higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NASIENRIGLYN

NASIONALE SERTIFIKAAT (BEROEPSGERIG)

BEGINSELS VAN REKENAARPROGRAMMERING
(Tweede Vraestel)
NKR VLAK 3

23 NOVEMBER 2018

Hierdie nasienriglyn bestaan uit 13 bladsye.

Kopiereg voorbehou

VRAAG 1

1.1
```
Option Explicit On
Option Strict On

Public Class frmHomeLoan

 'Global Veranderlikes
   Dim dblPrincipal As Double = 0D
   Dim dblAnnualInterestRate As Double = 0D
   Dim intNumOfMonths As Integer = 0I
```

Veranderlike verklaring {Al DRIE veranderlikes}✓
Veranderlikes geïnisialiseer✓ (2)

1.2 1.2.1
```
'QUESTION 1.2.1
Private Sub GetInput(ByRef dblPrincipal As Double, ByRef
dblAnnualInterestRate As Double, ByRef intNumOfMonths As
Integer)
```

Beperkte Access Modifier {"Private"}✓
Tipe prosedure {"Sub"}✓
Drie parameters/argumente ✓
Korrekte parameter deurgestuur {"ByRef"}✓ (4)

1.2.2
```
'QUESTION 1.2.2
 dblPrincipal = CDbl(txtPrincipalAmount.Text) -
CDbl(txtDeposit.Text)
 dblAnnualInterestRate = CDbl(txtInterestRate.Text)/100
 intNumOfMonths = CInt(tkbRepayment.Value) * 12
End Sub
```

Al drie toewysings {=}✓
Berekening van Principal amount {"txtPrincipal.Text – txtDeposit.Text"}✓
Berekening van Annual Interest Rate✓
Berekening van Number of Months✓
Omskakelingsfunksie {"CDbl/CInt/Val"}✓ (5)

1.3 1.3.1
```
'QUESTION 1.3.1
Private Sub Repayment(ByVal dblPrincipal As Double, ByVal
dblAnnualInterestRate As Double, ByVal intNumOfMonths As
Integer)
```

Beperkte Access Modifier {"Private"}✓
Tipe prosedure {"Sub"} ✓
Drie parameters/argumente ✓
Korrekte parameter passing {"ByVal"}✓ (4)

1.3.2
```
'QUESTION 1.3.2
 Dim dblMonthlyInterestRate As Double
 Dim dblMonthlyInstalment As Double
 Dim dblTotalPayable As Double
 Dim dblTotalInterestPayable As Double
```

Verklaar VIER veranderlikes✓
Toepaslike datatipe {"Double"}✓ (2)

1.3.3
```
'QUESTION 1.3.3
 dblMonthlyInterestRate = dblAnnualInterestRate / 12

 dblMonthlyInstalment = -Pmt(dblMonthlyInterestRate,
intNumOfMonths, dblPrincipal)

 dblTotalPayable = dblMonthlyInstalment * intNumOfMonths

 dblTotalInterestPayable = dblTotalPayable - dblPrincipal
```

Bereken Monthly Interest Rate✓✓
Bereken Monthly Instalment✓✓
Bereken Total Payable✓✓
Bereken Total Interest Payable✓✓ (8)

1.3.4
```
'QUESTION 1.3.4
 lstDisplay.Items.Clear()
 lstDisplay.Items.Add("Your monthly repayments will be:")
 lstDisplay.Items.Add(dblMonthlyInstalment.ToString("C2") &
vbCrLf)
 lstDisplay.Items.Add("")

 lstDisplay.Items.Add(vbCrLf & "The total amount payable
 after " & intNumOfMonths & " months is :")

 lstDisplay.Items.Add(dblTotalPayable.ToString("C2") &
 vbCrLf & vbCrLf)

 lstDisplay.Items.Add("")

 lstDisplay.Items.Add(vbCrLf & "The total amount of
 interest payable after " & intNumOfMonths & " months is
 :")


 lstDisplay.Items.Add(dblTotalInterestPayable.ToString("C2"
 ) & vbCrLf)

End Sub
```
Lyskasbeheer skoongemaak✓
Vertoon afvoer✓
Formateer string afvoer {.ToString("C2")}✓ (3)

1.4
```
'QUESTION 1.4
Private Sub tkbRepayment_Scroll(…) Handles tkbRepayment.Scroll

   lblRepaymentPeriod.Text = tkbRepayment.Value & " years"✓

End Sub
```
(1)

