Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2022/2023

COURSE NAME	:	DOTNET PROGRAMMING
COURSE CODE	:	BIE 33103
PROGRAMME CODE	:	BIP
EXAMINATION DATE	:	FEBRUARY 2023
DURATION	:	3 HOURS
INSTRUCTIONS	:	1. ANSWER **ALL** QUESTIONS 2. THIS FINAL EXAMINATION IS CONDUCTED VIA **CLOSED BOOK** 3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF **SIX (6)** PAGES

Q1 **(a)** A Pronic number is a number of the product of two consecutive integers, that is, a number of the form `n(n+1)`. For example, `6` is found by multiplying two consecutive integers `2` and `3` `(6 = 2 * 3)`, and 56 is found by multiplying `7` and `8` `(56 = 7 * 8)`.

(i) Write a `<body></body>` code segment to produce the result shown in **Figure Q1(i).**

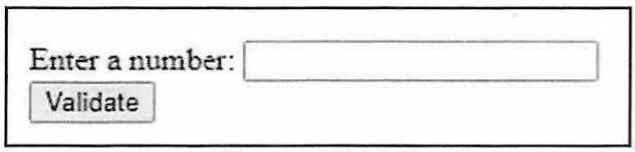

Figure Q1(a)(i)

(2 marks)

(ii) Write the C# code behind segment to accept user input from the textbox as for the Pronic number, create a function to determine the inputted Pronic numbers, and display the validity after user clicks the "Validate" button based on **Figure Q1(a)(i)**.

(5 marks)

(iii) Write a function in C# code behind to recursively obtain the Pronic numbers, based on the length of the Pronic series that the user inputs using **Figure Q1(a)(ii)** as a guide.

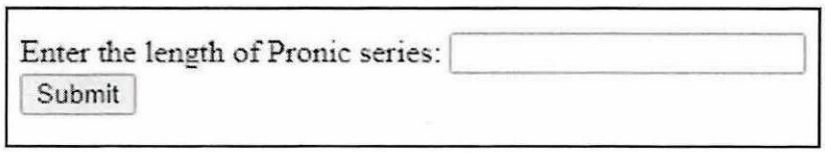

Figure Q1(a)(ii)

(3 marks)

(b) Write a C# code behind to produce a triangle shape made of the * symbol with the number of rows determined by user input, after the user clicks the "Triangle" button as in the **Figure Q1(b)**. Consider the following:

- The textbox ID is `Num_Rows`
- The button ID is `Triangle`

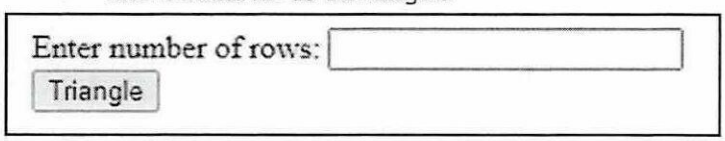

Figure Q1(b)

(10 marks)

Q2 Write a complete C# program based on the scenario in **Figure Q2**.

D'garden sweet home wants to create a web application that employees can use to bill tenants. The app produces a form that requests user to enter tenant's name and their room type; if either the tenant's name or the room type isn't specified, an error message will display. Users can choose to rent either master room, medium room or single room, each of them costing RM900, RM700, and RM500 respectively. Afterwards, user will click the Calculate button, which displays the total price the customer needs to pay. If the total price is RM1000 and above, there will be a 10% discount applied.

Figure Q2

(14 marks)

Q3 **(a)** Threads are units of processes that are responsible for the application code execution. By setting different execution paths or threads, complicated and time consuming operations can be multi-tasked or given priorities, with each thread performing a particular job.

(i) Write the output for the program as in **Figure Q3(a)**.

```
using System;
using System.Threading;

namespace Q3a_
{
    2 references
    public partial class Thread1 : System.Web.UI.Page
    {
        1 reference
        public void Proc_Thread(){
            for(int i = 0; i <= 6; i++) {
                if (i % 2 == 0) {
                    Response.Write("This is even = " + i + "</br>");
                }

                else {
                    Response.Write("This is odd </br>");
                }
                Thread.Sleep(1000);
            }
        }
        0 references
        protected void Page_Load(object sender, EventArgs e){
            Thread thr1 = new Thread(Proc_Thread);
            thr1.Start();
            Response.Write("Start the count</br>");
            for (int a = 1; a < 5; a++)
            {
                Response.Write("Going On</br>");
            }
            thr1.Join();
        }
    }
}
```

Figure Q3(a)

(5 marks)

(ii) Explain the process that occurs when the code is executed as in **Figure Q3(b)**.

```
using System;
using System.Threading;
namespace Q3a_
{
    2 references
    public partial class Thread2 : System.Web.UI.Page
    {
        bool stopped = false;
        0 references
        protected void Page_Load(object sender, EventArgs e)
        {
            Thread thr1 = new Thread(new ThreadStart(() =>
            {
                while (!stopped){
                    Response.Write("Running...");
                    Thread.Sleep(1000);}
            }));
            Thread thr2 = new Thread(ProcThread2);
            thr1.Start();
            thr2.Start();
            thr2.IsBackground = true;
            thr1.Join();
        }

        1 reference
        public void ProcThread2(){
                Response.Write("I am number 1");
        }
        0 references
        protected void Button1_Click(object sender, EventArgs e)
        {
            stopped = true;
            Response.Write("stop");
        }
    }
}
```

Figure Q3(b)

(5 marks)

(b) Write the C# program to save a user's input into a database as in **Figure Q3(c)**. Assume that **Table Q3** has been created in the database.

