



# THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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**MAIN EXAMINATION**

**SEPTEMBER –DECEMBER 2021**

**FACULTY OF SCIENCE**

**DEPARTMENT OF COMPUTER SCIENCE**

**REGULAR PROGRAMME**

**CMT/LIS 307: NET PROGRAMMING**

**Date: DECEMBER 2021**

**Duration: 2 Hours**

**INSTRUCTIONS: Answer Question ONE and any TWO Questions**

Q1. a) C# provides for automatic “boxing and unboxing” of primitive value types. Why is this potentially more efficient than simply eliminating primitive types and making everything an object? Explain **[6 Marks]**

b) You are connecting to a remote web service written in C# running on .NET through your local web browser. The web service behaves as a CGI program. Describe what is happening on the

- i. application level **[3 Marks]**
- ii. virtual machine level **[3 Marks]**
- iii. machine code level for both the client and server **[3 Marks]**

c) write a public static method called Swap that takes two strings as input by reference and exchanges their values. **[5 Marks]**

d) why is it that arrays in C# have nifty built-in methods like quicksort, but C++ arrays don't? Discuss **[5 Marks]**

e) Write a C# program when the code is compiled and executed, it produces the following result **[5 Marks]**

Monday: 1

Friday: 5

Q2. a) State an application that would be better to write in C++ than Java and give a brief rationale for your answer **[4 Marks]**

b) The following source code is my attempt to create a program that will sum all the integers in a file. Each line of the file contains a single integer, but some lines contain text. Identify errors and rewrite the code **[3 Marks]**

```
while ((inputline = infile.ReadLine()) != null)
{
    try
    {
        intvalue = Convert.ToInt32(inputline);
    }
    catch
    {
    }
    sum += intvalue;
}
```

Q3. a) Java also manipulates objects, such as Strings, by reference. Would your method, converted to Java, produce the same behavior as the C# program? Explain why or why not. **[4 Marks]**

b) Describe a situation where a property is more appropriate than a field or method. **[4 Marks]**

c) Differentiate between: **[4 Marks]**

- i) ApplicationException class and SystemException class
- ii) Sealed and abstract class

d) Using suitable example, write a snippet using while loop statement. **[5 Marks]**

e) C#.net, "garbage collection" is automatic. What does that mean and how might that affect my code? Explain. **[3 Marks]**

f) Outline any **THREE** application of using VB.Net **[3 Marks]**

Q4. a) In C# using Visual Studio .NET, you can drag a button to a form and change various properties. If you double-click the button or select the click event, Visual Studio will create a method for you that is invoked when the button is clicked,

e.g.: private void myButton\_Click (object sender, System.EventArgs e) { }

i) What mechanism tells C# to invoke this method when the button is clicked?

Explain

**[4 Marks]**

ii) Explain any **THREE** challenges when implementing system applications using C#

**[6 Marks]**

b) Given that mytable is attached to a database, what does this code do? Explain

**[4 Marks]**

For each (DataRow dataRow in mytable.Rows) {

comboBox1.Items.Add ( dataRow["name"] ); }

c) Write short note on the following:

**[6 Marks]**

i) Encapsulation

ii) Enumeration

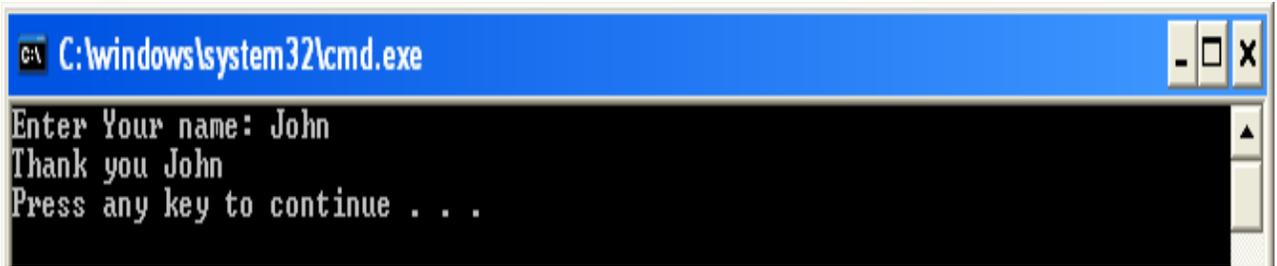
iii) Struct

Q5.

a) Create the program to enable the user to create as many objects as they would like. The program should be able to ask the user if they would like to capture another transaction before exiting and act accordingly **[5 Marks]**

b) Apply a program that prompts the user for the details of an item, i.e. Name, Quantity, and Cost per item and then calculates the total and displays these detail on a screen **[5 Marks]**

c) Write a code snippet that would display the following output from command window: **[5 Marks]**



```
C:\windows\system32\cmd.exe
Enter Your name: John
Thank you John
Press any key to continue . . .
```

d) Create a program that asks the user for an item cost and quantity. The program should then display the total on a message box and ask the user if they would like to do another transaction on the same dialog box. **[5 Marks]**

DTE DEC 2021

**\*END\***