1.5 1.5.1 (a)

```
'QUESTION 1.5
Private Sub btnCalcRepayment_Click(…) Handles
btnCalcRepayment.Click

'QUESTION 1.5.1
'(a)
  If IsNumeric(txtPrincipalAmount.Text) = False Then
    MessageBox.Show("The principal amount cannot be
     alphanumeric", "Input Data Validation")
    txtPrincipalAmount.Focus()
    Exit Sub
  End If
```

(b)

```
  If CDbl(txtInterestRate.Text) < 10.25 Then
    MessageBox.Show("Interest Rate cannot be less than
     the Prime Lending Rate", "Input Data Validation")
    txtInterestRate.Focus()
    Exit Sub
  End If
```

(c)

```
  If tkbRepayment.Value = 0 Then
    MessageBox.Show("Use the trackbar to select a
     repayment period.", "Input Data Validation")
    tkbRepayment.Focus()
    Exit Sub
  End If
```

Al DRIE geldigheidskriteria✓
Relevante kontrole gefokus {Al DRIE}✓ Staak stelling ("Exit Sub") {Al DRIE}

(3 × 1) (3)

1.5.2

```
'QUESTION 1.5.2
 If txtDeposit.Text = "" Then
    txtDeposit.Text = "0"
 End If
```

Korrekte waarde {0} toegeken aan tekskas✓ (1)

1.5.3

```
'QUESTION 1.5.3
   Call GetInput(dblPrincipal, dblAnnualInterestRate,
intNumOfMonths)
   Call Repayment(dblPrincipal, dblAnnualInterestRate,
                                                intNumOfMont
                                                hs)
End Sub
```

Roep prosedure {Beide}✓✓

LW: Die *Call* sleutelwoord is nie nodig nie.
Korrekte Parameters/Argumente deurgestuur {Beide}✓✓ (4)

1.6.1

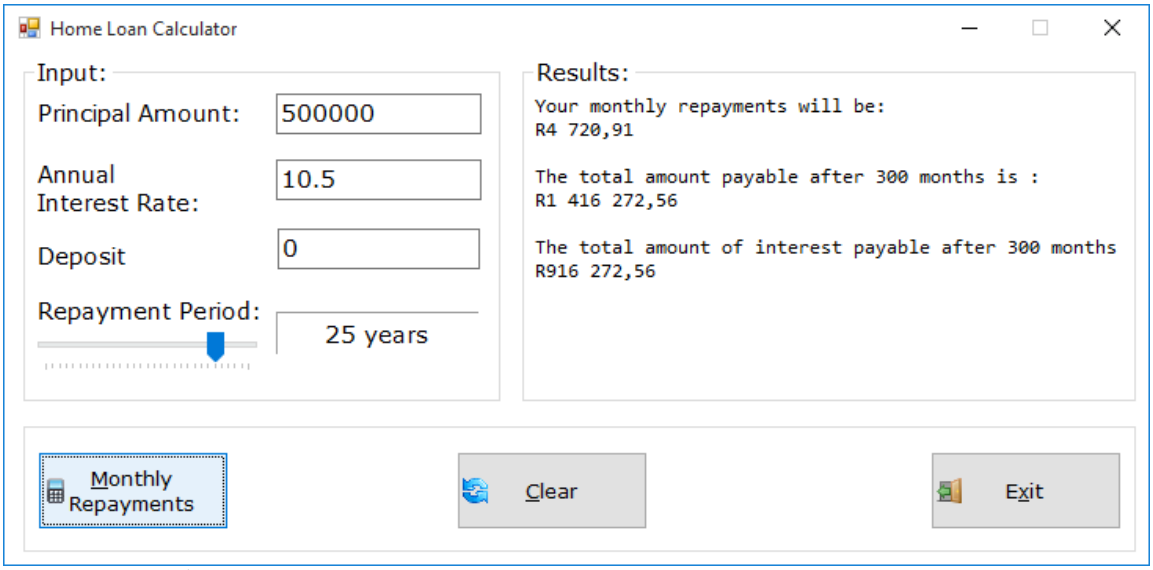
```
'QUESTION 1.6
Private Sub btnClear_Click(…) Handles btnClear.Click

        lstDisplay.Items.Clear()
        txtPrincipalAmount.Clear()
        txtDeposit.Clear()
        txtInterestRate.Clear()
```

