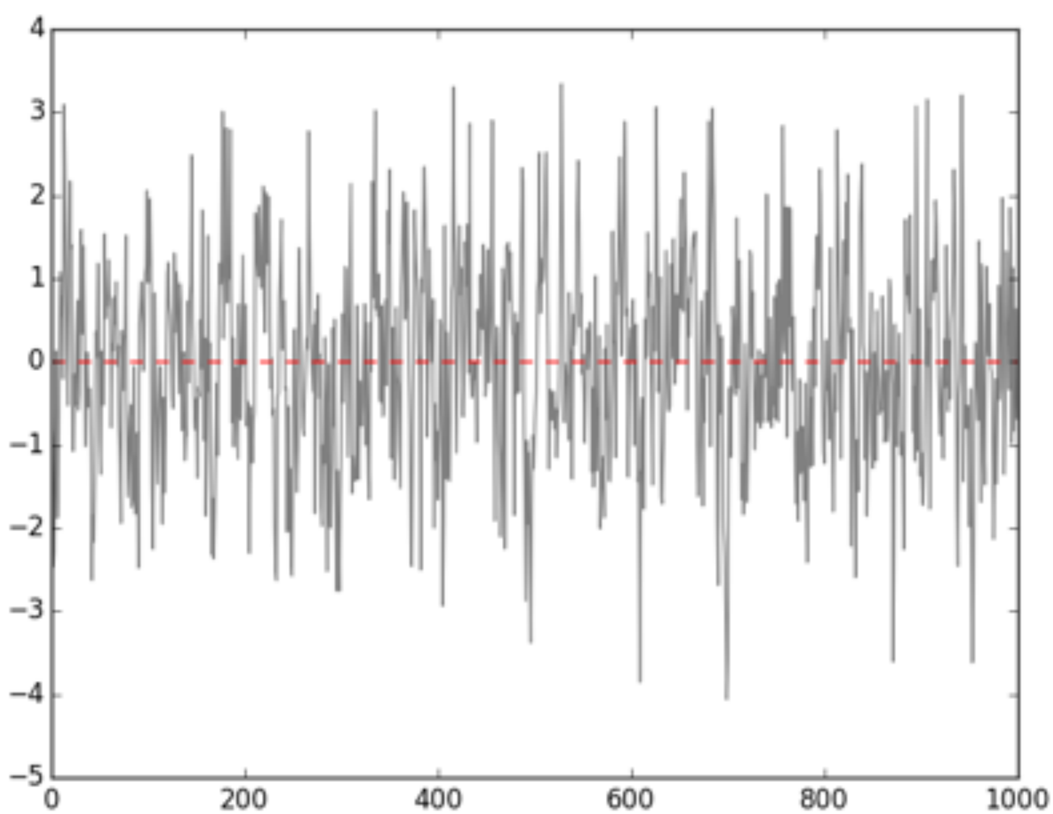
Problem1:

a.p=0.5 is included in 95% confidence interval

the statistic summary for p=0.5

```
                            OLS Regression Results
==============================================================================
Dep. Variable:                      y   R-squared:                       0.261
Model:                            OLS   Adj. R-squared:                  0.261
Method:                 Least Squares   F-statistic:                     352.8
Date:                Sun, 02 Nov 2014   Prob (F-statistic):           1.27e-67
Time:                        17:05:10   Log-Likelihood:                -1434.0
No. Observations:                 999   AIC:                             2872.
Df Residuals:                     997   BIC:                             2882.
                    Df Model:                            1
==============================================================================
                 coef    std err          t      P>|t|      [95.0% Conf. Int.]
------------------------------------------------------------------------------
const          0.0259      0.032      0.805      0.421        -0.037     0.089
x1             0.5114      0.027     18.783      0.000         0.458     0.565
==============================================================================
Omnibus:                        0.941   Durbin-Watson:                   2.010
Prob(Omnibus):                  0.625   Jarque-Bera (JB):                0.989
Skew:                          -0.017   Prob(JB):                        0.610
Kurtosis:                       2.849   Cond. No.                         1.19
==============================================================================
```



