IVE Information Technology

Information & Communications Technology

Programme Board

HIGHER DIPLOMA IN
SOFTWARE ENGINEERING
(IT114105)

MODULE TITLE:

HUMAN COMPUTER INTERACTION & GRAPHICAL USER INTERFACE PROGRAMMING

MODULE CODE: **ITP4506**

Instructions:

(a) This paper has a total of ELEVEN pages including the covering page.

(b) This paper contains TWO Sections.

(c) Section A is worth 55 marks and Section B is worth 45 marks.

(d) Section A contains SIX questions. Answer ALL questions in Section A.

(e) Section B contains THREE questions. Answer ALL questions in Section B. Each question is worth 15 marks.

Note: The result of this assessment will not be counted if you do not meet the minimum attendance requirement (if any) governed by the general academic regulations of your programme/course unless approval of the campus principal has been granted.

**SEMESTER 1
MAIN EXAMINATION**

**5 JANUARY, 2024
1:30 PM TO 3:30 PM (2 hours)**

This paper contains <u>TWO</u> sections.

Section A (55 marks)
This section contains SIX questions.
Answer <u>ALL</u> questions.

A1   (a)   In a WPF Project, you are required to produce a background area in *pink* colour with size 800px (width) x 300px (height). Then add a circle within the area which has the following properties:

Left margin: 100	Fill colour: Green
Top margin: 30	Outline colour: Black
Radius: 100	Outline width: 5

The following XAML code are written to satisfy the above requirements:

```
<Window x:Class="P1.MainWindow"
 xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
 xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
   ……………
 Title="WPF Project"          (i)          >

               (ii)

</Window>
```

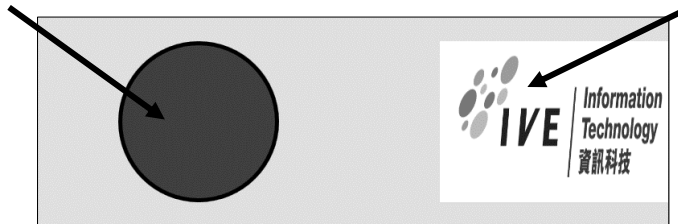Write down the contents of **(i)** and **(ii)** in your answer book.

[6 marks]

(b)   In addition, you are required to add a picture with the filename **"iveit.png"** on the right-hand side of the background area created in **A1 part (a)** above. The top margin of the picture is the same as that of the circle in **A1 part (a)**. The width and height to display the picture are 300px (width) x 200px (height). Fill up the picture area without keeping the aspect ratio. Result is similar to **Fig A1**.

Write appropriate XAML code for the above requirements.

[4 marks]

A1 part (a)
circle

A1 part (b)
picture named
"iveit.png"

Fig A1

A2   The following script written within the HTML \<canvas\> element could produce the diagram as shown in **Fig A2**. Size of the canvas is 300px wide and 500px high.

Write down the missing code for **(a) – (d)** .   **[6 marks]**

```
var c=document.getElementById("myCanvas");
var ctx=c.getContext("2d");

// Create upper circle
   ctx.fillStyle="pink";
   ctx.beginPath();
   ctx.arc(           (a)           );
   ctx.fill();

// Add Text to circle
// Position of the Text is (100,150)
   ctx.fillStyle="black";
   ctx.font="40px Arial";
   ctx.fillText(        (b)        );

// Create lower triangle
   ctx.beginPath();
   ctx.moveTo(150,300);
   ctx.lineTo(    (c)    );
   ctx.lineTo(    (d)    );
   ctx.closePath();
   ctx.fillStyle="red";
   ctx.fill();
```
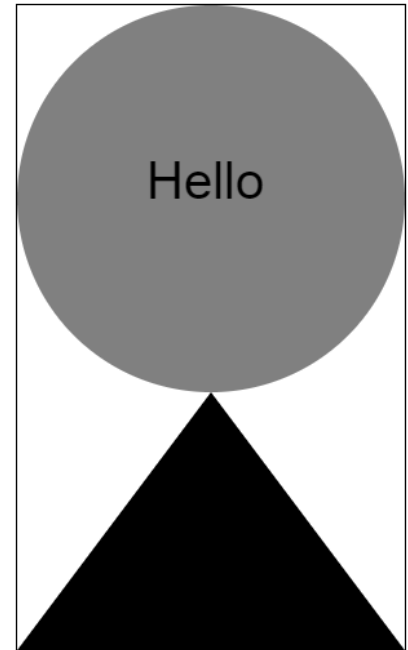
Fig A2

