval van geregistreerde pasiënte is

When the program is executed at least **FOUR** of the following patients must be registered as **test data** for the project

	Patient	Rehabilitation			Discharge	
		physiotherapy	Radiology	Specialist	ICU	Discharge
1	S Johnson			X		X
2	C Downey	X		X		X
3	H Latimer		X	X		X
4	J Nedpod			X		X
5	P Pham	X		X	ICU	
6	N Byrne	X		X		X
7	L Ullah	X	X		ICU	
8	O Murphy			X	ICU	
9	F Phil		X	X		X
10	J Harrison		X	X		X

2.2.2 [DISCHARGE]

At the end of the day the patient must pay his/her account before they may be discharged.

The following GUI is available:

Discharge |

List of Names

Count = ?

Who is to be discharged / transferred to ...

0

Discharge

ICU

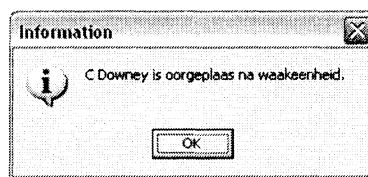
Discharge

- (a) When the **[LIST OF NAMES]** button is clicked
- a numbered list (starting from 1) of all the patients' names along with their account balances must be displayed. The balances must be right aligned and rounded off to two decimal digits.
 - the total number of patients registered for that day must be displayed on **[lblCount]** instead of the ?. $11 \div 2 = (5\frac{1}{2})$
- (b) Complete the code in the **[DISCHARGE]** button by taking the following requirements into consideration:
- The nursing staff indicate which patient may be discharged or which patient must be transferred to the ICU and fill in the patient's number in the, **[edtNr]** edit box.
 - Your program must prevent any invalid input from the user by:
 - Allowing only numerical values to be typed in the edit box
Hint: ASCII for backspace is #8.
 - Checking that the input is within the range of registered patients

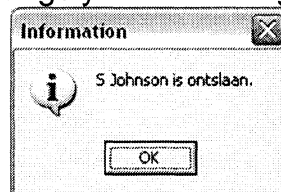
- Indien die [**Plaas oor na waakeenheid**]-opsie gekies word, moet die naam van die pasiënt aan die einde van die waakeenheid se tekslêer (genaamd **WAAKEENHEID.TXT**) geplaas word om op die hoogte van alle oorplasings te bly.

Indien 'n pasiënt oorgeplaas word, hoef hy/sy nog nie die rekening te betaal nie.

Nadat die pasiënt oorgeplaas is, moet die pasiënt nou van die naamlys, asook vanuit die skikking verwyder word deur die skuif van elemente in die skikking. 'n Gepaste boodskap (met die naam van die pasiënt as deel van die boodskap), soortgelyk aan die volgende, moet vertoon word.



- Indien die [**Ontslaan pasiënt**]-opsie gekies word, moet die pasiënt se inligting vanuit die naamlys en skikking verwyder word deur die skuif van elemente in die skikking. 'n Gepaste boodskap (met die naam van die pasiënt as deel van die boodskap), soortgelyk aan die volgende moet vertoon word.

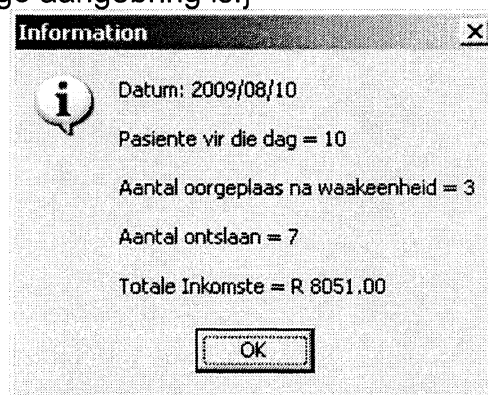


- Vertoon weer die lys van name.