Korrekte metode {.Clear( )}✓

1.6.2
```
        tkbRepayment.Value = 0
        lblRepaymentPeriod.Text = "0 Years"
```
Etiketkontrole EN volgstaaf gestel tot verstekwaardes✓
```
End Sub
```
(2 × 1) (2)

1.7 Drukstuk van bronkode

1.8



Korrekte afvoer✓ (1)

[40]

VRAAG 2

2.1
```
Option Explicit On
Option Strict On

Public Class frmLanguage
'QUESTION 2.1 Declare one-dimensional array containing subject names

    Dim strArrSubjectNames() As String = {"ENGLISH FAL P2", "SEPEDI
                                          FAL P2"}
```
Skikking verklaar en korrek geïnisialiseer✓ (1)

2.2
```
'QUESTION 2.2
    Dim intCounterVariable As Integer
    Dim intNoSectionsAnswered As Integer = 0
    Dim intNumberOfCandidates As Integer = 0
```
Veranderlike verklaring {Al DRIE veranderlikes} (1)

2.3
```
'QUESTION 2.3 Form load subprocedure
 Private Sub frmLanguage_Load(…) Handles MyBase.Load
    Dim index As Integer = 0
'Q2.3.1 Populate the combo box
    Do Until index > (strArrSubjectNames.Length - 1)
        cboSubjectNameList.Items.Add(strArrSubjectNames(index))
        index = index + 1
    Loop
```
Korrekte lustoestande✓✓
Skikkingselement by kombinasiekas gevoeg✓
Lusteller geïnkrementeer ✓ (4)

2.4
```
'QUESTION 2.4
 Private Sub cboSubjectNameList_SelectedIndexChanged(…) Handles
      cboSubjectNameList.SelectedIndexChanged

  btnEnter.Enabled = True
  Call DisplaySelectedSubject()
```

2.4.1
```
'QUESTION 2.4.1
  intNumberOfCandidates = CInt(InputBox("Enter the number
                               of candidates for the exam",
                               "Input Entry"))
```
invoer dialoogkas ✓
veranderlike toewysing ✓

2.4.2
```
'QUESTION 2.4.2
   'Redimension all the arrays
    ReDim strArrExamNumber(intNumberOfCandidates - 1)
    ReDim intArrSecAMark(intNumberOfCandidates - 1)
    ReDim intArrSecBMark(intNumberOfCandidates - 1)
    ReDim intArrSecCMark(intNumberOfCandidates - 1)
    ReDim intArrSecDMark(intNumberOfCandidates - 1)
    ReDim intArrTotalMarks(intNumberOfCandidates - 1)
    ReDim strArrMessage(intNumberOfCandidates - 1)
```
Dimensioning alle skikkings {ReDim}✓
Verstel indeks {intNumberOfCandidates - 1}✓

```
  'Enable the input group box
    grpInputData.Enabled = True

  'Focus the examination number text box
    txtExamNumber.Focus()
```

(2 × 2) (4)

2.5
```
'QUESTION 2.5

Private Sub ValidateExamNo()
  If txtExamNumber.Text = "" Then
```
Voorwaardelike stelling {"IF/End IF"}✓
```
     MessageBox.Show("Surname field cannot be left blank.", "Input
                     Data Validation")
     txtExamNumber.Focus()
  End If
End Sub
```
Boodskapkas ✓
Fokusbeheer✓ (3)

2.6
```
'QUESTION 2.6
Private Function ValidateMark(ByVal value As String) As Boolean
   Terugkeer tipe funksie {"as Boolean"}✓
   If CInt(value) > 35 Then Voorwaardelike stelling {"IF/End IF"}✓
       MessageBox.Show("Possible highest mark per section is 35.",
                       "Input Data Validation")
       Kommunikasie {"MessageBox"}✓
       Return False
       'OR
       ValidateMark = True
   Else
       Return True
       'OR
       ValidateMark = False
       Terugkeer stelling  {Enige EEN"}✓
   End If
End Function
```
(4)

2.7
```
'QUESTION 2.7
Private Sub btnEnter_Click(…) Handles btnEnter.Click
```

2.7.1
```
'QUESTION 2.7.1
 'Check if the limit of the array has been reached
  If intCounterVariable = intNumberOfCandidates Then
  Voorwaardelike stelling {"IF/End IF"}✓
     MessageBox.Show("The number of candidates that you can
                     enter has reached its limit", "Limit
                     Exceeded")
     Kommunikasie {"MessageBox"}✓
     btnEnter.Enabled = False
     Call ClearInputData()
     Roep Subprosedure {ClearInputData()}✓
     Exit Sub
     Termineer stelling {"Exit Sub}✓
  End If

Invoke procedure to validate exam number
   ValidateExamNo()
```
(4)

