**Algorithm Workbench**

4.

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7.

public static double timesTen(double x)

{

return 10 \* x;

}

**Programming Challenges**

7. **Test Average and Grade**

import java.util.Scanner;

public class TestScores{

public static void main(String []args)

{

Scanner scan = new Scanner(System.in);

double score1, score2, score3, score4, score5;

System.out.println("Input First Test Score");

score1 = scan.nextDouble();

System.out.println("Your first score is an " + determineGrade(score1));

System.out.println("Input Second Test Score");

score2 = scan.nextDouble();

System.out.println("Your second score is an " + determineGrade(score2));

System.out.println("Input Third Test Score");

score3 = scan.nextDouble();

System.out.println("Your third score is an " + determineGrade(score3));

System.out.println("Input Fourth Test Score");

score4 = scan.nextDouble();

System.out.println("Your fourth score is an " + determineGrade(score4));

System.out.println("Input Fifth Test Score");

score5 = scan.nextDouble();

System.out.println("Your fifth score is an " + determineGrade(score5));

System.out.println("Your test average is " + calcAverage(score1, score2, score3, score4, score5));

}

public static double calcAverage(double score1, double score2, double score3, double score4, double score5)

{

return (score1 + score2 + score3 + score4 + score5) / 5.;

}

public static char determineGrade(double testScore)

{

if (testScore >= 90)

{

return 'A';

}

else if (testScore >= 80)

{

return 'B';

}

else if (testScore >= 70)

{

return 'C';

}

else if (testScore >= 60)

{

return 'D';

}

else

{

return 'F';

}

}

}

8. **Conversion Program**

import java.util.Scanner;

public class ConversionProgram{

public static void main(String []args)

{

Scanner scan = new Scanner(System.in);

double distance;

System.out.print("Enter a distance in meters: ");

distance = scan.nextDouble();

while (true)

{

int choice = 0;

System.out.println("1. Convert to kilometers");

System.out.println("2. Convert to inches");

System.out.println("3. Convert to feet");

System.out.println("4. Quit the program");

System.out.print("\nEnter your choice: ");

choice = scan.nextInt();

if (choice == 1)

{

showKilometers(distance);

}

else if (choice == 2)

{

showInches(distance);

}

else if (choice == 3)

{

showFeet(distance);

}

else

{

System.out.println("Bye!");

break;

}

}

}

public static void showKilometers(double meters)

{

System.out.println(meters + " meters is " + meters \* 0.001 + " kilometers.\n");

}

public static void showInches(double meters)

{

System.out.println(meters + " meters is " + meters \* 39.37 + " inches.\n");

}

public static void showFeet(double meters)

{

System.out.println(meters + " meters is " + meters \* 3.281 + " feet.\n");

}

}

16. **Present Value**

import java.util.Scanner;

public class PresentValue{

public static void main(String []args)

{

double futureValue, annualInterestRate;

int numberOfYears;

Scanner scan = new Scanner(System.in);

System.out.println("Input Future Value");

futureValue = scan.nextDouble();

System.out.println("Input Annual Interest Rate");

annualInterestRate = scan.nextDouble();

System.out.println("Input Number of Years");

numberOfYears = scan.nextInt();

System.out.println("Present Value is $" + presentValue(futureValue, annualInterestRate, numberOfYears));

}

public static double presentValue(double futureValue, double annualInterestRate, int numberOfYears)

{

return futureValue / Math.pow(1 + annualInterestRate, numberOfYears);

}

}