LET WEL: Nadat die pasiënt vanuit die skikking verwyder is, mag daar nie 'n "holte" in die skikking wees nie.

$$29 \div 2 = (14\frac{1}{2})$$

- 2.3 Indien die program verlaat word deur die [**VERLAAT PROGRAM**]-opsie te kies, moet 'n boodskap soortgelyk aan die volgende vertoon word:
{Hierdie boodskap is gebaseer op bogenoemde toetsdata / van al 10 rekords nadat alle veranderinge aangebring is.}



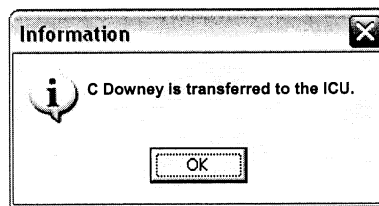
Nadat van die boodskap vertoon is, moet alle gebruikersgedefinieerde objekte vanuit die geheue verwyder word en die program moet beëindig word. Wenk: Die ASCII vir <enter> is #13.

$$14 \div 2 = (7)$$

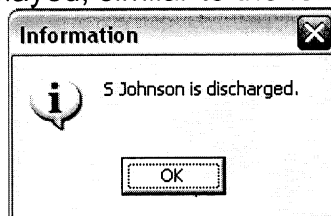
- If the [**Transfer to ICU**] option is selected, the name of the patient must be added to the end of the ICU's text file, **ICUWARD.TXT** in order to keep track of all transfers.

If a patient is transferred he / she doesn't have to pay the account yet.

After the patient has been transferred his information must be removed from the array as well as the list of names by shifting elements in the array. A user-friendly message (with the name of the patient as part of the message) must be displayed, similar to the following:



- If the [**Discharge patient**] option is chosen, the patient's information must be removed from the array as well as the list of names by shifting elements in the array. A user-friendly message (with the name of the patient as part of the message) must be displayed, similar to the following:



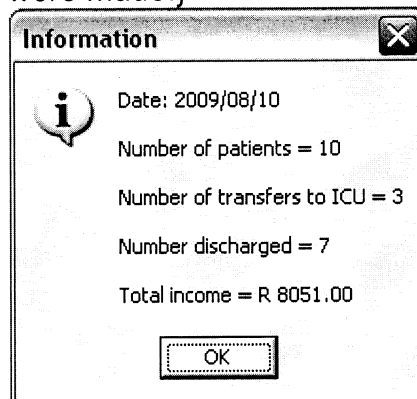
- Display the list of names again.

PLEASE NOTE: After a patient has been removed from the array, there must not be a "hole" in the array.

$$29 \div 2 = (14\frac{1}{2})$$

2.3 When the program is closed by selecting the [**QUIT**] menu, a similar message to the following must be displayed:

{This message is based on above-mentioned test data after entering all 10 records and all changes were made.}



After the message is displayed, all user defined objects must be released from memory and the program must end. The ASCII code for <enter> is #13

$$14 \div 2 = (7)$$

LEWER DIE VOLGENDE IN VIR VRAAG 2:

- 'n Drukstuk van die *unit*, **VR2_XXXX_U.pas**.
 - 'n Drukstuk van die *class unit*, **DAGSORG_XXXX_U.pas**.
- Gebruik die volgende as riglyn vir albei units:

Options:	
☒ Header/page number	☐ Use color
☒ Line numbers	☒ Wrap lines
☐ Syntax print	Left margin: 5

Die volgende lêers moet op die eksamendisket gestoor word:

- die *unit*, **VR2_XXXX_U.pas**,
- die *class unit*, **DAGSORG_XXXX_U.pas**,
- die vorm, **VR2_XXXX_U.dfm**,
- die projek, **VR2_XXXX_P.dpr**.

TOTAAL: VRAAG 2= 44

VRAAG 3 – DELPHI-PROGRAMMERING**(54 minute)****[36]**

Die doel van hierdie vraag is om algemene programmeringsvaardighede en tegnieke te toets. Die oplossing wat jy kodeer hoef nie van klasse en objekte gebruik te maak nie.

Indien 'n baba in die kliniek se ICU-saal opgeneem word, word hulle 24 uur per dag gemonitor. Weens die gebrek aan rekenaartoerusting, was alle data wat gemonitor is op papier ingevul, wat die saamstel van verslae moeilik gemaak het.

Met die opdatering van die fasiliteite by die kliniek is die ICU-saal nou met 'n rekenaar toegerus. Die verpleegpersoneel sleutel die inligting in tekslêers in.

