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Course, Year, & Section: BSIT 3-1N

Activity 4: Combined Operators Questions using Javascript

Instruction: Kindly read each number and show your code and output per questions.

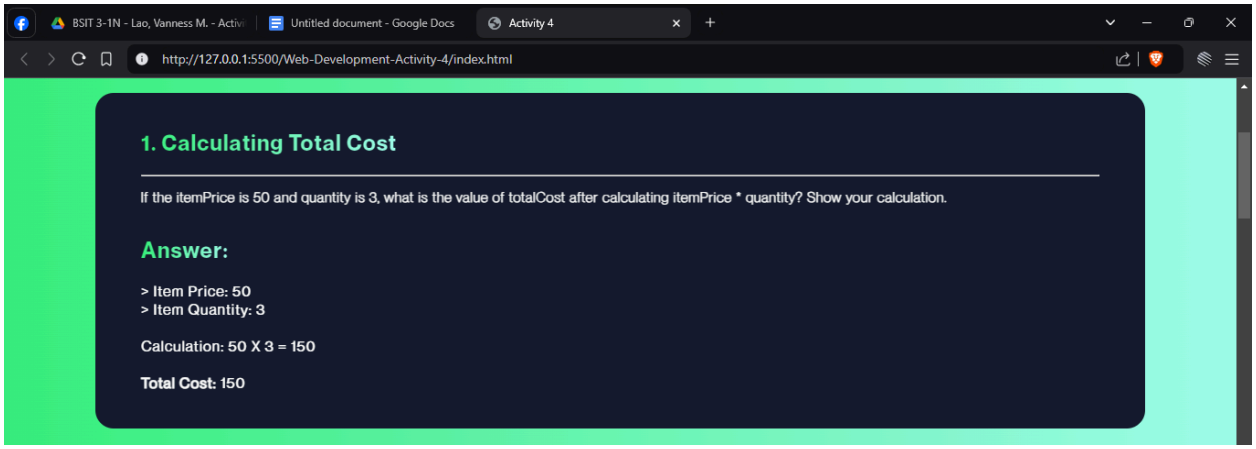
1. Calculating Total Cost:

- If the itemPrice is 50 and quantity is 3, what is the value of totalCost after calculating itemPrice * quantity? Show your calculation.

Source Code:

```
<!-- Question 1 -->
    <section class="question">
      <h1>
        1. Calculating Total Cost
      </h1>
      <hr>
      <h2>
        If the itemPrice is 50 and quantity is 3, what is the value of totalCost after calculating itemPrice * quantity? Show your calculation.
      </h2>
      <p>
        <br>
      </p>
      <h1>
        Answer:
      </h1>
      <script>
        var itemPrice = 50;
        var quantity = 3;
        var totalCost = itemPrice * quantity;
        document.write("> Item Price: " + itemPrice + "<br>");
        document.write("> Item Quantity: " + quantity + "<br><br>");
        document.write("Calculation: " + itemPrice + ' X ' + quantity + ' = ' + totalCost + "<br><br>");
        document.write("<b> Total Cost: </b>"+ totalCost);
      </script>
    </section>
```

Output:



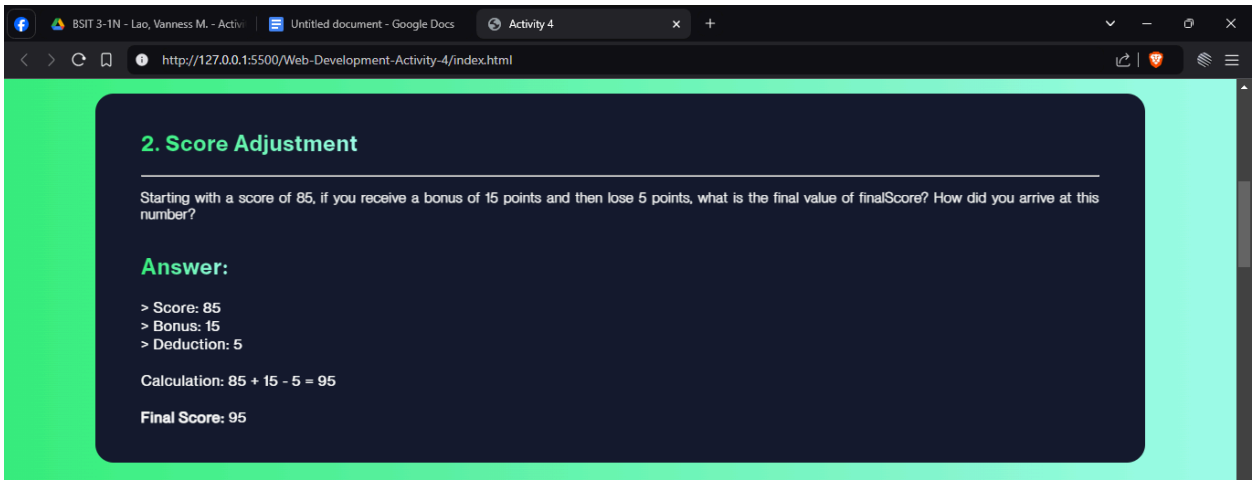
2. Score Adjustment:

- Starting with a score of 85, if you receive a bonus of 15 points and then lose 5 points, what is the final value of finalScore? How did you arrive at this number?