A3   The HTML5 code below could calculate the total amount of food ordered. Three choices are provided in the datalist as shown in **Fig A3-1**. Delivery Date is decided by the user as shown in **Fig A3-2.** The possible choice for date is pre-set to **5 Jan 2024 – 5 Feb 2024**.

Order Details

Price of your choice: $ [▼]

68
Lunch: Set A

74
Lunch: Set B

85
Lunch: Set C

Quantity: [0]

Total Amount = $

Delivery Date: [mm / dd /]

Fig A3-1

Order Details

Price of your choice: $ [68]

Quantity: [4]

Total Amount = $272

Delivery Date: [mm / dd / 2024]

January 2024 ▾					↑	↓
Su	Mo	Tu	We	Th	Fr	Sa
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

Fig A3-2

```
<h3>Order Details</h3>
<form oninput="              (a)              ">
<label>Price of your choice: $</label>
<input list="   (b)   " type="text" id="food" />
<p>Quantity: <input type="number" id="qty" value="0"
min="0" max="100"></p>
Total Amount = $<output name="x" ></output>
</form>
<datalist id="foodlist">
<option label="Lunch: Set A " value="   (c)   " />
<option label="Lunch: Set B " value="   (d)   " />
<option label="Lunch: Set C " value="   (e)   " />
</datalist>
<p>Delivery Date: <input type="   (f)   "
min="   (g)   "  max="   (h)   "></p>
```

Write down the contents of **(a)** – **(h)**.   **[9 marks]**

A4   An in-flight meal selection page for IVE Airline is designed with layout similar
to **Fig A4-1**. There are three types of meal can be chosen: beef, pork and vegan.
When a type of meal is selected, the image of the meal (i.e. **Beef.jpg**, **Pork.jpg**
or **Vegan.jpg**) will be displayed in the square area, and a message will also be
displayed below the image to inform users about their selections, where the user
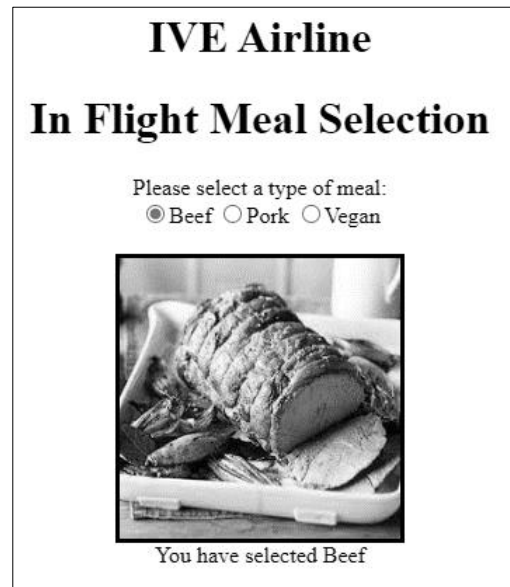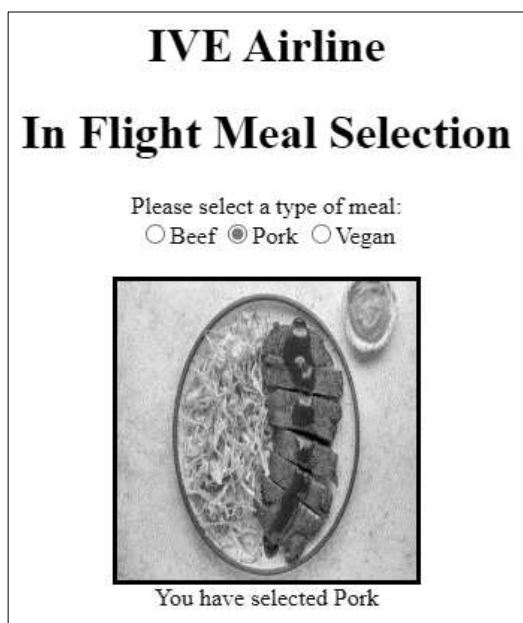interfaces look like **Fig A4-2, Fig A4-3 and Fig A4-4**.

