

Multiple Linear Regression 1.1 (HP 50g – HPGCC C Compiler 2.0)
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Multiple Linear Regression (MLREG) program written in C and cross-compiled on a Windows PC using the HPGCC 2.0 Windows Native Binaries C Compiler. The program will prompt you for the number of independent (X) variables and the number of given points to fit. Then it will ask you to enter the given X and Y (dependent variable) values. It then computes for the coefficients a_0 (constant) and a_1 to a_m of the multiple variable linear equation $Y = a_0 + a_1 * X_1 + a_2 * X_2 + \dots + a_m * X_m$. It also computes the equivalent Y values of the given X values using the calculated coefficients as well as the coefficient of determination r^2 , coefficient of correlation $|r|$ and some other error statistical parameters. Upon exit, the program dumps the computed coefficients, r^2 as well as the given X's, Y's and computed Y's as array/matrix strings on the stack. By editing the dumped strings and removing the quotation marks (") at both the beginning and end of each string, the dumped values become converted to numerical arrays/matrices which can now be used for manual calculations on the calculator. This program has been tested on the HP 50g.

To install, just upload the file `mlreg.hp` using the HP calculator's PC connectivity software and then direct the connectivity program to "disconnect" the calculator. The program will now appear as a string on the stack's first level. Immediately store it to a variable by typing a variable name (say 'mlreg') and then pressing the STO key.

To run the program, you will need to first install the ARM Toolbox library (SETUP.BIN) supplied with HPGCC to port 2 as follows (steps from the HPGCC ARMtoolbox documentation):

1. Transfer the file SETUP.BIN to your calculator.
2. Enter a (real) port number, where you want the lib to be stored, on the stack.
(2.0 is recommended for flash ROM)
3. Push SETUP.BIN on the stack.
4. Press EVAL
5. Warm boot your machine (Hold down the ON key, then press F3, then release both).

With the ARM toolbox installed, run the MLREG program by pressing right-shift, LIB. Select the ARM Toolbox. The next step is to recall (RCL) the variable storing MLREG so it is now listed as a string on the stack level 1. Then Press the PrRUN command (usually assigned to the first Function key F1) to run the program itself.

This updated version (1.1) adds a check to ensure that the number of given points is greater than the number of independent or X variables thereby preventing an invalid non-unique solution.