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.

using System;

class Program

{

static void Main(string[] args)

{

// Prompt the user to enter the base of the triangle

Console.Write("Enter the base of the triangle: ");

double baseLength = Convert.ToDouble(Console.ReadLine());

// Prompt the user to enter the height of the triangle

Console.Write("Enter the height of the triangle: ");

double height = Convert.ToDouble(Console.ReadLine());

// Calculate the area of the triangle using the formula: area = 0.5 \* base \* height

double area = 0.5 \* baseLength \* height;

// Display the calculated area

Console.WriteLine("The area of the triangle is: " + area);

}

}

**(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(string[] args)

{

// Declare an array of 5 integers

int[] numbers = new int[5];

// Fill the array with values based on the user-defined formula (n^2)

Console.WriteLine("Enter the base value for the formula (n^2): ");

int baseValue = Convert.ToInt32(Console.ReadLine());

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

{

numbers[i] = (i + baseValue) \* (i + baseValue); // n^2 formula

}

// Print the array elements

Console.WriteLine("Array elements:");

foreach (int num in numbers)

{

Console.WriteLine(num);

}

// Find and print the largest element in the array

int max = numbers[0];

for (int i = 1; i < numbers.Length; i++)

{

if (numbers[i] > max)

{

max = numbers[i];

}

}

Console.WriteLine("The largest element in the array is: " + max);

}

}

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

using System;

class Program

{

static void Main(string[] args)

{

// Iterate from 1 to 10

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

{

// Calculate the square root of the current number

double squareRoot = Math.Sqrt(i);

// Print the current number along with its square root

Console.WriteLine($"Number: {i}, Square Root: {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.

<!DOCTYPE html>

<html>

<head>

<title>My Website</title>

</head>

<body style="background-color: lightblue;">

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

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

<img src="image.jpg" alt="Description of the image">

<ul style="list-style-type: disc;">

<li>Item 1</li>

<li>Item 2</li>

<li>Item 3</li>

</ul>

<p>This is a <a href="https://example.com">link</a> to an external website.</p>

<h3 style="color: red; padding: 20px;">Heading 3</h3>

</body>

</html>

**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.

<!DOCTYPE html>

<html>

<head>

<title>Even/Odd Checker</title>

</head>

<body>

<button onclick="checkNumber()">Check Number</button>

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

<script>

function checkNumber() {

// Prompt user to enter a number

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

// Check if the number is even or odd

var result = (number % 2 === 0) ? "Even" : "Odd";

// Display the result in a paragraph element

document.getElementById("result").innerText = "The number is " + result + ".";

}

</script>

</body>

</html>

function checkNumber() {

// Prompt user to enter a number

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

// Check if the number is even or odd

var result = (number % 2 === 0) ? "Even" : "Odd";

// Display the result in a paragraph element

document.getElementById("result").innerText = "The number is " + result + ".";

}

**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) is a programming paradigm that emphasizes the use of objects to represent and manipulate data and their interactions within a system.

**Encapsulation** refers to the bundling of data and methods that operate on that data into a single unit, called a class.

**Inheritance** allows a class (subclass) to inherit properties and behaviors from another class (superclass).

**Polymorphism** allows objects of different classes to be treated as objects of a common superclass.

**Abstraction** involves hiding the implementation details of a class and exposing only the essential features to the outside world.

OOP concepts are invaluable in software development as they promote code organization, reusability, and maintainability.

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.