Source Code:

```
<!-- Question 2 -->
    <section class="question">
      <h1>
        2. Score Adjustment
      </h1>
      <hr>
      <h2>
        Starting with a score of 85, if you receive a bonus of 15 points and then lose 5 points,
        what is the final value of finalScore? How did you arrive at this number?
      </h2>
      <p>
        <br>
      </p>
      <h1>
        Answer:
      </h1>
      <script>
        var score = 85;
        var bonus = 15;
        var deduction = 5;
        var finalScore = (score + bonus) - deduction;
        document.write("> Score: " + score + "<br>");
        document.write("> Bonus: " + bonus + "<br>");
        document.write("> Deduction: " + deduction + "<br><br>");
        document.write("Calculation: " + score + ' + ' + bonus + ' - ' + deduction + ' = ' + finalScore + "<br><br>");
        document.write("<b> Final Score: </b>"+ finalScore);
      </script>
    </section>
```

Output:



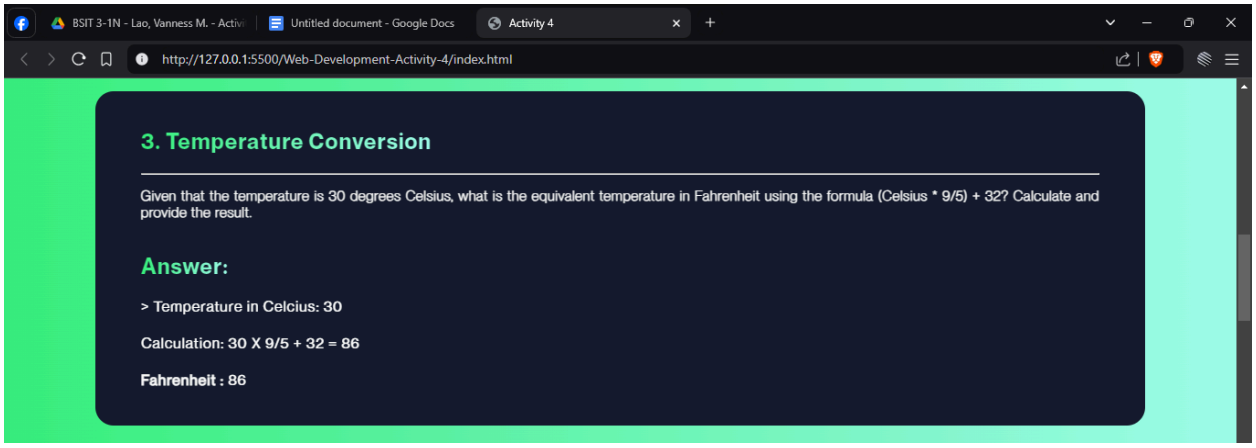
3. Temperature Conversion:

- Given that the temperature is 30 degrees Celsius, what is the equivalent temperature in Fahrenheit using the formula (Celsius * 9/5) + 32? Calculate and provide the result.

Source Code:

```
<!-- Question 3 -->
    <section class="question">
      <h1>
        3. Temperature Conversion
      </h1>
      <hr>
      <h2>
        Given that the temperature is 30 degrees Celsius, what is the equivalent temperature in
        Fahrenheit using the formula (Celsius * 9/5) + 32? Calculate and provide the result.
      </h2>
      <p>
        <br>
      </p>
      <h1>
        Answer:
      </h1>
      <script>
        var celcius = 30;
        var fahrenheit = (celcius * 9/5) + 32;
        document.write("> Temperature in Celcius: " + celcius + "<br><br>");
        document.write("Calculation: " + celcius + " X 9/5 + 32" + ' = ' + fahrenheit + "<br><br>");
        document.write("<b> Fahrenheit : </b>"+ fahrenheit);
      </script>
    </section>
```

Output:



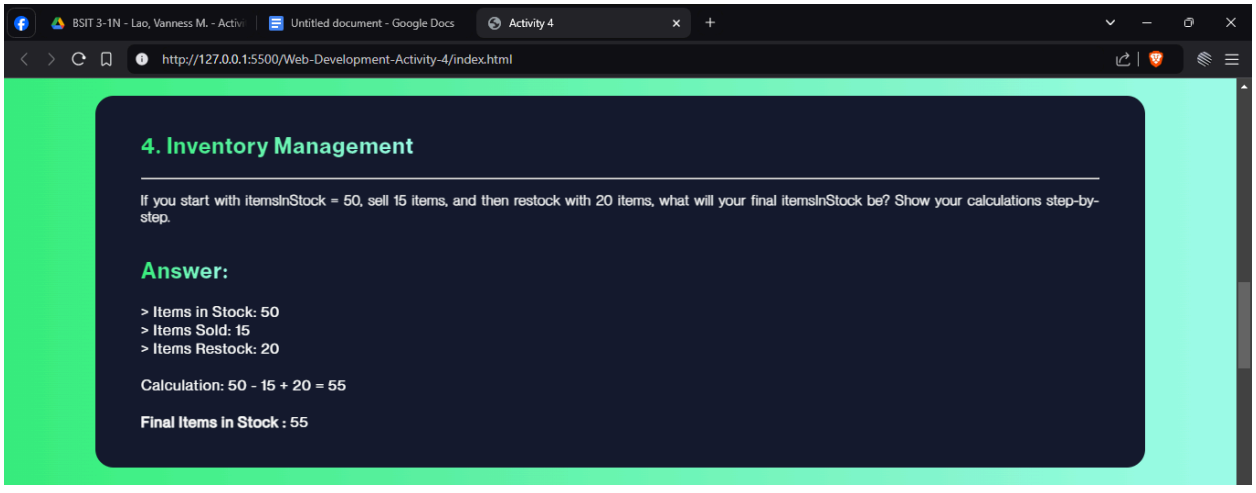
4. Inventory Management:

- If you start with itemsInStock = 50, sell 15 items, and then restock with 20 items, what will your final itemsInStock be? Show your calculations step-by-step.

Source Code:

```
<!-- Question 4 -->
    <section class="question">
      <h1>
        4. Inventory Management
      </h1>
      <hr>
      <h2>
        If you start with itemsInStock = 50, sell 15 items, and then restock with 20 items, what
        will your final itemsInStock be? Show your calculations step-by-step.
      </h2>
      <p>
        <br>
      </p>
      <h1>
        Answer:
      </h1>
      <script>
        var itemsInStock = 50;
        var sold = 15;
        var restock = 20;
        var finalItemsInStock = (itemsInStock - sold) + restock;
        document.write("> Items in Stock: " + itemsInStock + "<br>");
        document.write("> Items Sold: " + sold + "<br>");
        document.write("> Items Restock: " + restock + "<br><br>");
        document.write("Calculation: " + itemsInStock + ' - ' + sold + ' + ' + restock + ' = ' + finalItemsInStock + "<br><br>");
        document.write("<b> Final Items in Stock : </b>"+ finalItemsInStock);
      </script>
    </section>
```

Output:



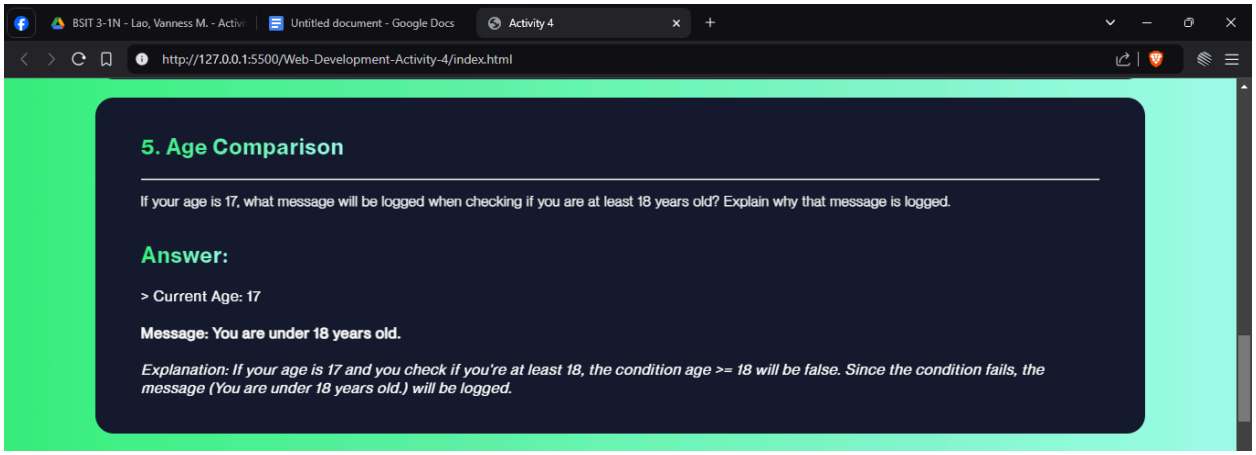
5. Age Comparison:

- If your age is 17, what message will be logged when checking if you are at least 18 years old? Explain why that message is logged.

