Contents

```matlab
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR 132
% Program Description
%        ...
%
% Assigment Information
%   Assignment:     PS 02, Problem #2
%   Author:         Yuefan Fu, fu194@purdue.edu
%   Team ID:        001
%       Contributor:
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

INITIALIZATION

```matlab
[a,b,c] = textread('Data_direct_labor_costs.txt','%d%d%d','headerlines',1)
A=[a,b,c]
```

```
a =

     1
     2
     5
    10
    12
    15
    20


b =

    60
```

```
    45
    24
    21
    19
    16
    14


c =

    75
    54
    30
    17
    15
    13
    12


A =

     1    60    75
     2    45    54
     5    24    30
    10    21    17
    12    19    15
    15    16    13
    20    14    12
```

CALCULATIONS

```
Model1 = 61 * a.^(-0.5)
Model2 = 75 * a.^(-0.62)
```

```
Model1 =

   61.0000
   43.1335
   27.2800
   19.2899
   17.6092
   15.7501
   13.6400


Model2 =

   75.0000
   48.8003
   27.6503
   17.9912
   16.0683
   13.9922
   11.7064
```
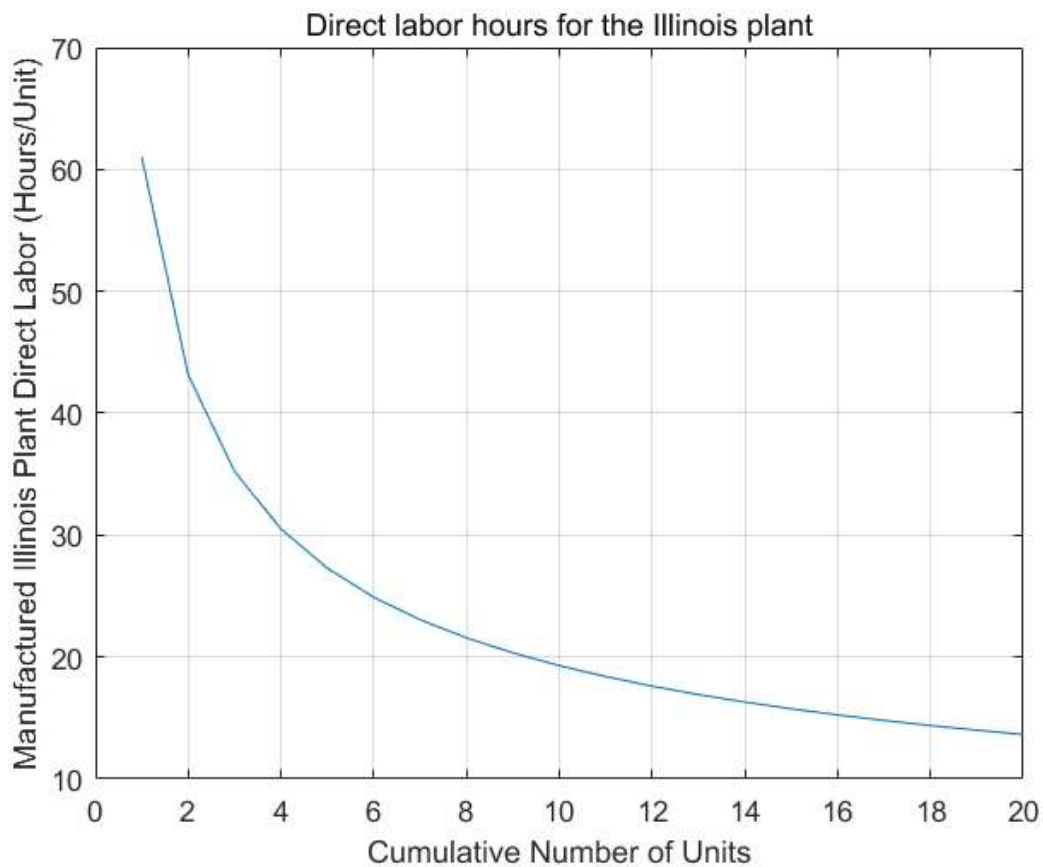
MODEL SMOOTHNESS CHECK

