



SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology

Second Year, First Semester Examination – 2020

HNDIT 2311- Rapid Application Development

Instructions for Candidates:

Answer any Five (5) questions only.

All questions carry equal marks.

No. of questions : 06

No. of pages : 06

Time : Three hours

Question 1.

- What is Rapid Application Development (RAD). (02marks).
- State four factors that you consider to select an appropriate software development model. (04 marks)
- Give four characteristics of Rapid Application Development. (04 marks)
- Define .NET Framework. (02 marks)
- Explain four dimensions of Rapid Application Development to speed up development of software. 3PT (08 marks)

[Total 20 Marks]

Question 2.

- State whether the following statements are true or false. (05 marks)
 - Rapid Application Development is always the best model for software development. false
 - Visual Studio is an IDE which supports to multiple languages.
 - User involvement in RAD is higher, compared to waterfall model. True
 - Hybrid Team consists of similar talented people. True
 - In RAD, time and cost does not affect quality of product. False
 - .NET framework uses disconnected architecture. True
 - Silver Bullet Syndrome is a product related mistake. False
 - Rapid Application uses specialized tools to develop applications. True
 - Logical operator can return Boolean value. True
 - XOR is a reverse expression of OR operator. True

- Declare the following variables with suitable data type based on given value. (03 marks)

- Name of student: Ahamed char
- Marks: 73 integer
- Date of Birth: 12-09-2000 date
- Z-Score: 1.2345 Double
- Salary: 45000 integer
- Apply: True

iii.

What is the value of the following expressions

- a. $17 \text{ Mod } 3 + 4 * 2 = 6$
- b. $6/2 - (5 - 2 * 2) = 2$
- c. $5 \text{ Mod } 4 - 2 = 0$
- d. $2 * 3 + (15/3) \text{ Mod } 2 * (4/2) = 3$
- e. $(4 < 2) \text{ And } (6 < 5) \text{ Or } (7 >= 7) =$

(05 marks)

iv.

Write the syntax of for loop.

v.

Compare and contrast pretest loop and posttest loop.

for

end

$6 + 5 \text{ mod } 2 \times 2$
 $11 \text{ mod } 4$

(03 marks)

(04 marks)

[Total 20 Marks]

Question 3.

i.

Write the output of the following code segments.

a) Dim i, t, count As Integer
For i = 2 To 10 Step 3
t += i
count = count + 1
Next
MsgBox(t & " " & count)

(06 marks)

2-10 → setep 3.

$2 + 5 = 7$
 $7 + 3 = 10$
 $10 + 3 = 13$
 $13 + 3 = 16$
 $16 + 3 = 19$
 $19 + 3 = 22$
 $22 + 3 = 25$
 $25 + 3 = 28$
 $28 + 3 = 31$
 $31 + 3 = 34$
 $34 + 3 = 37$
 $37 + 3 = 40$
 $40 + 3 = 43$
 $43 + 3 = 46$
 $46 + 3 = 49$
 $49 + 3 = 52$
 $52 + 3 = 55$
 $55 + 3 = 58$
 $58 + 3 = 61$
 $61 + 3 = 64$
 $64 + 3 = 67$
 $67 + 3 = 70$
 $70 + 3 = 73$
 $73 + 3 = 76$
 $76 + 3 = 79$
 $79 + 3 = 82$
 $82 + 3 = 85$
 $85 + 3 = 88$
 $88 + 3 = 91$
 $91 + 3 = 94$
 $94 + 3 = 97$
 $97 + 3 = 100$

b) Dim n As Integer = 254.

Dim a, b As Integer

Do While (n > 0)

a = n Mod 10

n = n / 10

b += a

Loop

MsgBox(b)

And X

or +

$254 / 10 = 25$
 $25 / 10 = 2$
 $2 / 10 = 0$
 $254 \text{ Mod } 10 = 4$
 $25 \text{ Mod } 10 = 5$
 $2 \text{ Mod } 10 = 2$
 $4 + 5 + 2 = 11$

c) Dim n As Integer = 15

Dim count As Integer = 0

Do Until (n < 5)

count = count + 1

n = n - 2

Loop

MsgBox(count)

$0 < 5$
 $\text{count} = 0 + 1$
 $n = 15 - 2$
 $n = 13$
 $13 > 5$
 $\text{count} = 1 + 1$
 $n = 13 - 2$
 $n = 11$
 $11 > 5$
 $\text{count} = 2 + 1$
 $n = 11 - 2$
 $n = 9$
 $9 > 5$
 $\text{count} = 3 + 1$
 $n = 9 - 2$
 $n = 7$
 $7 > 5$
 $\text{count} = 4 + 1$
 $n = 7 - 2$
 $n = 5$
 $5 < 5$
Exit

ii.