2.7.2
```
'QUESTION 2.7.2
   strArrExamNumber(intCounterVariable) =
CStr(txtExamNumber.Text)
```
Korrekte skikkingtoekenning {examination number} (1)

2.7.3
```
'QUESTION 2.7.3
   ' check if section a was answered
   If (CInt(txtSecAMark.Text) > 0) Then
      intArrSecAMark(intCounterVariable) =
CInt(txtSecAMark.Text)
      intNoSectionsAnswered = intNoSectionsAnswered + 1
   End If

   ' check if section B was answered
   If (CInt(txtSecBMark.Text) > 0) Then
```
(4)

2.7.4

```
'QUESTION 2.7.4
```

Inkrement getal afdelings beantwoord✓ {Enige EEN}

```
      intNoSectionsAnswered = intNoSectionsAnswered + 1

      If intNoSectionsAnswered = 1 Then
         intArrSecAMark(intCounterVariable) = 0
         intArrSecBMark(intCounterVariable) =
CInt(txtSecBMark.Text)
      End If

      If intNoSectionsAnswered = 2 Then
         intArrSecBMark(intCounterVariable) =
CInt(txtSecBMark.Text)
      End If

   End If

  ' check of section C was answered
  If (CInt(txtSecCMark.Text) > 0) Then
        intNoQuestAnswered = intNoQuestAnswered + 1
        If intNoSectionsAnswered = 1 Then
           intArrSecCMark(intCounterVariable) =
                          CInt(txtSecCMark.Text)
        End If

        If intNoSectionsAnswered = 2 Then
           intArrSecCMark(intCounterVariable) =
                          CInt(txtSecCMark.Text)
        End If

        If intNoSectionsAnswered > 2 Then
           intArrSecCMark(intCounterVariable) = 0
        End If
  End If

 ' check of section D was answered
 If (CInt(txtSecDMark.Text) > 0) Then
        intNoSectionsAnswered = intNoSectionsAnswered + 1
        If intNoSectionsAnswered = 1 Then
           intArrSecDMark(intCounterVariable) =
CInt(txtSecDMark.Text)
        End If

        If intNoSectionsAnswered = 2 Then
           intArrSecDMark(intCounterVariable) =
CInt(txtSecDMark.Text)
        End If

        If intNoSectionsAnswered > 2 Then
           intArrSecDMark(intCounterVariable) = 0
        End If
 End If
```

IF stelling voorwaardes.
{ If (CInt(txtSecAMark.Text) > 0)}
{ If (CInt(txtSecBMark.Text) > 0)}
{ If (CInt(txtSecCMark.Text) > 0)}
{ If (CInt(txtSecDMark.Text) > 0)}

{Enige EEN IF stelling}✓

Skikking toewysing
{intArrSecAMark(intCounterVariable) = CInt(txtSecAMark.Text)}
{intArrSecBMark(intCounterVariable) = CInt(txtSecBMark.Text)}
{intArrSecCMark(intCounterVariable) = CInt(txtSecCMark.Text)}
{intArrSecDMark(intCounterVariable) = CInt(txtSecDMark.Text)}
{ENIGE EEN}✓

IF Stelling voorwaardes { intNoQuestAnswered = 2 } {Enige EEN}✓
IF Stelling voorwaardes { intNoQuestAnswered > 2 } {Enige EEN}✓

NOTA AAN NASIENERS: Kandidate se logika mag van bogenoemde verskil. (1)

2.7.5
```
'QUESTION 2.7.5
 If intNoQuestAnswered > 2 Then
```
Voorwaardelike stelling {"If/End If"}✓
```
    strArrMessage(intCounterVariable) = "Too many
questions"
 Else
    strArrMessage(intCounterVariable) = ""
 End If
```
Ken boodskap aan skikking toe {"beide"}✓
```
 'Clear controls to add again
    ClearInputData()
    txtExamNumber.Focus()

 'Enable Display Button
    btnDisplay.Enabled = True

 'Increment the counter
    intCounterVariable += 1
```
(2)

2.7.6
```
'QUESTION 2.7.6
 'Reset the number of questions answered
    intNoQuestAnswered = 0
```
Ken NUL toe aan getal vrae beantwoord✓
```
End Sub
```
(1)