Source Code:

```
<!-- Question 5 -->
    <section class="question">
      <h1>
        5. Age Comparison
      </h1>
      <hr>
      <h2>
        If your age is 17, what message will be logged when checking if you are at least 18 years
        old? Explain why that message is logged.
      </h2>
      <p>
        <br>
      </p>
      <h1>
        Answer:
      </h1>
      <script>
        var age = 17;
        document.write("> Current Age: " + age + "<br><br>");
        if (age >= 18) {
          document.write("Message: You are at least 18 years old.");
        } else {
          document.write("<b> Message: You are under 18 years old.</b>" + "<br><br>");
        }
        document.write("<i> Explanation: If your age is 17 and you check if you're at least 18, the condition age >= 18 will be false. Since the condition fails, the message (You are under 18 years old.) will be logged. </i>");
      </script>
    </section>
```

Output:



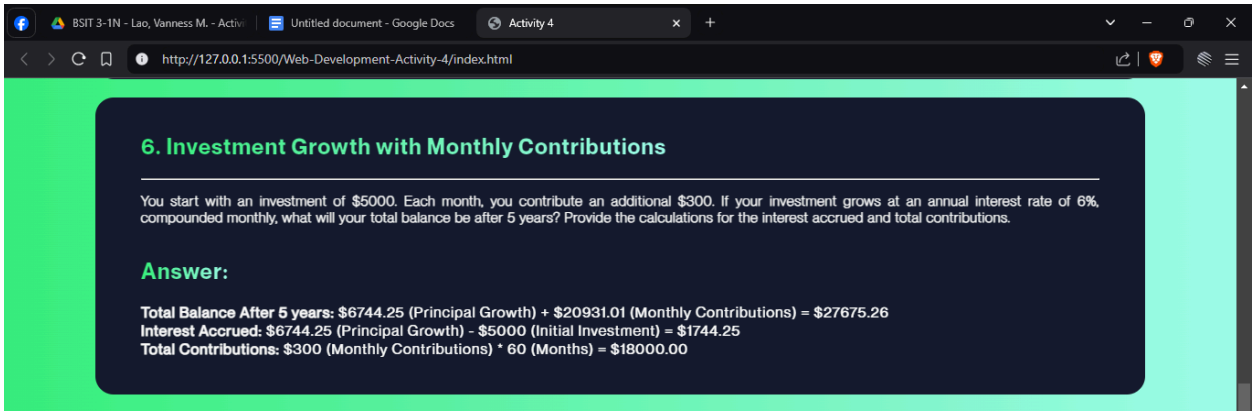
6. Investment Growth with Monthly Contributions:

- You start with an investment of $5000. Each month, you contribute an additional $300. If your investment grows at an annual interest rate of 6%, compounded monthly, what will your total balance be after 5 years? Provide the calculations for the interest accrued and total contributions.

Source Code:

```
<!-- Question 6 -->
    <section class="question">
      <h1>
        6. Investment Growth with Monthly Contributions
      </h1>
      <hr>
      <h2>
        You start with an investment of $5000. Each month, you contribute an additional $300.
        If your investment grows at an annual interest rate of 6%, compounded monthly, what
        will your total balance be after 5 years? Provide the calculations for the interest accrued
        and total contributions.
      </h2>
      <p>
        <br>
      </p>
      <h1>
        Answer:
      </h1>
      <script>
        let principal = 5000;
        let monthlyContribution = 300;
        let interestRate = 0.06;
        let months = 12 * 5;
        let futureValuePrincipal = principal * Math.pow(1 + interestRate / 12, months);
        let futureValueContributions = monthlyContribution * ((Math.pow(1 + interestRate / 12, months) - 1) / (interestRate / 12));
        let totalFutureValue = futureValuePrincipal + futureValueContributions;
        let interestAccrued = futureValuePrincipal - principal;
        let totalContributions = monthlyContribution * months;
        document.write(`<b> Total Balance After 5 years: </b>$${futureValuePrincipal.toFixed(2)} (Principal Growth) + $${futureValueContributions.toFixed(2)} (Monthly Contributions) = $${totalFutureValue.toFixed(2)}<br>`);
        document.write(`<b> Interest Accrued: </b>$${futureValuePrincipal.toFixed(2)} (Principal Growth) - $${principal} (Initial Investment) = $${interestAccrued.toFixed(2)}<br>`);
        document.write(`<b> Total Contributions: </b>$${monthlyContribution} (Monthly Contributions) * ${months} (Months) = $${totalContributions.toFixed(2)}<br>`);
      </script>
    </section>
```

Output:



7. Distance Traveled with Varying Speeds:

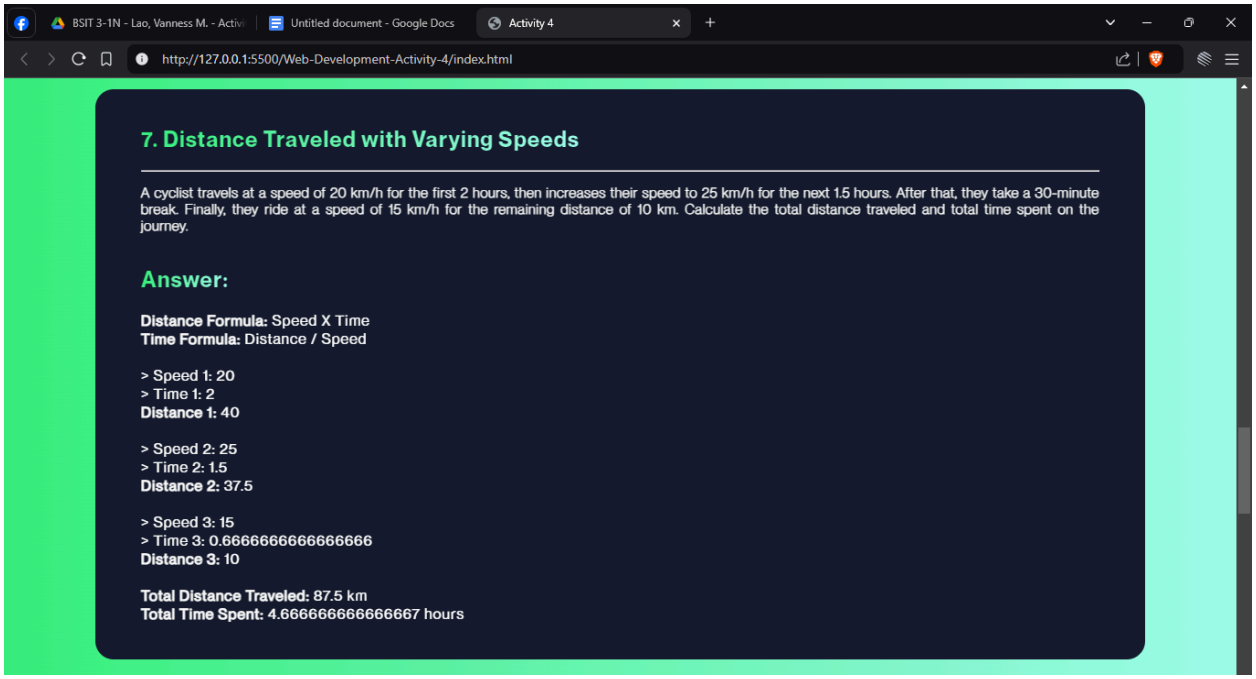
- A cyclist travels at a speed of 20 km/h for the first 2 hours, then increases their speed to 25 km/h for the next 1.5 hours. After that, they take a 30-minute break. Finally, they ride at a speed of 15 km/h for the remaining distance of 10 km. Calculate the total distance traveled and total time spent on the journey.

Source Code:

```
<!-- Question 7 -->
    <section class="question">
      <h1>
        7. Distance Traveled with Varying Speeds
      </h1>
      <hr>
      <h2>
        A cyclist travels at a speed of 20 km/h for the first 2 hours, then increases their speed to
        25 km/h for the next 1.5 hours. After that, they take a 30-minute break. Finally, they
        ride at a speed of 15 km/h for the remaining distance of 10 km. Calculate the total
        distance traveled and total time spent on the journey.
      </h2>
      <p>
        <br>
      </p>
      <h1>
        Answer:
      </h1>
      <script>
        var speed_1 = 20;
        var time_1 = 2;
        var distance_1 = speed_1 * time_1;
        var speed_2 = 25;
        var time_2 = 1.5;
        var distance_2 = speed_2 * time_2;
        var breakTime = 30 / 60;
        var speed_3 = 15;
        var distance_3 = 10;
        var time_3 = distance_3 / speed_3;
        var total_distance = distance_1 + distance_2 + distance_3;
        var total_time = time_1 + time_2 + breakTime + time_3;

        document.write("<b> Distance Formula: </b> Speed X Time <br>");
        document.write("<b> Time Formula: </b> Distance / Speed <br><br>");
        document.write("> Speed 1: " + speed_1 + "<br>");
        document.write("> Time 1: " + time_1 + "<br>");
        document.write("<b> Distance 1: </b>" + distance_1 + "<br><br>");
        document.write("> Speed 2: " + speed_2 + "<br>");
        document.write("> Time 2: " + time_2 + "<br>");
        document.write("<b> Distance 2: </b>" + distance_2 + "<br><br>");
        document.write("> Speed 3: " + speed_3 + "<br>");
        document.write("> Time 3: " + time_3 + "<br>");
        document.write("<b> Distance 3: </b>" + distance_3 + "<br><br>");
        document.write("<b> Total Distance Traveled: </b>" + total_distance + " km" + "<br>");
        document.write("<b> Total Time Spent: </b>" + total_time + " hours" + "<br>");
      </script>
    </section>
```

Output: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Untitled document - Google Docs
Activity 4
http://127.0.0.1:5500/Web-Development-Activity-4/index.html
7. Distance Traveled with Varying Speeds
A cyclist travels at a speed of 20 km/h for the first 2 hours, then increases their speed to 25 km/h for the next 1.5 hours. After that, they take a 30-minute break. Finally, they ride at a speed of 15 km/h for the remaining distance of 10 km. Calculate the total distance traveled and total time spent on the journey.
Answer:
Distance Formula: Speed X Time
Time Formula: Distance / Speed
> Speed 1: 20
> Time 1: 2
Distance 1: 40
> Speed 2: 25
> Time 2: 1.5
Distance 2: 37.5
> Speed 3: 15
> Time 3: 0.6666666666666666
Distance 3: 10
Total Distance Traveled: 87.5 km
Total Time Spent: 4.666666666666667 hours

