higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PRINCIPLES OF COMPUTER PROGRAMMING

(Second paper)

NQF LEVEL 3

12 March 2020

This marking guideline consists of 11 pages.

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QUESTION 1: FUNCTIONS AND SUB PROCEDURES

1.1
```
Option Explicit On
Option Strict On ✓

Public Class frmRental


 Dim intClientCount As Integer = 0      ✓
 Dim intStatus As Integer = 0           ✓
 Dim decDailyRentalFee As Decimal = 0   ✓
```
(4)

1.2
```
Private✓ Sub PopVehicleNames()✓
```

Correct Access Modifier {Private}
Correct subprocedure definition (2)

1.2.1
```
lstVehicleNames.Items.Clear()✓
```
(1)

1.2.2
```
If ✓ radCompact.Checked = True ✓ Then
     lstVehicleNames.Items.Add(strCompactOption1)
     lstVehicleNames.Items.Add(strCompactOption2)

ElseIf ✓ radHatch.Checked = True Then
     lstVehicleNames.Items.Add(strHatchOption1)
     lstVehicleNames.Items.Add(strHatchOption2)      ✓

ElseIf ✓ radSedan.Checked = True Then
     lstVehicleNames.Items.Add(strSedanOption1)
     lstVehicleNames.Items.Add(strSedanOption2)
End If
```

Add items to list box (all three)
Conditional test on radio buttons (all three)
Conditional test (correct if statement)
Conditional test (correct use of nested elseif)

NOTE: Only penalise a maximum of TWO marks in the case where a candidate did not use a nested if statement. (5)

1.2.3
```
lstVehicleNames.SelectedIndex = 0 ✓
```
(1)

1.3 1.3.1

```
Private✓ Sub DisplayVehicleInfo(ByVal Description As
String, ByVal Rentalfee As Decimal, ByVal Availability
As Integer)✓
```

Correct access modifier {Private}
Correct subprocedure definition (all three parameters) (2)

1.3.2

```
lblVehicleDescription.Text = lstVehicleNames.Text✓ &
" " & description✓
```

Correct concatenation of parameter
Selected list box item text (2)

1.3.3

```
intStatus = Availability✓
```

(1)

1.3.4

```
btnCreateBooking.Enabled = False✓
```

(1)

1.3.5

```
If intStatus = 0✓ Then
   lblRentalFee.Text = "Not Available."
ElseIf intStatus = 2  Then                    ✓
   lblRentalFee.Text = "Sold out."
Else
   btnCreateBooking.Enabled = True
   decDailyRentalFee = Rentalfee              ✓

   lblRentalFee.Text = Rentalfee.ToString("C2") & " a
                                                day."✓
End If

End Sub
```

Correct conditional test for vehicle availability
Assign appropriate message into rental fee display label (both)
Enable button control and assign parameter value into variable
Assign formatted rental fee message into rental fee display label (4)

1.4
```
Private Sub radCompact_CheckedChanged(…) Handles
                                    radCompact.CheckedChanged
        If radCompact.Checked = True Then✓
            PopVehicleNames()
        End If
End Sub

Private Sub radSedan_CheckedChanged(…) Handles
                                    radSedan.CheckedChanged
        If radSedan.Checked = True Then
            PopVehicleNames()
        End If
End Sub

Private Sub radHatch_CheckedChanged(…) Handles
                                    radHatch.CheckedChanged
        If radHatch.Checked Then
            PopVehicleNames()✓
        End If
End Sub
```

Correct conditional test of all checked radio button controls (all three)
Invoke correct subprocedure PopVehicleNames (all three)
(2)

1.5 1.5.1
```
Private✓ Function IsBalanceOk(ByVal Amount As
Decimal✓) As Boolean✓
```

Correct access modifier (Private)
Correct function definition (One parameter)
Correct function return type (Boolean) (3)

1.5.2
```
If✓ CDec(txtCreditCardBal.Text) > (Amount * 2)✓ Then
        Return True
    Else                                        ✓
        Return False
End If

End Function
```

Correct conditional test for double rental
Return statement (both) (3)

