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.

**Console.WriteLine("Triangle Area Calculator");**

**Console.WriteLine("Enter Value of Base: ");**

**double tBase = Convert.ToDouble(Console.ReadLine());**

**Console.WriteLine("Enter Value of Height: ");**

**double tHeight = Convert.ToDouble(Console.ReadLine());**

**double tArea = (tBase\*tHeight)/2;**

**Console.WriteLine("The Area of the Triangle is "+tArea);**

**(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.**

**int[] Arr = new int[5];**

**int largestArray = 0;**

**for(int i=0;i<5;i++){**

**Arr[i]= i\*2;**

**if(largestArray < Arr[i]){**

**largestArray = Arr[i];**

**}**

**}**

**Console.WriteLine("The largest number in the Array is "+largestArray);**

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

**for(int i=1; i<=10;i++){**

**double squareRoot = Math.Sqrt(i);**

**Console.WriteLine("Number "+i +" Square Root is " +squareRoot);**

**}**

**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.

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.

**HTML**

**<!DOCTYPE html>**

**<html>**

**<head>**

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

**</head>**

**<body>**

**<img src=”img.jpg”>**

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

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

**<ul>**

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

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

**</ul>**

**<ol>**

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

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

**<li>Item 3</li>**

**</ol>**

**<p>Click this <a href=”externalwebsite.com”>External Website</a> </p>**

**</body>**

**<h3 style="color: red;">Heading</h3>**

**</html>**

**CSS**

**body {**

**background-color: lightblue;**

**}**

**h1, h2, h3 {**

**padding: 20px;**

**}**

**p {**

**font-size: 14px;**

**}**

**li {**

**list-style-type: disc; /\* Bullet point style \*/**

**}**

**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.

**<html>**

**<head>**

**</head>**

**<body>**

**<button onclick="oddEven()">Odd or Even</button>**

**<p id="result"></p>**

**<script>**

**function oddEven() {**

**var number = parseInt(prompt("Enter a number:"));**

**var text = document.getElementById("result");**

**if (number % 2 === 0) {**

**text.textContent = number + " is even.";**

**}**

**else {**

**text.textContent = number + " is odd.";**

**}**

**}**

**</script>**

**</body>**

**</html>**

**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.

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.

**Encapsulation** is a technique used to hide data from direct access

**Inheritance** inherits attributes and methods from one class to another. Superclass is what you call the class where subclass will inherit the attributes and methods. Superclass and subclass analogy is like the parent and the children, and the children can do anything the parent can do but not vice versa.

**Polymorphism** is a technique that utilizes inheritance to create one class and make several classes inherit from that class so it can take many forms. Example in game you make an enemy and make different variants like mob type enemy, mid-boss type enemy, boss type enemy, hidden-boss type enemy etc.

**Abstraction** is a technique that hides certain details and only shows the important information.