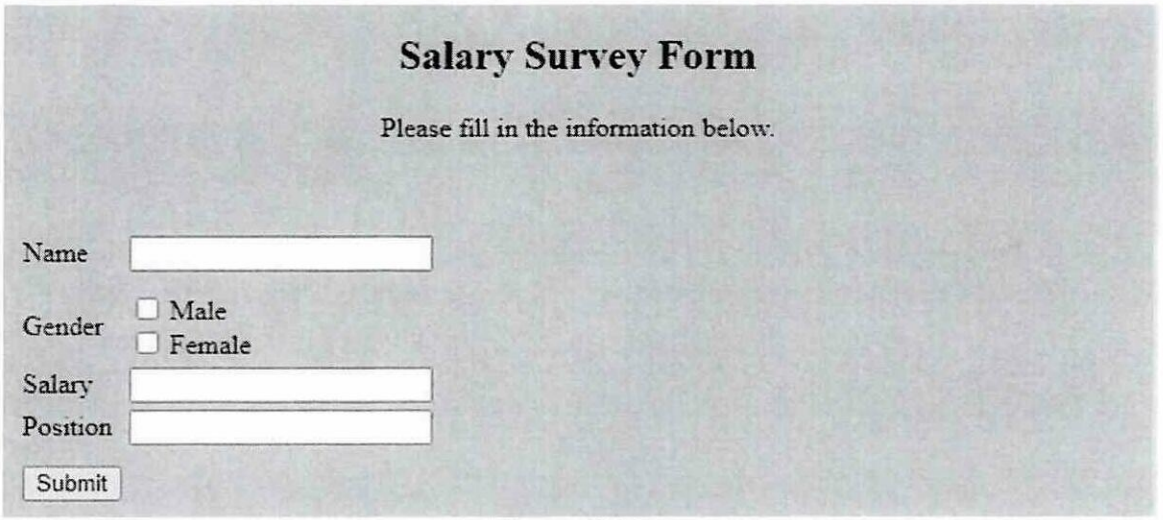

Figure Q3(c)

Table Q3

ColumnName	DataType
name	varchar (30)
gender	tinyint (1)
salary	float
position	varchar (50)

(20 marks)

Q4 Write ASP code segment in the `<form> </form>` to produce the output in **Figure Q4**. Consider the following information:

- The list for car types are Sports Car, Minivan, Pickup Truck, and Hybrid/Electric
- For the validation expression for booking ID, the total characters allowed for it is six, with the first two characters being a letter between a to z, and the rest are integers (0-9)
- Use the validation expression `"\w+([-+.']\w+)*@\w+([-.]\w+)*\.\w+([-.]\w+)*"` to validate email address pattern
- Use the validation expression `"\(^[0-9]{10}$)|(^\+[0-9]{2}\s+[0-9]{2}[0-9]{8}$)|(^[0-9]{3}-[0-9]{4}-[0-9]{4}$)"` to validate phone number

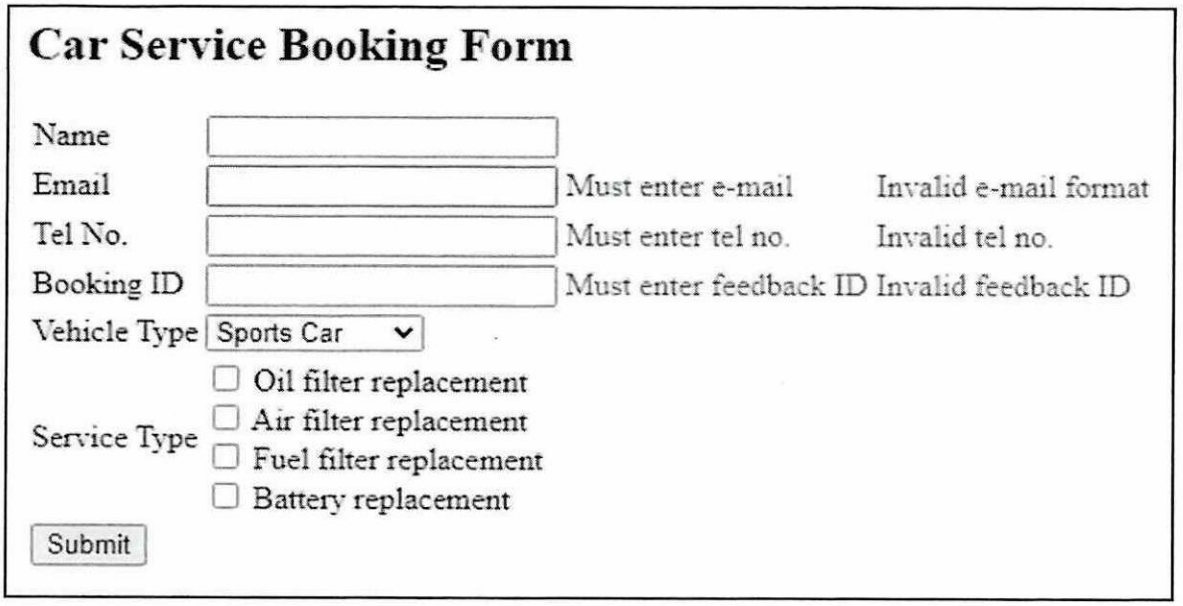

Figure Q4

(16 marks)

- END OF QUESTIONS –