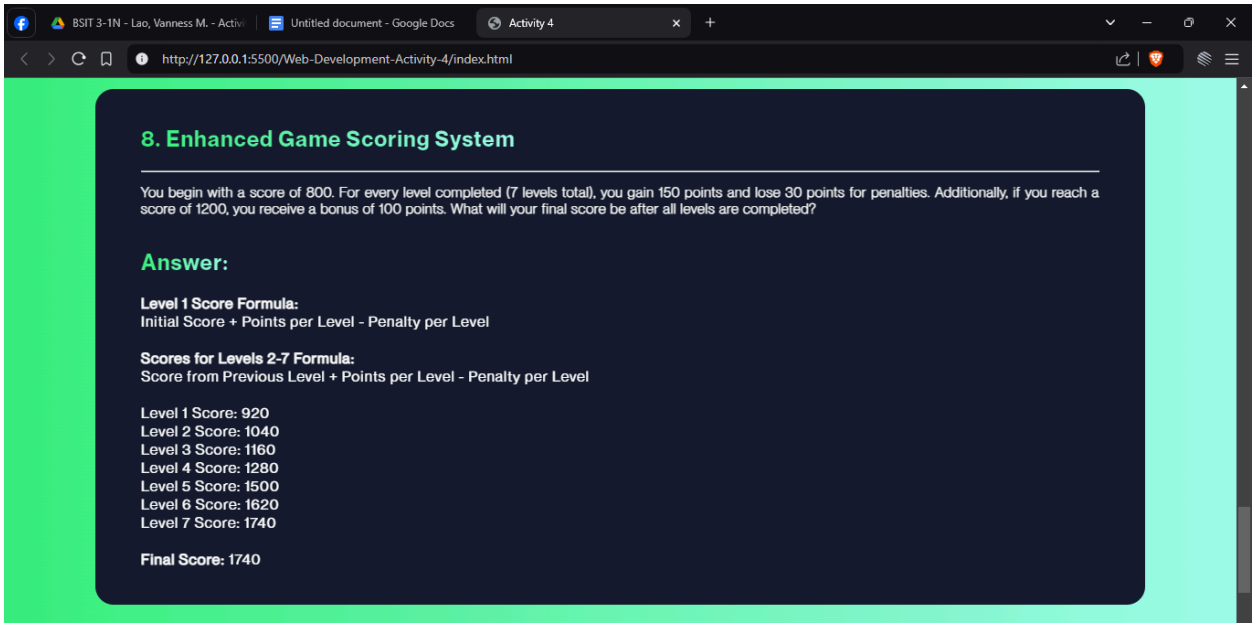
8. Enhanced Game Scoring System:

- You begin with a score of 800. For every level completed (7 levels total), you gain 150 points and lose 30 points for penalties. Additionally, if you reach a score of 1200, you receive a bonus of 100 points. What will your final score be after all levels are completed?

Source Code:

```
<!-- Question 8 -->
    <section class="question">
      <h1>
        8. Enhanced Game Scoring System
      </h1>
      <hr>
      <h2>
        You begin with a score of 800. For every level completed (7 levels total), you gain 150
        points and lose 30 points for penalties. Additionally, if you reach a score of 1200, you
        receive a bonus of 100 points. What will your final score be after all levels are
        completed?
      </h2>
      <p>
        <br>
      </p>
      <h1>
        Answer:
      </h1>
      <script>
        var initialScore = 800;
        var totalLevels = 7;
        var pointsPerLevel = 150;
        var penaltyPerLevel = 30;
        var bonusScore = 100;
        var finalScore = initialScore;
        document.write("<b> Level 1 Score Formula: </b><br> Initial Score + Points per Level - Penalty per Level <br><br>")
        document.write("<b> Scores for Levels 2-7 Formula: </b><br> Score from Previous Level + Points per Level - Penalty per Level <br><br>")
        for (var i = 1; i <= totalLevels; i++) {
            finalScore = (finalScore + pointsPerLevel) - penaltyPerLevel;
            document.write("Level " + i + " Score: " + finalScore + "<br>");
            if (finalScore >= 1200){
              finalScore += bonusScore;
              bonusScore = 0;
            }
        }
        document.write("<br><b> Final Score: </b>" + finalScore);
      </script>
    </section>
```

Output: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Untitled document - Google Docs
Activity 4
http://127.0.0.1:5500/Web-Development-Activity-4/index.html
8. Enhanced Game Scoring System
You begin with a score of 800. For every level completed (7 levels total), you gain 150 points and lose 30 points for penalties. Additionally, if you reach a score of 1200, you receive a bonus of 100 points. What will your final score be after all levels are completed?
Answer:
Level 1 Score Formula:
Initial Score + Points per Level - Penalty per Level
Scores for Levels 2-7 Formula:
Score from Previous Level + Points per Level - Penalty per Level
Level 1 Score: 920
Level 2 Score: 1040
Level 3 Score: 1160
Level 4 Score: 1280
Level 5 Score: 1500
Level 6 Score: 1620
Level 7 Score: 1740
Final Score: 1740