1.6 1.6.1
```
~~Protected~~ Private✓ Sub SaveRentalData(…)
```

Correct access modifier (Private)

```
ReDim decRentalDue(intClientCount)
 ReDim strHiredVehicles(intClientCount)
 decRentalDue(intClientCount) = amount
 strHiredVehicles(intClientCount) =
                                    lstVehicleNames.Text
```
(1)

1.6.2
```
intClientCount = intClientCount + 1✓
```
Increment counter (1)

1.6.3
```
'rental confirmation note
MessageBox.Show✓ (lstVehicleNames.Text  & " hired for
" & days.ToString & " days at total cost of " &
amount.ToString("C2")✓ & ".", "Rental Confirmation",
MessageBoxButtons.OK, MessageBoxIcon.Information)

End Sub
```
Pop-up dialog box (Message Box.Show)
Correct format of message box (2)

1.7 1.7.1
```
Private Sub btnCreateBooking_Click(…) Handles
                                  btnCreateBooking.Click

Dim intNumberOfdays As Integer
Dim decAmountDue As Decimal
Dim blnBalancestatus As Boolean


If intStatus = 1 Then
   If ValNumField(txtCreditCardBal.Text) = False
                                                  Then
       MessageBox.Show("Re-enter availabe balance on
           your credit card.", "Credit Card Balance",
                                MessageBoxButtons.OK,

     MessageBoxIcon.Information)
       txtCreditCardBal.Focus()
   Else

intNumberOfdays = ✓ CInt(InputBox ✓ ("Enter the
                      number of days", "Rental Days"))
```
Correct input box
Assign the value into a local variable (2)

1.7.2
```
decAmountDue = decDailyRentalFee * intNumberOfdays✓
```
(1)

1.7.3 (a)
```
blnBalancestatus = IsBalanceOk(decAmountDue)✓
```
Invoke function with an argument and assign the value into a local variable (1)

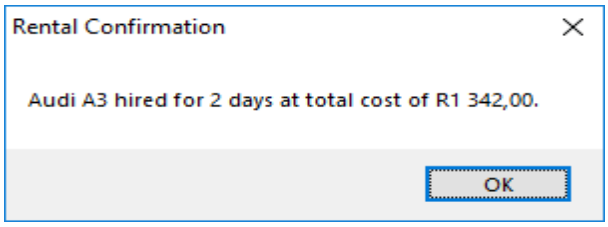
(b)
```
If blnBalancestatus = False✓ Then
    MessageBox.Show("Insufficient funds.
                  The client's credit card balance
should be more than twice the rental fee.", _
                                    "Creating
Booking",
                              MessageBoxButtons.OK,
                         MessageBoxIcon.Information)✓
    txtCreditCardBal.Focus()✓
    Exit Sub
```

Validation (Conditional statement If)
Communication (Message Box)
Navigation (Focus/Exit sub) (3)

(c)
```
Else
   ' record the rental details
    SaveRentalData(decAmountDue, intNumberOfdays)
   ' reset the availability status.
    ChangeVehicleStatus(Status.NotAvailable)✓✓
   'clear rental form
   ClearRentalForm()
  End If
 End If
End If
```
Invoke methods (All THREE) (2)

1.8 Source code PRINTOUT

1.9



✓

Correct dialog box and output (1)
[45]

QUESTION 2: ARRAYS

2.1 2.1.1
```
Dim decCarWashPrices(,)✓ As Decimal = {{0, 0, 0, 0},
{60, 70, 300, 500}, {70, 80, 325, 550}}✓
```

Two-dimensional array declaration
Initialisation of array (2)

2.1.2
```
Dim decExtraPrices(,) As Decimal = {{0, 0}, {10, 15},
{15, 20}}✓
```

Correct array 2-dimensional array and initialisation (1)

2.1.3
```
Dim decExtrasCost As Decimal = 0
Dim decCarWashCost As Decimal = 0 ✓
Dim decTotalCost As Decimal = 0
```

Global variable declaration and initialisation (all three) (1)

2.2
```
Public✓ Sub DisplayCustInformation()✓
```

Correct access modifier (Public)
Correct subprocedure definition (2)

2.2.1
```
lblCustomerDetails.Text =✓ txtCustomerName.Text &
vbLf & vbLf & "Contact No: " & txtContactNumber.Text✓
```

