Thomas Penick 452 80 6040
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Program Assignment PA5

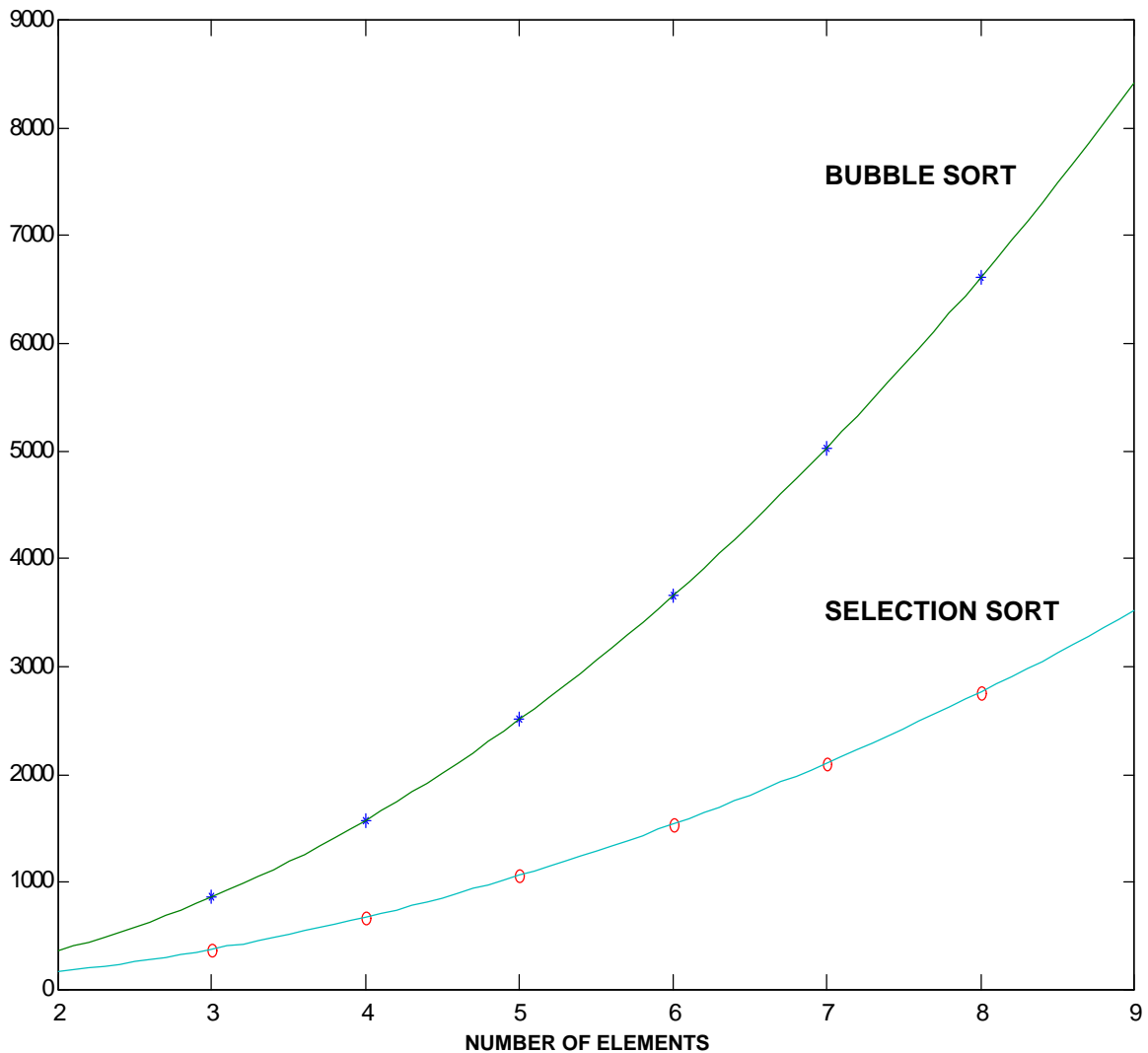## Least Squares Plots of Program Efficiency

Matlab Input:

```
x = [3 4 5 6 7 8]';
y1 = [860 1575 2508 3659 5028 6615]';
y2 = [375 673 1061 1539 2107 2765]';
A = [x.^2, x, ones(size(x))];
c1 = A\y1
c2 = A\y2
t = 2:0.1:9;
z1 = polyval(c1,t);
z2 = polyval(c2,t);
plot(x,y1,'*',t,z1,x,y2,'o',t,z2)
```

Matlab Output:

```
c1 =
   109.0000
   -48.0000
    23.0000
c2 =
    45.0000
   -17.0000
    21.0000
```


CLOCK CYCLES — NUMBER OF ELEMENTS — BUBBLE SORT — SELECTION SORT

<u>**ABOUT THE MATLAB COMMANDS**</u>

ones   Create vector or matrix of all ones.

Synopsis (as used): `Y = ones(size(A))`

Y = ones(size(A)) is the same size as A and consists of all 1s.

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Synopsis:
 X = A\B is the solution to the equation AX = B

polyval   Polynomial evaluation.

Synopsis: `y = polyval(p,S)`

y = polyval(p,S), where p is a vector whose elements are the coefficients of a polynomial in descending powers, is the value of the polynomial evaluated at S. If S is a matrix or vector, the polynomial is evaluated at each of the elements.

plot   Linear 2-D plot.

Synopsis (as used):
`plot(X1,Y1,'linetype1',X2,Y2,'linetype2',...)`

plot(X,Y) plots vector X versus vector Y. If X or Y is a matrix, then the vector is plotted versus the rows or columns of the matrix, whichever line up.

Various line types, plot symbols and colors can be obtained with plot(X,Y,'linetype') where linetype is a 1-, 2-, or 3-character string made from the following characters:

```
.    point           y  yellow
o    circle          m  magenta
x    x-mark          c  cyan
+    plus            r  red
*    star            g  green
-    solid line      b  blue
:    dotted line     w  white
-.   dashdot line    k  black
-   dashed line
```