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ใบงานที่ 7

วัตถุประสงค์ เพื่อ ทดลองใช้ regression

```
static void LinearRegression() {
  // https://introcs.cs.princeton.edu/java/97data/LinearRegression.java.html
  double[] x = x_RadioAds();
  double[] y = y_Revenue();
  // first pass : compute xbar and ybar
  // sumxsqr is for other statistic param
  double sumx = 0.0, sumy = 0.0, sumxsqr = 0.0;
  for (int i = 0; i < x.length; i++) {
      sumx += x[i];
      // sumxsqr += (x[i] * x[i]);
      sumy += y[i];
  }
  double xbar = sumx / x.length;
  double ybar = sumy / y.length;

  // second pass : compute summary stat
  double xxbar, yybar, xybar; // yybar for R²
  xxbar = yybar = xybar = 0.0;
  for (int i = 0; i < x.length; i++) {
      xxbar += (x[i] - xbar) * (x[i] - xbar);
      yybar += (y[i] - ybar) * (y[i] - ybar);
      xybar += (x[i] - xbar) * (y[i] - ybar);
  }
  double beta1 = xybar / xxbar;
  double beta0 = ybar - beta1 * xbar;
  System.out.printf(" y = %.4f * x + %.4f%n", beta1, beta0);

  // third pass : R-squred determines the proportion of variance in the
  // dependent variable that can be explained by the independent variable.
    int df = x.length - 2;
    double rss = 0.0; // residual sum of squares
    double ssr = 0.0; // regression sum of squares

    for (int i = 0; i < x.length; i++) {
        double fit = beta1 * x[i] + beta0;
        rss += (fit - y[i]) * (fit - y[i]);
        ssr += (fit - ybar) * (fit - ybar);
    }
    double R2 = ssr / yybar;
    System.out.printf("R^2 = %.4f%n", R2);
    //more codes
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```
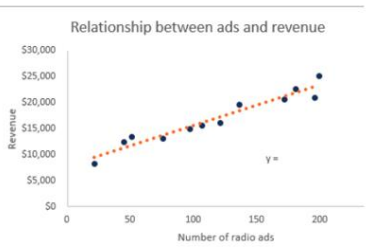

Data	Radio ads	Revenue
Jan	21	$8,350.0
Feb	180	$22,755.0
Mar	50	$13,455.0
Apr	195	$21,100.0
May	96	$15,000.0
Jun	44	$12,500.0
Jul	171	$20,700.0
Aug	135	$19,722.0
Sep	120	$16,115.0
Oct	75	$13,100.0
Nov	106	$15,670.0
Dec	198	$25,300.0



Regression -“while there are shorter and taller people, only outliers are very tall or short, and most people cluster somewhere around (or "regress" to) the average” - https://www.investopedia.com/terms/r/regression.asp#toc-example-of-how-regression-analysis-is-used-in-finance

คำสั่ง

y = 78.0753 * x + 7930.3547

กำหนดส่ง TBA