An application is created to categorize people according to their age as follows. (06 marks)

Age of Person	Type
Age > 65	Senior Citizen
Age between 18 and 65	Adult
Age between 5 and 17	Child
Age < 5	Baby

Fill in the blanks (a to f) of the following source code based on the above scenario.

```
Dim age As Integer = 24
Dim type As String
Select (a) Person age
    Case Is > 65
        type = "Senior Citizen"
    Case (b) 18 To 65
        type = "Adult"
    Case 5 (c) 15 To 17
        type = (d) child
    Case (e) Age < 5
        type = "Baby"
(f) _____
MsgBox(type)
```

- iii. Generate code to calculate number of units and charge for electricity according to the following scenario when press the "Calculate" button. (08 marks)

Tariff Block	Price per Unit (Rs.)
From 1 to 60 units	Rs. 10.00
From 61 to 90 units	Rs. 25.00
Greater than 90 units	Rs. 40.00

Number of Units = Current Meter Reading – Previous Meter Reading

[Total 20 Marks]

Question 04.

(02 marks)

i. State importance of array in programming.

ii. Write code in VB.NET to do following tasks

a) Create an array named *Num* to store the following sequence of numbers.

(01 marks)

34,56,25,67,82,44,71,62

b) Count the number of odd numbers in the array.

(03 marks)

iii. A payroll system is developed for a company. In the system **Net Pay** is calculated according to the following scenario.

Form7

Payroll System

Staff

Name:

Staff ID:

Gender: ☒ Male ☐ Female

Category:

Basic Salary:

Allowance: ☒ Cost of Living ☒ Research Allowance

Fund Type: ☒ EPF ☐ UPF

Pay Sheet

Name: R. Silva
Staff ID: S00124
Gender: Male
Category: Academic
Basic Salary: 30000
Allowance: 18000
Deduction: 5760
Net Pay: 42240

Payment

Total Allowance:

Deduction:

Net Pay:

- Rs. 7500 is provided as a cost of living allowance and 35% of basic salary is given as research allowance. The system calculates the total allowance as respective checkboxes are checked. Some staff get cost of living allowance, research allowance or both.
- Gross salary is computed as sum of total allowance and basic salary.
(Gross salary = Total Allowance + Basic Salary)
- Deduction is 12% of gross salary for EPF employee and 20% of gross salary for UPF employee.
- Net Pay is calculated by subtracting deduction from gross salary
(Net Pay = Gross Salary - Deduction)

A. Provide suitable name for all the objects except label in the interface according the .NET convention.

(02 marks)

Question 06.

An Employee Information system has been developed to manage employee details in SQL server database as follows.

Form10

Employee Information

Employee

Name: Insert txtName

Emp ID: View txtEmpId

Gender: ☐ Male ☒ Female Delete radMale
"female"

Category: Search cmbCategory

Date of Appointment: Update otp Date of Appointment

Name	ID	Gender	Category	ADate
<input type="text" value="Shamily"/>	Emp001	Male	Academic	7/14/2011
Ravi	Emp002	Male	Non Academic	7/14/2018
Shamily	Emp003	Female	Academic	10/10/2021

- Provide suitable name for all the input tools of the above interface according the .NET convention. (02 marks)
- Write a code segment to insert a record of Employee into the database using following information. (04 marks)
 Data Source=MAC\MACSERVER;Initial Catalog=Employee;Integrated Security=True
 Staff (Name, ID, Gender, Category, ADate)
- Generate the code segments for the following actions. (04 marks)
 - To display employee details in the DataGridView. (03 marks)
 - To delete a record of employee by providing EmpID. (04 marks)
 - To search details of employee based on their EmpID. (03 marks)
 - To update employee information.

[Total 20 Marks]

- B. Write the code segment to do the following task when you press the "Compute" button.
- Calculate the Total Allowance, Deduction and Net Pay and display in the respective text box. (05 marks)
 - Display staff information in the list box as shown in the interface. (03 marks)
- C. Write the code segment to clear the form when press "Reset" Button. (03 marks)
- D. Give the code to close the form when you press "Exit" button. (01 marks)

[Total 20 Marks]

Question 05.

- Briefly explain the Class. What do you mean by Class in object-oriented programming? (02 marks)
- Differentiate sub procedure and function with examples. (04 marks)
- The following application is created using object-oriented concept.

Form9

Product

Product Name: Laptop

Price: 55000

Quantity: 3

Calculate

Amount: 165000

Handwritten notes:
 txtPname
 txtPrice
 txtQty
 txtAmount

Handwritten code:
 Public Class Product
 Dim /
 Public Product AS Integer
 Function calAmount()

Provide code segment for the following tasks.

- Give appropriate names for all text boxes in the form. (01 marks)
- Create a class named "Product" with name, price and quantity attributes. (03 marks)
- Initialize these attributes using parameterized constructor in the class. (03 marks)
- Generate function named "calAmount ()" which returns product of price and quantity in the class. (03 marks)
- Display amount in the text box when you click "Calculate" button by creating object and calling "calAmount()" function. (04 marks)

[Total 20 Marks]