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## CRITICAL THINKING ASSIGNMENT #4 OPTION 1

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## Pseudocode:

### *// Define variables*

```
DECLARE number, sum, average, totalAfterInterest, totalBeforeInterest,  
min, max as Double  
DECLARE i as Integer
```

### *// Define constant*

```
DECLARE RATE as Double  
SET RATE to 0.2
```

### *// Set initial values*

```
SET sum, totalBeforeInterest to 0  
SET min to MAX_VALUE  
SET max to MIN_VALUE  
SET i to 0
```

### *// Begin loop for five numbers*

```
WHILE i < 5  
    DISPLAY "Enter a number: "  
    READ number from user input
```

### *// Calculate the sum*

```
ADD number to sum  
INCREMENT i
```

### *// Update min and max values*

```
SET min to minimum of min and number  
SET max to maximum of max and number
```

### *// Calculate total and average*

```
SET totalBeforeInterest to sum  
SET totalAfterInterest to sum + (sum * RATE)  
SET average to sum divided by i
```

### *// Display results*

```
DISPLAY "The total before interest is: " + totalBeforeInterest  
DISPLAY "The total after 20% interest is: " + totalAfterInterest  
DISPLAY "The average is: " + average  
DISPLAY "The maximum is: " + max  
DISPLAY "The minimum is: " + min
```

### Screenshot Code:

```
import java.util.Scanner;

public class Main {

    public static void main(String[] args) {

        // import scanner class for user input
        Scanner input = new Scanner(System.in);

        // declaring variables
        double number;
        double sum = 0;
        double average;
        double totalAfterInterest;
        double totalBeforeInterest;
        double min = Double.MAX_VALUE;
        double max = Double.MIN_VALUE;
        int i = 0;

        // declaring constants
        final double RATE = 0.2;

        // while loop for five numbers
        while (i < 5) {
            System.out.print("Enter a number: ");
            number = input.nextDouble();

            // summation of all the numbers
            sum += number;
            // iterator to stop infinite loop
            i++;

            // evaluate max/min values using Math class
            min = Math.min(min, number);
            max = Math.max(max, number);

        }

        // calculates total and average
        totalBeforeInterest = sum;
        totalAfterInterest = sum + (sum * RATE);
        average = sum / i;

        // prints results
        System.out.println("\nThe total before interest is: " + totalBeforeInterest);
        System.out.println("The total after 20% interest is: " + totalAfterInterest);
        System.out.println("The average is: " + average);
        System.out.println("The maximum is: " + max);
        System.out.println("The minimum is: " + min);

        // resource leak closure
        input.close();

    }

}
```

### Results:

```
Enter a number: 10
Enter a number: 20
Enter a number: 30
Enter a number: 40
Enter a number: 50

The total before interest is: 150.0
The total after 20% interest is: 180.0
The average is: 30.0
The maximum is: 50.0
The minimum is: 10.0
```