Vir die doeleindes van dié vraag, word twee tekslêers gebruik:

- **INFO.TXT** → word gebruik om die persoonlike inligting van die babas te stoor. Die inligting wat ingesleutel word, is die baba se rekeningnommer, van, naam, geboortedatum (formaat: YYYY/MM/DD) en die geslag (aangedui as 'n M vir 'n seun en 'n F vir 'n dogter). 'n Voorbeeld van die inhoud van die **INFO.TXT**-lêer:

```
AG10,Hague,Anthony ,2009/01/05,M
AU50,Platt,Sarah,2009/05/09,F
BD42,Islay,Teresa,2009/06/24,F
CJ15,Dawson,James,2009/01/03,M
ES31,Shaukat,Sonia,2009/08/11,F
EW14,Tngvine,Tina,2009/04/26,F
FD52,Lewis,Declon,2009/04/19,M
FI41,Hest,Louise,2009/05/17,F
GB31,Quersh,Abduraheim,2009/01/01,M
```


HAND IN THE FOLLOWING FOR QUESTION 2:

- A printout of the *unit*, **Q2_XXXX_U.pas**.
- A printout of the *class-unit*, **DAYCARE_XXXX_U.pas**. Use the following guideline for both units:

Options:	
☒ Header/page number	☐ Use color
☒ Line numbers	☒ Wrap lines
☐ Syntax print	Left margin: 5

The following files need to be saved on your examination disk:

- the *unit*, **Q2_XXXX_U.pas**,
- the *class-unit*, **DAYCARE_XXXX_U.pas**,
- the *form*, **Q2_XXXX_U.dfm**,
- the *project*, **Q2_XXXX_P.dpr**.

TOTAL: QUESTION 2 = 44

QUESTION 3 – DELPHI PROGRAMMING

(54 minute)

[36]

The aim of this question is to test general programming skills and techniques. The solution you code doesn't need to make use of classes and objects.

If a baby is admitted to the clinic's ICU, they are observed 24 hours a day. Due to the lack of computer equipment all observations were written on paper, which makes the compiling of reports difficult.

With the updating of the clinic's facilities the ICU ward now has a computer. The nursing staff type all observations into text files.

For the purposes of this question, two text files are used.

- **INFO.TXT** → is used to store the personal information of the babies. The information that is typed in is the account number, surname, name, date of birth (format: YYYY/MM/DD) and the gender (indicated as M for a boy and F for a girl) of the baby.

An example of the content of the **INFO.txt** file:

```
AG10,Hague,Anthony,2009/01/05,M
AU50,Platt,Sarah,2009/05/09,F
BD42,Islay,Teresa,2009/06/24,F
CJ15,Dawson,James,2009/01/03,M
ES31,Shaukat,Sonia,2009/08/11,F
EW14,Tngvine,Tina,2009/04/26,F
FD52,Lewis,Declon,2009/04/19,M
FI41,Hest,Louise,2009/05/17,F
GB31,Quershi,Abduraheim,2009/01/01,M
```

- **ICU.TXT** → word gebruik om die inligting wat gemonitor word, in te stoor. Die inligting wat gestoor word, is die tyd wanneer die waarneming gedoen word, die baba se rekeningnommer, die kode vir die tipe waarneming en die waarneming-data.

'n Voorbeeld van die inhoud van die **ICU.txt**-lêer is:

```
06:18,AG10,T,38.14
21:19,AU50,O,13
17:28,BD42,T,37.61
08:53,CJ15,H,110
08:57,ES31,O,16
22:55,EW14,H,115
20:30,FD52,T,39.74
09:38,FI41,T,39.97
05:29,GB31,T,37.51
```

Die **tyd** word in die 24 uur-formaat aangedui, d.w.s. ses-uur die oggend word aangedui as 06:00, terwyl drie-uur die middag aangedui word as 15:00.

Die volgende **kategorieë** word op enige gegewe tydstip gemonitor:

- Temperatuur (kode **T**) gemeet in °C, bv. 36.31
- Hartklop (kode **H**) gemeet in slae per minuut, bv. 121
- Suurstofvlak in bloed (kode **O**) gemeet in dele per miljoen (dpm), bv. 12

Jy word voorsien van 'n onvoltooide Delphi-program, **VR3_P.dpr**.

Maak die lêer "**VR3_P.dpr**" in Delphi oop.

