

**Laboratory Assignment 4**  
PH 508 NUMERICAL METHODS & PROGRAMMING

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**Remark 1** For all the questions below, the programs are available on the web page. Download these programs and edit/modify according to the instructions given therein.

1. A batch of students have taken an exam. The marks of each student and number of students is to be input. Print out the batch average, variance, highest marks and lowest marks. Grade a student as A if his marks are above or equal to the batch average, and B otherwise.
2. A set of data points are given as  $\{(x_i, y_i) \mid i = 0, 1, \dots, n\}$ . Input  $n$  and the data in two arrays. Fit a straight line  $y = mx + c$  to this data by linear regression. Print  $m$  and  $c$ . Also print a table as shown below:

$x$	$y$	$y$ from equation	absolute error

3. A sequence of single digit integers are input. Find the number of zeros, ones etc. and print it out in a table form.
4. Write a program to sort an array.
5. Write a program to evaluate a polynomial using nested multiplication algorithm. Input the degree of polynomial, coefficients and the point of evaluation.