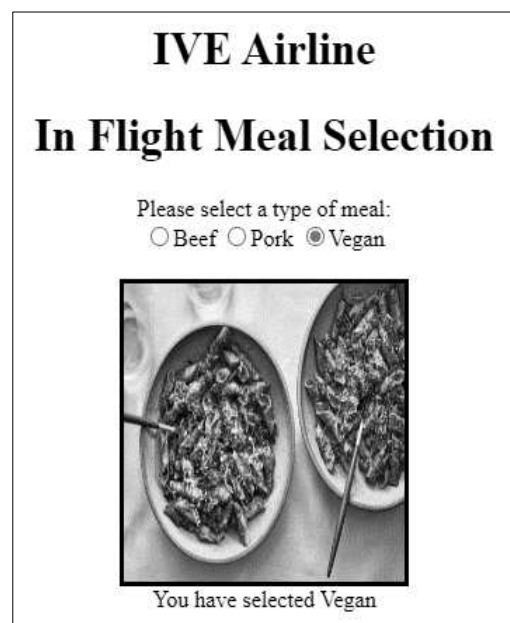**Fig A4-1**

Fig A4-2

Fig A4-3

Fig A4-4

(A4 continues in next page)

(A4 continues from previous page)

Major source code of the webpage is given below:

```
$(document).ready(function(){

        *** Complete the missing jQuery code here ***

});
</script>
</head>
<body>
<center><h1>IVE Airline</h1></center>
<center><h1>In Flight Meal Selection</h1></center>
<center><label>Please select a type of meal:</label><br>
<input type="radio" name="radio" value="Beef">Beef
<input type="radio" name="radio" value="Pork">Pork
<input type="radio" name="radio" value="Vegan">Vegan
</center>
<br/>
<center>
<div style = "width:200px; height:200px; background:Grey;
        border:black 3px solid">
<img id="myimg"  src="landing.jpg" width="200" height="200"
        alt="Sample image" />
</div>
<center><div id="message"></div></center>
</body>
```

Complete the missing jQuery code above in your answer book to construct the page for IVE Airline's in-flight meal selection.

[10 marks]

A5 A webpage using jQuery is written to show the food ordered by customer. When loaded, the layout is shown in **Fig A5-1**. Three button functions are provided:

Load Data: load data from **food_data.json** and are presented as shown in **Fig A5-2**.

Move Down: The table will move 100px downwards within 1 second.

Move Right: The table will move to the right by 100px within 1.5 seconds.

| Load Data | Move Down | Move Right |

Fig A5-1

| Load Data | Move Down | Move Right |

Food_ID	Name	Price	Delivery
A123	Pizza	180	☑
A456	Soup	120	☐
B888	Cake	68	☑
B999	Coke	18	☐

Fig A5-2

Below is the jQuery code of the webpage:

Given IDs of the buttons **Move Down** and **Move Right** are "down" and "right".

```
$(document).ready(function() {
   $("#driver").click(function(event){
      $.getJSON(    (a)    , function(jd) {
        $('#stage').html('<table><tr><th>Food_ID</th>
           <th>Name</th> <th>Price</th>
           <th>Delivery</th><tr>');
         for (var i = 0; i < jd.name.length; i++)  {
           var str = "<tr><td>" +     (b)     +
                      "</td><td>" +     (c)     +
                      "</td><td>" +     (d)      + "</td><td>";
           if (    (e)     == 1 )
             str = str + "<input    (f)
                             disabled>";
           else
             str = str + "<input type='checkbox'
                             disabled>";
           $("#stage").append(str + "</td></tr>");
         };
         $('#stage').append('</table>');
      });
   });
   $("#down").click(function(event){
       $("#stage").animate(        (g)         );
   });
   $("#right").click(function(event){
       $("#stage").animate(        (h)         );
   });
});
```

(A5 continues in next page)

(A5 continues from previous page)

Given the contents of **food_data.json**:

```
{
"foodid": ["A123","A456","B888","B999"],
"name": ["Pizza","Soup","Cake","Coke"],
"price": [180,120,68,18],
"delivery": [1,0,1,0]
}
```

Write the contents of **(a)** – **(h)** in your answer book.   **[10 marks]**

A6   (a) *Make error reports clear* is one of the important components of Usability. It can help user to recognize and diagnose errors effectively. Suggest THREE ways to make error reports clear.