Problem1:

b.p=-0.5 is included in 95% confidence interval

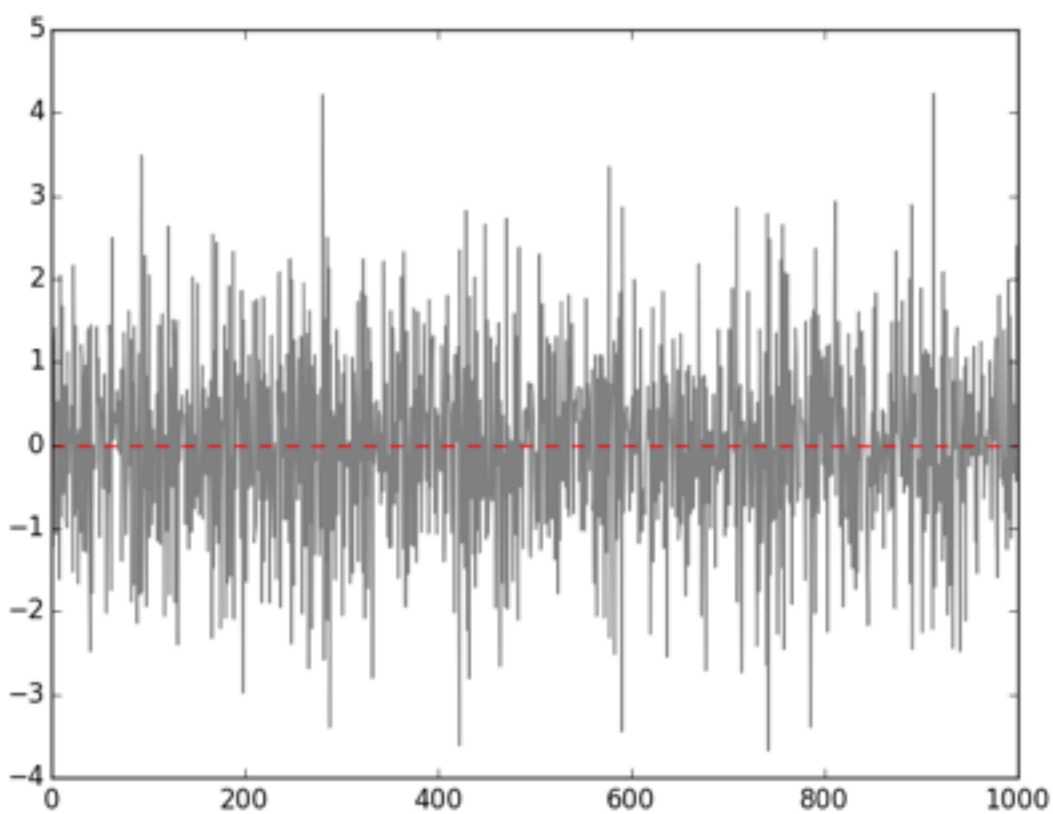
the statistic summary for p=-0.5

OLS Regression Results

Dep. Variable:	y	R-squared:	0.273
Model:	OLS	Adj. R-squared:	0.272
Method:	Least Squares	F-statistic:	374.8
Date:	Sun, 02 Nov 2014	Prob (F-statistic):	3.98e-71
Time:	17:09:56	Log-Likelihood:	-1399.5
No. Observations:	999	AIC:	2803.
Df Residuals:	997	BIC:	2813.
Df Model:	1		

	coef	std err	t	P>|t|	[95.0% Conf.	Int.]
const	0.0370	0.031	1.191	0.234	-0.024	0.098
x1	-0.5227	0.027	-19.359	0.000	**-0.576**	**-0.470**

Omnibus:	0.183	Durbin-Watson:	2.015
Prob(Omnibus):	0.912	Jarque-Bera (JB):	0.134
Skew:	0.026	Prob(JB):	0.935
Kurtosis:	3.024	Cond. No.	1.15



Problem1:

c.p=1 is included in 95% confidence interval

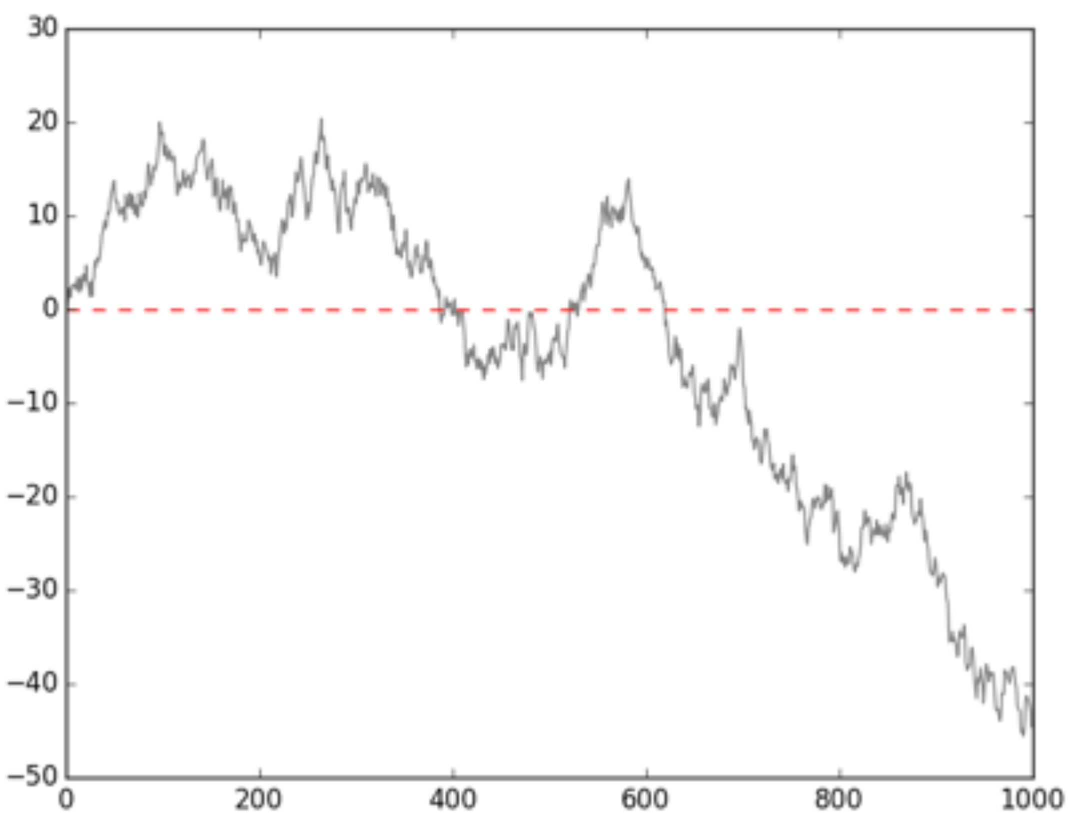
the statistic summary for p=1

OLS Regression Results

Dep. Variable:	y	R-squared:	0.985
Model:	OLS	Adj. R-squared:	0.985
Method:	Least Squares	F-statistic:	6.745e+04
Date:	Sun, 02 Nov 2014	Prob (F-statistic):	0.00
Time:	17:11:43	Log-Likelihood:	-1428.9
No. Observations:	999	AIC:	2862.
Df Residuals:	997	BIC:	2872.
Df Model:	1		

	coef	std err	t	P>|t|	[95.0% Conf. Int.]	
const	0.0797	0.047	1.690	0.091	-0.013	0.172
x1	0.9922	0.004	259.712	0.000	**0.985**	**1.000**

Omnibus:	5.150	Durbin-Watson:	2.039
Prob(Omnibus):	0.076	Jarque-Bera (JB):	3.979
Skew:	0.009	Prob(JB):	0.137
Kurtosis:	2.691	Cond. No.	18.2



Problem2:

a. regression for Walk2~Walk1

answer for question a

OLS Regression Results

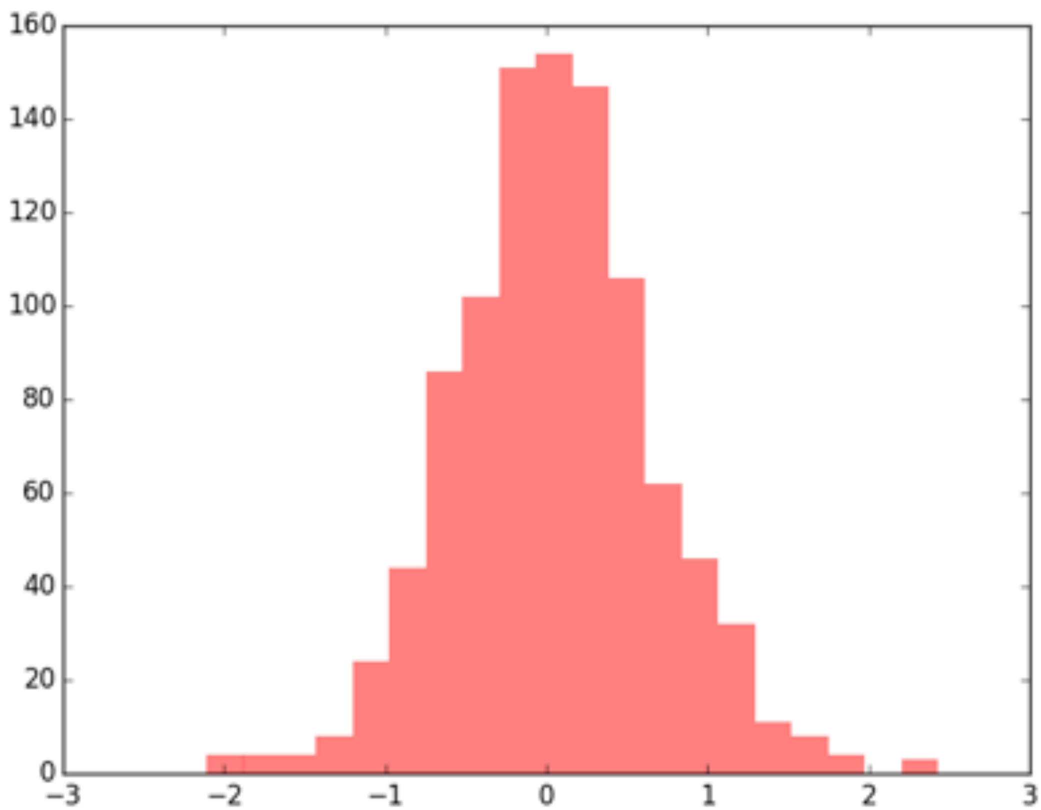
Dep. Variable:	y	R-squared:	0.376
Model:	OLS	Adj. R-squared:	0.375
Method:	Least Squares	F-statistic:	600.9
Date:	Sun, 02 Nov 2014	Prob (F-statistic):	2.95e-104
Time:	17:13:01	Log-Likelihood:	-3394.6
No. Observations:	1000	AIC:	6793.
Df Residuals:	998	BIC:	6803.
Df Model:	1		

	coef	std err	t	P>|t|	[95.0% Conf.	Int.]
const	-16.7224	0.326	-51.220	0.000	-17.363	-16.082
x1	-0.6585	0.027	-24.514	0.000	-0.711	-0.606

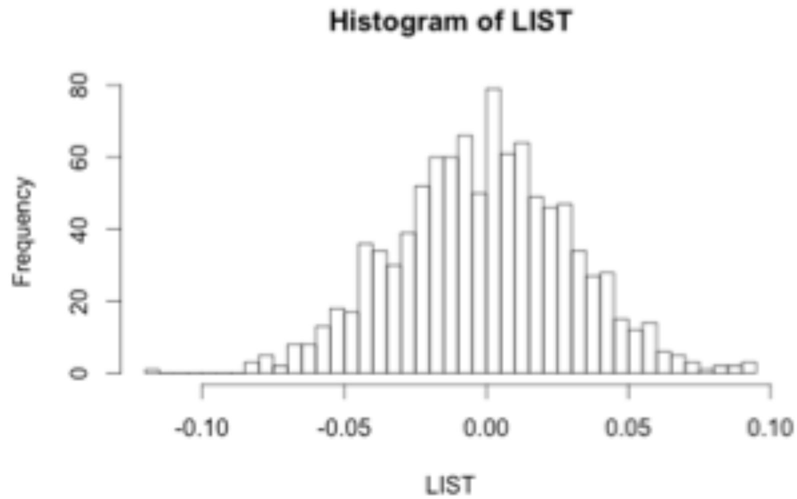
Omnibus:	30.400	Durbin-Watson:	0.026
Prob(Omnibus):	0.000	Jarque-Bera (JB):	32.476
Skew:	0.439	Prob(JB):	8.87e-08
Kurtosis:	3.096	Cond. No.	17.4

b. histogram for coefficient

answer for question b



comparing to the 3.c in HW4, the histogram in question B has the same center(0) and about the same shape, but more steep (smaller standard deviation)



c. histogram for coefficient

I would say yes, since two variables are independent but the R square are quite big.

Actually, non-stationary time series sometimes could have R square be very close to 1. In this case, I think there could be independent unit roots and there's no correlation but has significant statistical number.