2.8
```
Private Sub btnSearch_Click(…) Handles btnSearch.Click
(…)

'QUESTION 2.8.1
  Dim index As Integer = 0
  For intCounterVariable = 0 To UBound(strArrExamNumber)
    If strArrExamNumber(intCounterVariable) =
txtSearchExaminatioNumber.Text Then
       index = intCounterVariable
       lstDisplayResults.Items.Clear()
       lstDisplayResults.Items.Add("Results: ")

     lstDisplayResults.Items.Add(strArrExamNumber(index).PadRight(18)
        & intArrTotalMarks(index).ToString.PadRight(4) &
        strArrMessage(index).PadLeft(25))
         Exit For
    Else
        lstDisplayResults.Items.Add("Examination number: " &
        txtSearchExaminatioNumber.Text & " not found.
    End If
```

```
Next
```

Lusstelling voorwaardes {0 to upper bounds of array}✓
IF/ELSE Stelling voorwaardes✓
Toeken van indekswaarde { index = intCounterVariable }✓
Formateer Vertoonafvoer✓ (4)

2.9 Drukstuk van bronkode

2.10

ENGLISH FAL P2

Examination Number	Total Marks	Comment
8306231006089	40	
8706126008084	24	Too many questions

Korrekte afvoer✓ (1)
[35]

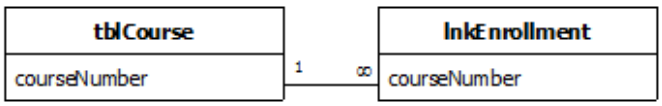
VRAAG 3

3.1 **Columns**

Name	Type	Size
custNumber	Integer	2
courseNumber	Integer	2
dateEnrolled	Date/Time	8
amountPaid	Currency	8

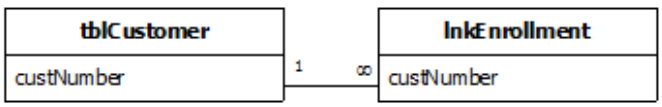
Relationships

tblCourseInkEnrollment



Attributes: Enforced
RelationshipType: One-To-Many

tblCustomerInkEnrollment



Attributes: Enforced
RelationshipType: One-To-Many

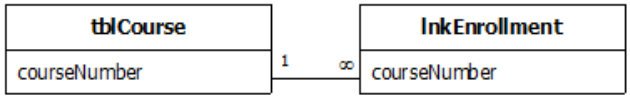
TWEE 1:M Relasies✓✓
Verwysingsintegriteit toegepas✓

Columns

Name	Type	Size
courseNumber	Integer	2
courseName	Text	50
courseFee	Currency	8

Relationships

tblCourseInkEnrollment



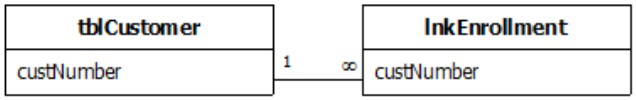
Attributes: Enforced
RelationshipType: One-To-Many

Columns

Name	Type	Size
custNumber	Integer	2
custFirstName	Text	25
custLastName	Text	25
custMobile	Text	10

Relationships

tblCustomerInkEnrollment



Attributes: Enforced
RelationshipType: One-To-Many

Korrekte tabelname {Al DRIE tabelle}✓
Korrekte veldname {Al DRIE tabelle }✓
Korrekte datatipes {Al DRIE tabelle }✓
Korrekte grootte {Al DRIE tabelle }✓ (7)

3.2 3.2.1

custNumber	custFirstName	custLastName	cellPhone
100	Maredi	MOLOTO	0610025540
101	Shane	SMITH	0832349908
102	Meriam	HELEN-AIDE	0726560885
104	Kingsley	KOLOBE	0731123349
105	Anna-Merie	VAN LINDEN	0842007783