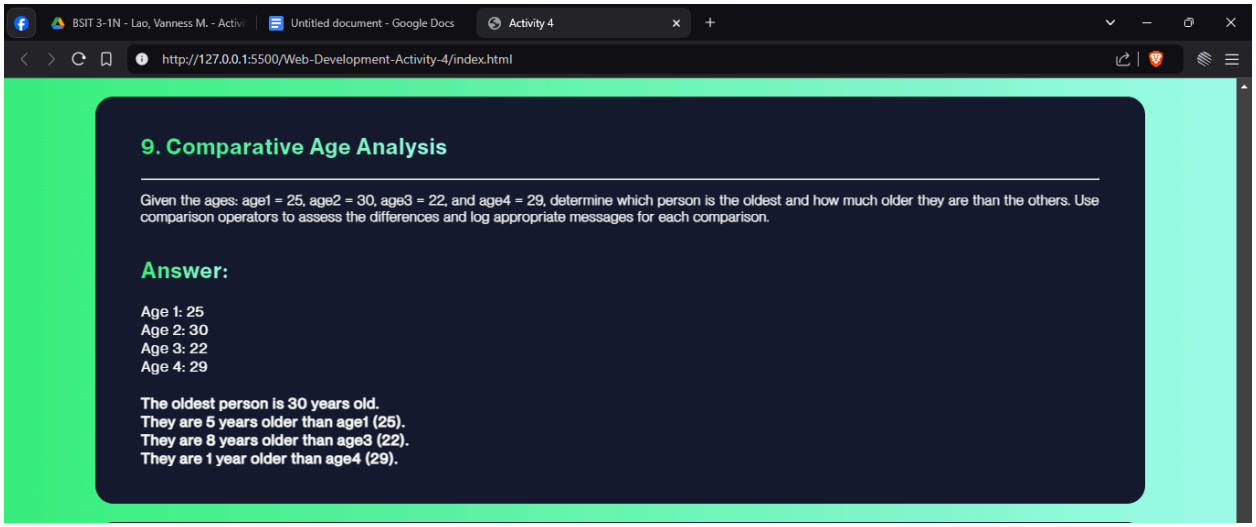
9. Comparative Age Analysis:

- Given the ages: age1 = 25, age2 = 30, age3 = 22, and age4 = 29, determine which person is the oldest and how much older they are than the others. Use comparison operators to assess the differences and log appropriate messages for each comparison.

Source Code:

```
<!-- Question 9 -->
    <section class="question">
      <h1>
        9. Comparative Age Analysis
      </h1>
      <hr>
      <h2>
        Given the ages: age1 = 25, age2 = 30, age3 = 22, and age4 = 29, determine which person
        is the oldest and how much older they are than the others. Use comparison operators to
        assess the differences and log appropriate messages for each comparison.
      </h2>
      <p>
        <br>
      </p>
      <h1>
        Answer:
      </h1>
      <script>
        var age1 = 25;
        var age2 = 30;
        var age3 = 22;
        var age4 = 29;
        var oldest = Math.max(age1, age2, age3, age4);
        document.write("Age 1: " + age1 + "<br>");
        document.write("Age 2: " + age2 + "<br>");
        document.write("Age 3: " + age3 + "<br>");
        document.write("Age 4: " + age4 + "<br><br>");
        document.write("<b>The oldest person is " + oldest + " years old.<br>");
          if (oldest > age1) {
            document.write("They are " + (oldest - age1) + " years older than age1 (" + age1 + ").<br>");
          }
          if (oldest > age2) {
            document.write("They are " + (oldest - age2) + " years older than age2 (" + age2 + ").<br>");
          }
          if (oldest > age3) {
            document.write("They are " + (oldest - age3) + " years older than age3 (" + age3 + ").<br>");
          }
          if (oldest > age4) {
            document.write("They are " + (oldest - age4) + " year older than age4 (" + age4 + ").<b>");
          }
      </script>
    </section>
```

Output: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Untitled document - Google Docs
Activity 4
http://127.0.0.1:5500/Web-Development-Activity-4/index.html
9. Comparative Age Analysis
Given the ages: age1 = 25, age2 = 30, age3 = 22, and age4 = 29, determine which person is the oldest and how much older they are than the others. Use comparison operators to assess the differences and log appropriate messages for each comparison.
Answer:
Age 1: 25
Age 2: 30
Age 3: 22
Age 4: 29
The oldest person is 30 years old.
They are 5 years older than age1 (25).
They are 8 years older than age3 (22).
They are 1 year older than age4 (29).