- Gaan na "**File | Save As...**" en stoor die *unit* as **VR3_XXXX_U.pas**.
- Gaan na "**File | Save Project As...**" en stoor die *project* as **VR3_XXXX_P.dpr**.

waar **XXXX** die eerste vier letters van jou naam is.

- Voeg jou naam by die *Caption* van die vorm tussen die {} in.

Daar word van jou verwag om die volgende te doen:

- 3.1 Laat die gebruiker toe om die baba se rekeningnommer in die **[edtNommer]**-redigeerblokkie in te sleutel. Toevoer is onafhanklik van hoof- of kleinletters (not case-sensitive).

- 3.2 Skep die volgende gebruikersgedefinieerde veranderlike en funksie as deel van die vorm:

```
TVRAAG_3 = class(TForm)
    //verskeie komponente
private
    { Private declarations }
    sPers_Info : String;
    function Geldige_Rekening(sNomX : String) : Boolean;
public
    { Public declarations }
end;
```

- **ICU.TXT** → is used to store the information of all the observations in the ICU ward. The information that is typed in is the time when the observation is made, the account number of the baby, the code of the type of observation and the observation data.

An example of the content of the **ICU.txt** file:

```
06:18,AG10,T,38.14
21:19,AU50,O,13
17:28,BD42,T,37.61
08:53,CJ15,H,110
08:57,ES31,O,16
22:55,EW14,H,115
20:30,FD52,T,39.74
09:38,FI41,T,39.97
05:29,GB31,T,37.51
```

The **time** is indicated in the 24-hour format, i.e. six o'clock in the morning is indicated as 06:00, whereas three o'clock in the afternoon as 15:00.

The following **categories** are monitored at any given moment:

- Temperature (code **T**), measured in °C, e.g. 36.21
- Heartbeat (code **H**), measured in beats per minute, e.g. 121
- Oxygen level in blood (code **O**) measured in parts per million (ppm), e.g. 12

You are supplied with an incomplete Delphi program, **Q3_P.dpr**.

Open the file "**Q3_P.dpr**" in Delphi.

- Go to "**File | Save As...**" and save the *unit* as **Q3_XXXX_U.pas**.
- Go to "**File | Save Project As...**" and save the *project* as **Q3_XXXX_P.dpr**.

where **XXXX** represents the first four letters of your name.

- Add your name to the *Caption* of the form between the {}.

You are required to do the following:

- 3.1 Allow the user to type the baby's account number in the [edtNumber] edit box. Input is not case-sensitive.
- 3.2 Declare the following user defined variable and function as part of the form:

```
TQUESTION3 = class(TForm)
//various components
private
{ Private declarations }
    sPers_Info           : String;
    function Valid_Account(sNumX : String) : Boolean;
public
{ Public declarations }
end;
```

Kodeer die funksie om die geldigheid van die ingesleutelde rekeningnommer te verifieer.

'n Rekeningnommer is geldig, indien:

- dit uit slegs 4 karakters bestaan,
 - die eerste 2 karakters alfabetiese karakters is,
 - karakters 3 en 4 numeriese karakters is, en
 - die ingesleutelde rekeningnommer in die INFO.txt-lêer voorkom.
- Indien die rekeningnommer in die lêer voorkom, ken die waarde van daardie reël aan die veranderlike **sPers_Info** toe.

24÷2=(12)

3.3 Voltooi die kode vir die [VERTOON VERSLAG]-button deur aan elk van die volgende kriteria te voldoen.

40÷2=(20)

3.3.1 Maak gebruik van die funksie, **GELDIGE_REKENING**, om te bepaal of die rekeningnommer geldig is. Indien die nommer ongeldig is, mag kriteria 3.3.2 en 3.3.3 nie uitgevoer word nie en moet 'n gebruikersvriendelike boodskap vertoon word.

3.3.2 Vertoon die baba se persoonlike inligting as 'n opskrif vir die verslag, met gepaste sub-opskrifte. Maak gebruik van die veranderlike **sPers_Info**.