ALLE korrekte rekords✓

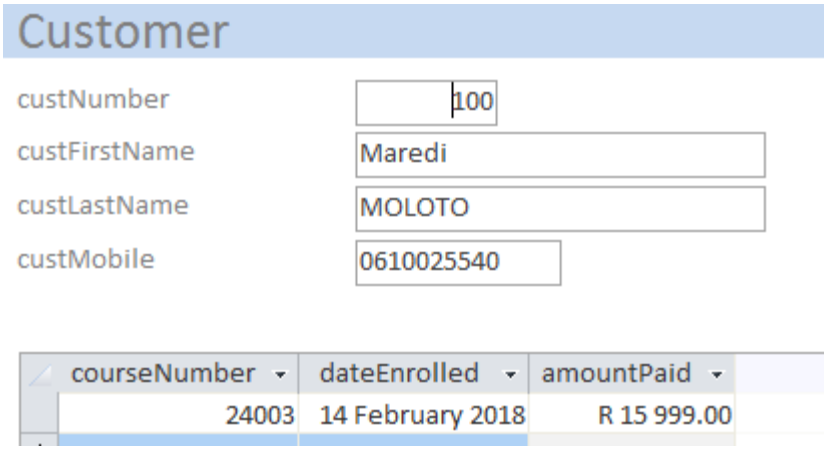
3.2.2

courseNumber	courseName	courseFee
24002	ICT in Education	R 12 500,00
24003	C++ Programming	R 14 000,00
24004	Web design	R 9 200,00
24005	Networking fundamentals	R 5 500,00
24006	Vb.net Programming	R 10 500,00
24007	Introduction to Databases	R 6 500,00

ALLE korrekte rekords✓

(2 × 1) (2)

3.3 3.3.1



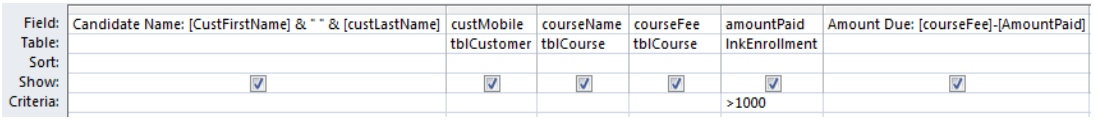
Hoofvorm met subvorm✓
Etiket geformateer {"Customer"}✓ (1)

3.3.2

CustNumber	CourseNumber	AmountPaid
100	24002	R 2 400,00
100	24004	R 1 500,00
101	24003	R 1 500,00
102	24002	R 1 200,00
104	24002	R 500,00
105	24003	R 1 200,00

ALLE korrekte rekords✓ (1)

3.4 3.4.1–3.4.5



ALLE korrekte velde geselekteer (1)
Veld bereken {"Candidate Name"} (1)
Veld bereken {"Amount Due"} (2)
Filter kriteria (1)
Drukstuk sienontwerp (1)

3.4.6

Candidate Name	CellPhone	Course Name	AmountPaid	Course Fee	Amount Due
Maredi MOLOTO	0610025540	ICT in Education	R 2 400.00	R 12 500.00	R 10 10
Maredi MOLOTO	0610025540	Web design	R 1 500.00	R 9 200.00	R 7 70
Shane SMITH	0832349908	C++ Programming	R 1 500.00	R 14 000.00	R 12 50
Meriam HELEN-AIDE	0726560885	ICT in Education	R 1 200.00	R 12 500.00	R 11 30
Anna-Merie VAN LINDEN	0842007783	C++ Programming	R 1 200.00	R 14 000.00	R 12 80

ALLE korrekte rekords✓ (1)

3.5

The Course List - EXAMINATION NUMBER

Course Name	Candidate Name	CellPhone	AmountPaid	Course Fee	Amount Due
C++ Programming					
	Anna-Merie VAN LINDEN	0842007783	R 1 200.00	R 14 000.00	R 12 800.00
	Shane SMITH	0832349908	R 1 500.00	R 14 000.00	R 12 500.00
			R 2 700.00	R 28 000.00	R 25 300.00
ICT in Education					
	Kingsley KOLOBE	0731123349	R 500.00	R 12 500.00	R 12 000.00
	Meriam HELEN-AIDE	0726560885	R 1 200.00	R 12 500.00	R 11 300.00
	Maredi MOLOTO	0610025540	R 2 400.00	R 12 500.00	R 10 100.00
			R 4 100.00	R 37 500.00	R 33 400.00
Web design					
	Maredi MOLOTO	0610025540	R 1 500.00	R 9 200.00	R 7 700.00
			R 1 500.00	R 9 200.00	R 7 700.00
			R 8 300.00	R 74 700.00	R 66 400.00

Alle korrekte velde (1)
Korrekte groeperingsvlak {"Course Name"} (1)
Totale, Subtotale en Groottotaal verslag (3)
Verslagtitel (1)
Verslag drukstuk (1)
[25]

TOTAAL: 100

Kopiereg voorbehou