```
smoothA = [1:20]
smoothM1=61*smoothA.^(-0.5)
plot(smoothA,smoothM1);
title('Direct labor hours for the Illinois plant')
xlabel('Cumulative Number of Units')
ylabel( 'Manufactured Illinois Plant Direct Labor (Hours/Unit)')
grid on
```

smoothA =

  1 至 13 列

    1   2   3   4   5   6   7   8   9   10   11   12   13

  14 至 20 列

   14   15   16   17   18   19   20

smoothM1 =

  1 至 7 列

   61.0000   43.1335   35.2184   30.5000   27.2800   24.9031   23.0558

  8 至 14 列

   21.5668   20.3333   19.2899   18.3922   17.6092   16.9184   16.3029

  15 至 20 列

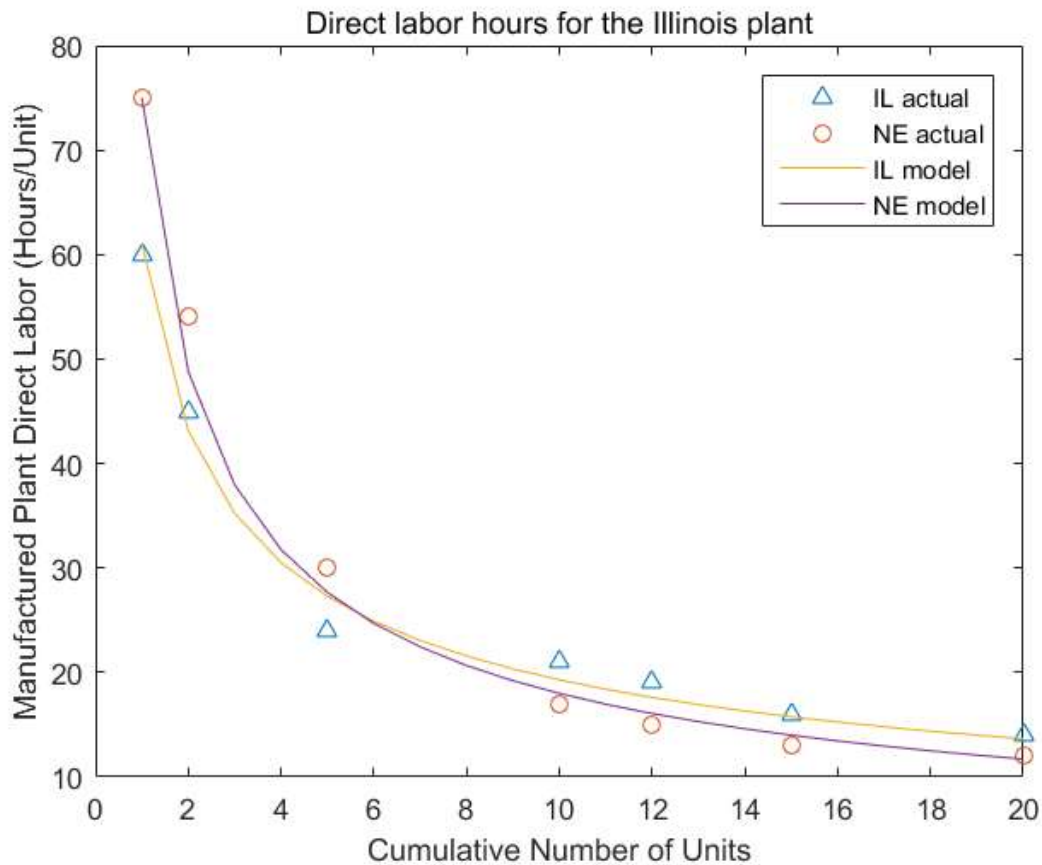   15.7501   15.2500   14.7947   14.3778   13.9944   13.6400

Direct labor hours for the Illinois plant

FORMATTED FIGURES

```
smoothM2=75*smoothA.^(-0.62);
plot(a,b,'^',a,c,'o',smoothA,smoothM1,smoothA,smoothM2);
title('Direct labor hours for the Illinois plant')
xlabel('Cumulative Number of Units')
ylabel( 'Manufactured Plant Direct Labor (Hours/Unit)')
legend('IL actual','NE actual','IL model','NE model');
```

Direct labor hours for the Illinois plant

ANALYSIS

-- Q1

Nebraska's plant have a more efficient training program as shown in the figure that first the direct labor was higher than Illinois but finally less than Illinois.

-- Q2

```
Training has minimized the cost of labor because people can spend less
time to do the same amount work.
```

ACADEMIC INTEGRITY STATEMENT

I/We have not used source code obtained from any other unauthorized source, either modified or unmodified. Neither have I/we provided access to my/our code to another. The project I/we am/are submitting is my/our own original work.

Published with MATLAB® R2015b