3.3.3 Vertoon al die data van hierdie baba in **chronologiese** volgorde. WENK: Jy moet gebruik maak van een of meer skikkings, wat gesorteer moet word voordat die data vertoon kan word. *Sien die onderstaande diagram vir die verlangde formatering van die waardes.*

Voorbeeld van die afvoer vir baba NL33:

Pasient:

REKENINGNOMMER: NL33
BABA: LOUISE, HULME
Geboortedatum: 2009/01/10

TYD	TEMP °C	LESINGS HART bpm	SUURSTOF dpm
09:35			18
09:38			14
10:57			20
10:58			11
15:25		105	
16:24		126	
16:25	38.00		
21:10			18
22:33	37.00		

Code the function to verify the validity of the account number typed in.
 An account number is valid if

- it consists of only 4 characters,
- the first 2 characters are alphabetical characters,
- characters 3 and 4 are numeric, and
- the typed in account number appears in the INFO.txt file. If the account number appears in the text file, assign the information from that line of text to the variable, **sPers_Info**.

24÷2=(12)

3.3 Complete the code for the [**DISPLAY REPORT**] button by complying with each of the following criteria:

40÷2=(20)

3.3.1 Make use of the function, **VALID_ACCOUNT**, to determine if the account number is valid. If the number is invalid, criteria 3.3.2. and 3.3.3. may not be executed, and a user-friendly message must be displayed.

3.3.2 Display the baby's personal information as a heading to the report, with suitable subheadings. Make use of the variable **sPers_Info**.

3.3.3 Display all the data collected for this baby in chronological order.
 HINT: You must make use of one or more arrays which must be sorted before displaying the data
See the following diagram for the required formatting of the values.

Example of report for baby NL33:

Baby

Account number: NL33
 BABY: LOUISE, HULME
 Date of Birth: 2009/01/10

TIME	MEASUREMENTS		
	TEMP °C	HEART bpm	OXYGEN ppm
09:35			18
09:38			14
10:57			20
10:58			11
15:25		105	
16:24		126	
16:25	38.00		
21:10			18
22:33	37.00		

- 3.4 Voltooi die kode vir die **[Save As]-button**.
Maak gebruik van die **TSaveDialog**-komponent om die naam van die verslag van die gebruiker te verkry. Stoor dan hierdie verslag.

Uitvoer: Stoor die verslag vir baba SH12.

4÷2=(2)

- 3.5 Voltooi die kode vir die **[Print]-button**.
Maak gebruik van die **TPrintDialog**-komponent om die gebruiker die geleentheid te bied om die verslag te druk, indien verlang. Indien die gebruiker die **[Cancel]-button** kies, mag geen drukstuk gelewer word nie.

4÷2=(2)

LEWER DIE VOLGENDE IN VIR VRAAG 3:

- 'n Drukstuk van die *unit*, **VR3_XXXX_U.pas**. Gebruik die volgende as riglyn:

Options:	
☒ Header/page number	☐ Use color
☒ Line numbers	☒ Wrap lines
☐ Syntax print	Left margin: 5

Die volgende lêers moet op die eksamendisket gestoor word:

- die *unit*, **VR3_XXXX_U.pas**,
- die vorm, **VR3_XXXX_U.dfm**,
- die projek, **VR3_XXXX_P.dpr**.
- die verslag vir baba SH12.

TOTAAL: VRAAG 3 = [36]

TOTAAL: 120

- 3.4 Complete the code for the **[SAVE AS]** button.
 Make use of the **TSaveDialog** component by asking the user for a name for the report. Save this report.

Execute: Save the report for baby SH12.

4÷2=(2)

- 3.5 Complete the code for the **[PRINT]** button.
 Make use of the **TPrintDialog** component to give the user an opportunity to print the report if required. If the user selects the **[Cancel]** button then no report may be printed.

4÷2=(2)

HAND IN THE FOLLOWING FOR QUESTION 3:

- A printout of the *unit*, **Q3_XXXX_U.pas**. Use the following guideline:

Options:	
☒ Header/page number	☐ Use color
☒ Line numbers	☒ Wrap lines
☐ Syntax print	Left margin: 5

The following files need to be saved on your examination disk:

- the *unit*, **Q3_XXXX_U.pas**,
- the *form*, **Q3_XXXX_U.dfm**,
- the *project*, **Q3_XXXX_P.dpr**.
- the report for baby SH12.

TOTAL: QUESTION 3 = 36

TOTAL: 120