[6 marks]

(b) What is the difference between Monochromatic colour scheme and Analogous colour scheme?

[4 marks]

*** END OF Section A ***

Section B (45 marks)

This section contains <u>THREE</u> questions.

Answer <u>ALL</u> questions in this section.

B1 You are requested to design a membership renewal form written in C# for an animal adoption centre. You should include ALL the information below in your design.

- Logo of animal adoption centre

- Form Title: Membership Renewal Form
- 6-digits Member Number (e.g. 237510)
- Renewal Plan Fee: 1 year ($300), 2 year ($500) or Life-term ($1500)
- Title: Mr, Mrs or Ms
- Surname and Given Name
- Contact No. and Email Address
- Other Information: How many pets do you have now?
- Declaration
    1. I declare that the information given in this form is true and complete.
    2. I have read and accepted the terms and conditions as regards to the membership applied for.
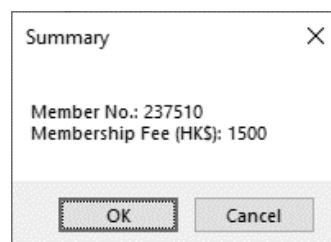- Reset and Submit buttons

(a) Using the best controls from the user's perspective, sketch and label the above form in your answer book.

[10 marks]

(b) After all data has been inputted and selected, the user clicks the **Submit** button, and then a confirmation message in a message box similar to **Fig B1** is displayed. Assume the membership fee is stored in a variable named mFee after user selects the renewal plan. Write a piece of C# code for the click event of the **Submit** button.

[5 marks]

*<u>Remarks:</u> if the information is retrieved from specific control, you should name those control(s) in **B1 part (a)** as well.*

Fig B1

B2   (a)   Name **FOUR** types of Ambiguous Organizational schemes.   **[2 marks]**

 (b)   Describe ANY **TWO** types of Organizational Structures.   **[4 marks]**

 (c)   Name **ANY TWO** principles of visual organization and briefly describe how they are applied in the webpage shown in **Fig B2**.

[4 marks]

Fig B2

(d) Identify **THREE** navigational elements of different types found in **Fig B2**.

[3 marks]

(e) State **TWO** benefits of using meaningful icons rather than words in web design.

[2 marks]

B3   (a)   Consider the "Tap and Go with e-payment" while taking the MTR (except Airport Express stations) in Hong Kong, and define a Hierarchical Task Analysis (HTA) notation with a chart for the process.

Requirements and Hints:

- There are TWO e-payment methods to take MTR in Hong Kong: Octopus and QR Code payment. You need to define the HTA notation with the QR Code method;
- Assume the passenger has already applied with the QR Code Ticket on at least one of the e-payment app;
- The tasks for all e-payment apps are the same. However, you need to define the HTA notation with one of the payment methods: AlipayHK EasyGo, UnionPay App MTR Transit QR Code, Tencent Transit QR Code or MTR Mobile QR Code; (For example, if you decide to define the QR Code payment by Tencent Transit QR Code, the notation should be "Tap and Go with e-payment" by Tencent Transit QR Code)
- Tasks should be included:
  - Login to the e-payment app
  - Select the applicable QR Code
  - Select payment type (Children or Elderly, Adult by default)
  - Select travel in first class on East Rail Line
  - Queue up at the designated gate to enter or exit the platform;
  - Scan the QR Code at the QR Reader gates;
  - Take the MTR (Hints: Get to the platform, ride on the train and exit the destination station.)
  - Ignore any notation about line exchange
- The QR Code will automatically show up once you log in the e-payment app after entering the gate and before exiting the gate;
- The notation does not consider top-up failed cases.

[13 marks]

(b)   Provide a comparison between bitmapped and vector fonts.

[2 marks]

*** END OF Section B ***

***** END OF PAPER *****