Assign to label control
Concatenating customer name and contact number
NOTE: Do not penalise candidates for using "" instead of vbLF (2)

2.2.2
```
lblRegNumber.Text = txtRegNumber.Text
lblMakeModel.Text = txtMakeModel.Text✓
lblColour.Text = txtColour.Text

End Sub
```

Assign car data items into display labels (1)

2.3 2.3.1
```
Private Sub btnCarWashOption_Click(…) Handles
btnCarWashOption.Click

If ValContactNumber(txtContactNumber.Text) = False✓
                                                  Then
     MessageBox.Show("Re enter the contact number",
                     "Input Error")✓
     txtContactNumber.Focus()   ✓
     Exit Sub ✓
End If
```

Validation (Conditional statement If)
Communication (Message Box)
Navigation (Focus/Exit sub) (4)

2.3.2
```
If ValTextField(txtRegNumber.Text) = False Then
      MessageBox.Show("Re enter the contact
                              number", "Input Error")
      txtRegNumber.Focus()
      Exit Sub
End If
```

Validation (Conditional statement If) (1)

2.3.3
```
If cboVehicleType.SelectedIndex = 0✓ Then
     MessageBox.Show("Please select the vehicle
               category for pricing purposes.")
     cboVehicleType.Focus()
     Exit Sub
Else ✓
     DisplayCustInformation()✓
     TabControl1.SelectedIndex = 1✓
End If
```
Validation (Conditional statement If/Else)
Invoke subprocedure
Change tab page (selected index) (4)

2.4 2.4.1
```
Private Sub CalcTotalCost(…)

'reset totals
decTotalCost = 0
decCarWashCost = 0
decExtrasCost = 0

decCarWashCost = ✓ decArrCarWashPrices
        (cboVehicleType.SelectedIndex,✓
colIndex)✓
```
Assign to appropriate variable
Correct array element row
Correct array element column (3)

2.4.2
```
If chkDrying.Checked = True ✓ Then
     decExtrasCost = decArrExtraPrices
          (cboVehicleType.SelectedIndex, 0)✓✓
End If
```
Correct conditional test for checkbox
Assign value from 2-dimensional array (3)

2.4.3
```
If chkVacuum.Checked = True Then
   decExtrasCost = decExtrasCost +✓
decArrExtraPrices
               (cboVehicleType.SelectedIndex, 1✓)
End If
```
Increment the Extra cost with the value from 2-dimensional array (2)

2.4.4
```
decTotalCost = (decCarWashCost + decExtrasCost)✓
```
Correct formula to calculate amount to be paid (1)

2.5
```
Private Function CalcCostExcludingVAT(ByVal amount As
Decimal✓) As Decimal✓
  Return (amount / 1.15D)✓
End Function
```

Parameter
Function return type (decimal)
Return calculated amount (3)

2.6 Debugging and fix code errors

2.7 PRINTOUT of source code

[30]

QUESTION 3

3.1 Database table structures using Microsoft Access.

3.1.1

Table: Client

Columns

Name	Type	Size
ClientID	Text	4
ClientName ✓	Text ✓	20 ✓
ClientContactNo	Text	12

Correct field names
Correct data types
Correct sizes (3)

3.1.2

Table: Job

Columns

Name	Type	Size
JobID	Text	6
JobTitle	Text	40
Area ✓	Text ✓	20 ✓
AnnualSalary	Decimal	16
ClientID	Text	4

Correct field names
Correct data types
Correct sizes (3)

3.1.3

Relationships

ClientsJobs

Clients		Jobs
ClientID	1 ∞	ClientID

Attributes: Enforced ✓
RelationshipType: One-To-Many ✓

Relationship Type (1:M)
Enforced referential integrity (2)

