Before reading past below instructions:

1. Create an account in Github using your name in this format: lastname\_firstname\_section
2. Request access to [Lycevm<3Alabang · GitHub](https://github.com/Lycevm-3Alabang)
3. Upload this file ON YOUR GITHUB ACCOUNT with answer under the title / file name : E3\_Assessment\_\_[Section]\_[LastnameFirstName]  
   example: E3\_Assessment\_\_BSCS32E1\_AlamoNinoFrancisco

Help: [Get started with GitHub documentation - GitHub Docs](https://docs.github.com/en/get-started)

**Sample Assessment for Introduction to Programming**

This assessment is designed to evaluate your understanding of basic programming concepts in C#, HTML, CSS, and JavaScript.

Instructions: Read each question carefully and provide complete and clear answers. Avoid multiple-choice format responses. Focus on demonstrating your understanding through code, explanations, and discussions.

**Part 1: C# (30 points)**

**(10 points) Write a C# program that calculates the area of a triangle given its base and height. Include user input for both values and display the calculated area.**

A screenshot of a computer

Description automatically generated

**(10 points) Declare an array of 5 integers and fill it with values based on a user-defined formula (e.g., n^2). Then, print the largest element in the array.**

using System;

class Program

{

static void Main()

{

// Declare and initialize an array of 5 integers

int[] array = { 1, 4, 9, 16, 25 };

// Print the array

Console.WriteLine("Array elements:");

foreach (int num in array)

{

Console.Write(num + " ");

}

Console.WriteLine();

// Find and print the largest element in the array

int max = array[0];

foreach (int num in array)

{

if (num > max)

{

max = num;

}

}

Console.WriteLine("Largest element in the array: " + max);

}

}

**A screenshot of a computer

Description automatically generated**

**(10 points) Implement a simple for loop that iterates from 1 to 10 and prints each number along with its square root.**

**A screenshot of a computer

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**Part 2: HTML, CSS, and JavaScript (30 points)**

**HTML (10 points):** You are provided with the following incomplete HTML code snippet:

**HTML**

**<!DOCTYPE html>**

**<html>**

**<head>**

**<title>My Website</title>**

**</head>**

**<body>**

**<h1>Welcome to...</h1>**

**<p>This is a paragraph...</p>**

**<ul>**

**<li>Item 1</li>**

**<li>Item 2</li>**

**</ul>**

**</body>**

**</html>**

Complete the code snippet by adding the following elements:

An image within the <body> tag with a relevant src attribute.

An ordered list (<ol>) with three items.

A hyperlink within a <p> tag that points to an external website.

A CSS styling rule using an inline style attribute to change the font color of the <h3> heading.

A pig standing in grass

Description automatically generatedA piglet in the grass

Description automatically generated

<!DOCTYPE html>

<html>

<head>

  <title>My Website</title>

</head>

<body>

  <h1>WELCOME TO MY WEBSITE</h1>

  <p>This is a paragraph...</p>

  <ul>

  <img src="images/Cute .jpg" alt="cute image" >

  <ol>

    <li>CHOCOLATE</li>

    <li>UBE</li>

    <li>CHEESE</li>

  </ol>

  <p>

    Visit our <a href="https://www.bing.com/images/search?view=detailV2&ccid=Q3HQFicQ&id=0C1F4466C607001E8AE6515C9DEB625D5324D52E&thid=OIP.Q3HQFicQvSRVUSnA63D7YgHaE8&mediaurl=https%3A%2F%2Fstatic.promediateknologi.id%2Fcrop%2F0x0%3A0x0%2F750x500%2Fwebp%2Fphoto%2Fp1%2F302%2F2023%2F09%2F01%2FFOTO-CMS-2023-09-01T191607737-3487054984.png&exph=500&expw=750&q=lee+bada&simid=608038924493985151&form=IRPRST&ck=EB024F0958201B481DC47CDBE8529A11&selectedindex=18&itb=0&ajaxhist=0&ajaxserp=0&vt=0&sim=11">website</a>.

  </p>

  <h3 style="color: rgb(59, 59, 77);">THANK YOU FOR VISITING MY WEBSITE</h3>

</body>

</html>

CSS (10 points): Create a CSS stylesheet that defines the following styles:

Change the background color of the body element to light blue.

Apply a padding of 20px to all headings (h1, h2, h3).

Set the font size of the <p> tag to 14px.

Make the list items (li) have a bullet point style instead of the default numbers.

A blue square with white lines

Description automatically generated with medium confidence

A screen shot of a computer

Description automatically generated

A screenshot of a computer program

Description automatically generated

**JavaScript (10 points):** Write a JavaScript function that takes a number as input and returns a string indicating whether the number is even or odd. Then, add a button to your HTML page that, when clicked, calls this function and displays the result (even or odd) in a paragraph element below the button.

**A screenshot of a computer

Description automatically generated**

**A white background with black dots

Description automatically generated**

**A screen shot of a computer program

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**Part 3: Essay Question (40 points)**

Discuss the importance of object-oriented programming (OOP) concepts in software development. Explain the key principles of OOP (encapsulation, inheritance, polymorphism, abstraction) and provide examples of how they can be used to create more efficient, maintainable, and reusable code. Include real-world scenarios or cases where OOP is particularly valuable.

Object-oriented programming (OOP) principles play a critical role in software development by improving code structure, supporting code reuse and management, enabling abstract thinking and polymorphism, and ultimately enhancing the overall quality and productivity of software development. OOP achieves these benefits through concepts like modularity, encapsulation, inheritance, polymorphism, and abstraction, empowering developers to create scalable, adaptable, and easy-to-maintain software solutions.

Encapsulation - involves bundling data and methods within a class, hiding the internal state of objects, and exposing only necessary functionalities through well-defined interfaces. For instance, in a Car class, attributes like speed and fuel\_level, along with methods like accelerate() and refuel(), are encapsulated, protecting the car's internal state. This ensures that the internal workings of the car are shielded from direct external manipulation.

Inheritance - is a mechanism in which a subclass inherits attributes and behaviors from a superclass, facilitating code reuse and establishing a class hierarchy. This allows the subclass to access and utilize the features of the superclass, promoting efficient code organization and reducing redundancy.

Polymorphism - enables objects from different classes to be treated as objects of a shared superclass, offering flexibility in design and implementation. It allows objects to respond uniquely to the same method call based on their specific class, enhancing code versatility and adaptability.

Abstraction - involves concentrating on essential features while concealing unnecessary details. Developers achieve this by creating abstract classes and interfaces that define methods without specifying their implementation. For example, an abstract class Animal with methods like move() and makeSound() outlines common behaviors for all animals without detailing how each animal moves or produces sound. Concrete subclasses like Dog and Bird can then customize these methods, enabling flexibility and code reuse while keeping implementation details hidden within each subclass.

Points Distribution:

Each part carries equal weight (30 points).

Code clarity, functionality, and explanations will be considered in grading.

The essay question focuses on understanding and application of OOP concepts.