(a)

**bhat = x1\y;**

bhat =

-3.4823e+06

1.5062e+01

-3.5819e-02

-2.0202e+00

-1.0332e+00

-5.1104e-02

1.8292e+03

(b)

**ans = bhat-Bhat\_Values;**

ans =

-2.0429e-06

2.2315e-10

-6.0882e-14

-6.8701e-13

-1.4633e-13

-7.6272e-14

1.0552e-09

(c)

**y\_fit = (bhat'\*x1')'**

y\_fit =

6.0056e+04

6.1216e+04

6.0125e+04

6.1597e+04

6.2911e+04

6.3888e+04

6.5153e+04

6.3774e+04

6.6005e+04

6.7402e+04

6.8186e+04

6.6552e+04

6.8811e+04

6.9650e+04

6.8989e+04

7.0758e+04

**err = y - y\_fit**

err =

267.340

-94.014

46.287

-410.115

309.715

-249.311

-164.049

-13.180

14.305

455.394

-17.269

-39.055

-155.550

-85.671

341.932

-206.758

**x = 1:1:16;**

**errorbar(x,y,err)**

图表, 折线图

描述已自动生成

(d)

文本

描述已自动生成

**x1, x2, x5, x6 are highly correlated.**

(e)

图表, 折线图

描述已自动生成

1. load Longley.dat
2. x = Longley(:,2:7);
3. y = Longley(:,1);
4. %Corresponding to the constant term，add a column of 1s.
5. column = [1;1;1;1;1;1;1;1;1;1;1;1;1;1;1;1];
6. x1 = [column x];
7. %Certified values of Beta
8. Bhat\_Values = [-3482258.63459582,15.0618722713733,-0.358191792925910e-01,-2.02022980381683,-1.03322686717359,-0.511041056535807e-01,1829.15146461355]'
9. bhat = x1\y;
10. %Compare bhat with certified values
11. ans = bhat-Bhat\_Values;
12. %The least squares fit
13. y\_fit = (bhat'\*x1')'
14. %The difference between y and the least squares fit
15. err = y - y\_fit;
16. x\_plot = 1:1:16;
17. errorbar(x\_plot,y,err);
18. %Compute the correlation coefficients for x
19. R = corrcoef(x);
20. %Normallize the vector y and columns of x
21. y = y - mean(y);
22. y = y/std(y);
23. for i = 1:6
24. x(:,i)=x(:,i)-mean(x(:,i));
25. x(:,i)=x(:,i)/std(x(:,i));
26. end
27. %Plot all seven normallized variables on the same axis
28. normal = [y x];
29. plot(normal)
30. legend('y','x1','x2','x3','x4','x5','x6')