3.1.4

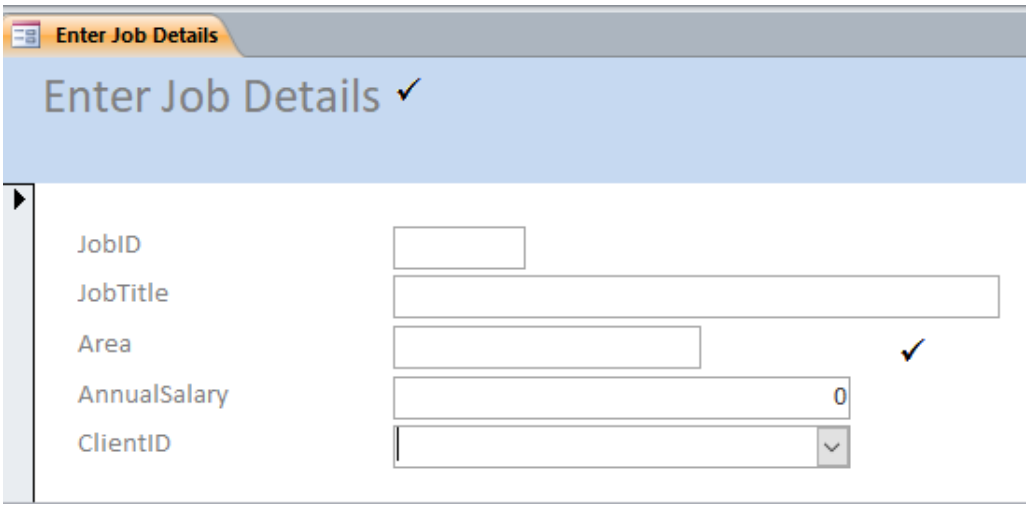
Field Name	Data Type
JobID	Text
JobTitle	Text
Area	Text
AnnualSalary	Number
ClientID	Text

General | Lookup

Field Size	Decimal
Default Value	0
Validation Rule	>=150000 ✓
Validation Text	
Required	No

Correct validation rule (1)

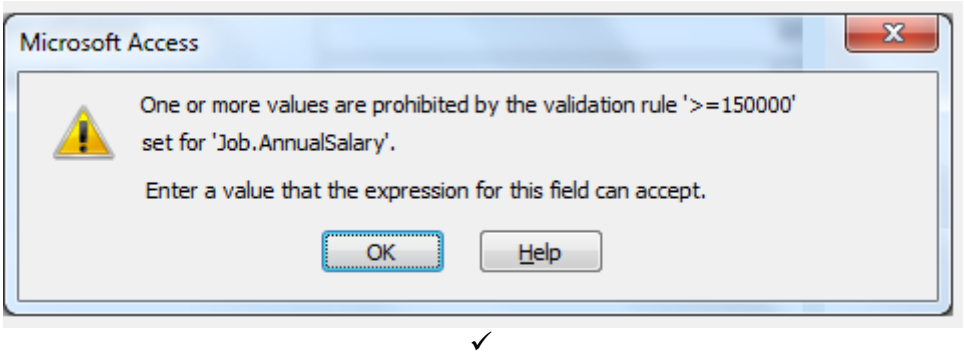
3.2 Database Form



Correct title of the form
Correct layout of the form (2)

3.3 Data Capturing into database tables:

3.3.3



✓

Screenprint of error message (1)

3.4 Database query

3.4.1–
3.4.4

Field:	JobID	JobTitle	Area	Monthly Salary: [AnnualSalary]/12
Table:	Job	Job	Job	
Sort:				
Show:	☑	☑	☑	☑
Criteria:			"Centurion"	
or:				

Correct field names
Calculated field: new name
Calculated field formula
Correct criteria of area (5)

3.4.5

JobID	JobTitle	Area	Monthly Salary
000001	Mechanical Fire Safety Engineer	Centurion	R18 666,67
000004	Customer Care Consultant	Centurion	R13 037,50
000005	Senior Financial Account	Centurion	R33 541,67

Correct query results (1)

3.5 Database Report

Selected Vacancies - Examination number

Job Title	Job ID	Area	Monthly Salary
Customer Care Consultant	000004	Centurion	R13 037.50
Mechanical Fire Safety Engineer	000001	Centurion	R18 666.67
Senior Financial Account	000005	Centurion	R33 541.67
		Lowest Monthly Salary:	R13 037.00

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Correct fields
Sorting by job title
Layout: portrait
Report title
Currency symbol (“R”)
Label (Lowest)
Lowest monthly salary (7)
[25]

TOTAL: 100

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