10. Dynamic Countdown Timer with Complex Conditions:

- Starting with a count of 50, log the current count and decrement it. If the count is divisible by 5, you double the count before logging it. If the count is odd, subtract 1. How many times will you log a value before reaching 0, and what values will be logged during the countdown?

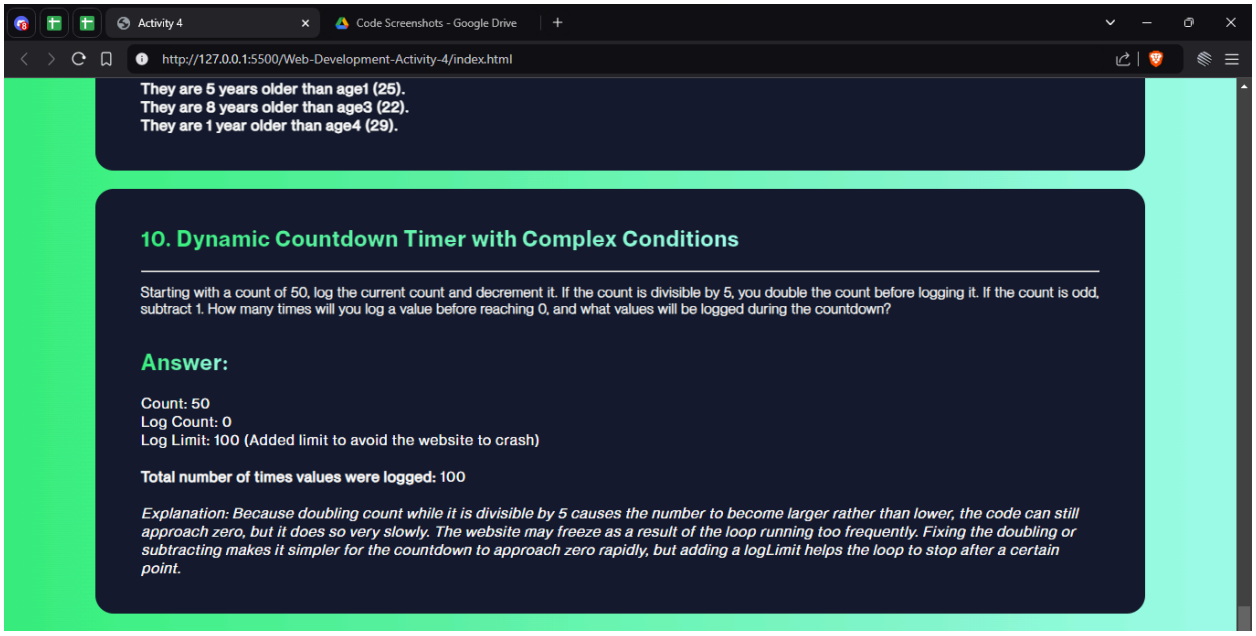
Source Code:

```
<!-- Question 10 -->
   <section class="question">
     <h1>
       10. Dynamic Countdown Timer with Complex Conditions
     </h1>
     <hr>
     <h2>
       Starting with a count of 50, log the current count and decrement it. If the count is
       divisible by 5, you double the count before logging it. If the count is odd, subtract 1.
       How many times will you log a value before reaching 0, and what values will be logged
       during the countdown?

     </h2>
     <p>
       <br>
     </p>
     <h1>
       Answer:
     </h1>
     <script>
       let count = 50;
       let logCount = 0;
       const logLimit = 100;
       document.write("Count: " + count + "<br>")
       document.write("Log Count: " + logCount + "<br>")
       document.write("Log Limit: " + logLimit + " (Added limit to avoid the website to crash) <br><br>")
       while (count > 0 && logCount < logLimit) {
           console.log(count);
           logCount++;
           if (count % 5 === 0) {
               count *= 2;
           } else if (count % 2 !== 0) {
               count -= 1;
           } else {
               count--;
           }
       }
       document.write("<b> Total number of times values were logged: </b>" + logCount + "<br><br>");

     </script>
   </section>
```

Output:


Activity 4
Code Screenshots - Google Drive
http://127.0.0.1:5500/Web-Development-Activity-4/index.html
They are 5 years older than age1 (25).
They are 8 years older than age3 (22).
They are 1 year older than age4 (29).
10. Dynamic Countdown Timer with Complex Conditions
Starting with a count of 50, log the current count and decrement it. If the count is divisible by 5, you double the count before logging it. If the count is odd, subtract 1. How many times will you log a value before reaching 0, and what values will be logged during the countdown?
Answer:
Count: 50
Log Count: 0
Log Limit: 100 (Added limit to avoid the website to crash)
Total number of times values were logged: 100
Explanation: Because doubling count while it is divisible by 5 causes the number to become larger rather than lower, the code can still approach zero, but it does so very slowly. The website may freeze as a result of the loop running too frequently. Fixing the doubling or subtracting makes it simpler for the countdown to approach zero rapidly, but adding a logLimit helps the loop to stop after a certain point.