

Dataset: **Water_Spring_Amiata.csv**

1: Nhiệt độ ở Fiora

Nhiệt độ Trung bình : 11.2 độ C

Nhiệt độ thấp nhất : -8.95 độ C

Nhiệt độ cao nhất : 28 độ C

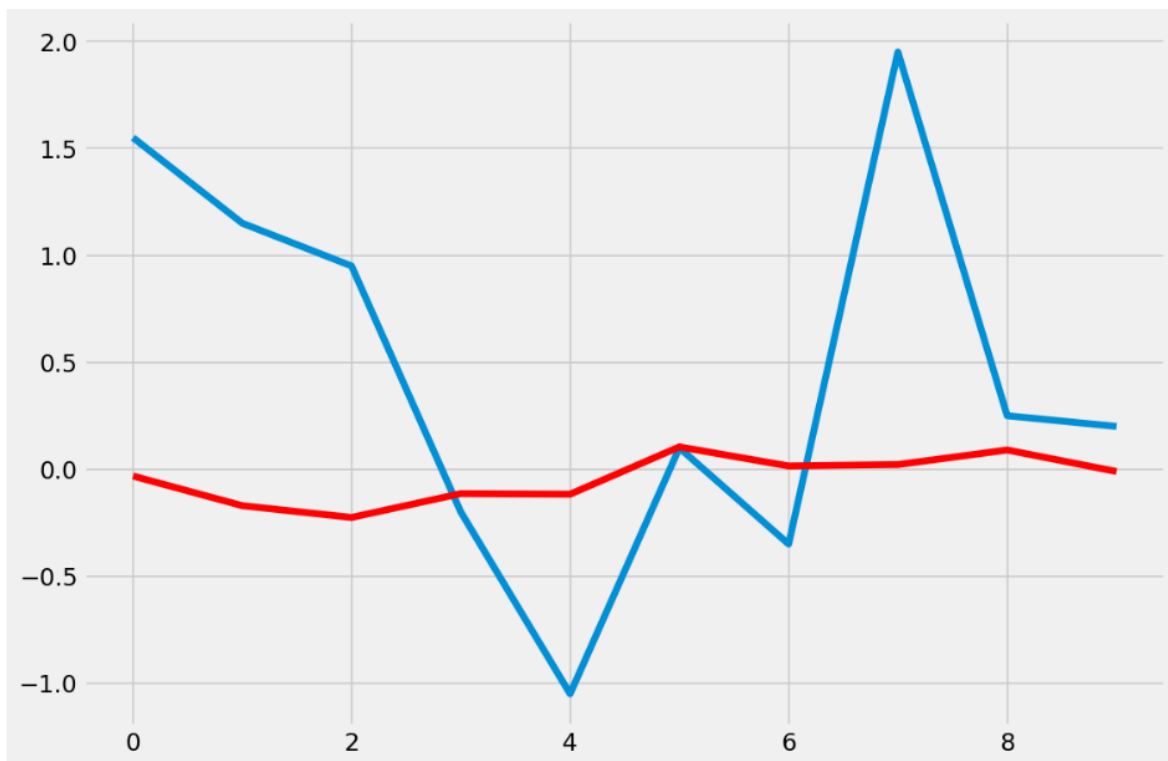
2: Model AR

Predict model AR tầm 0.10436

Expected : 1.95000

Test RMSE: 1.021

```
predicted=-0.031930, expected=1.550000  
predicted=-0.170548, expected=1.150000  
predicted=-0.225584, expected=0.950000  
predicted=-0.114116, expected=-0.200000  
predicted=-0.116874, expected=-1.050000  
predicted=0.104365, expected=0.100000  
predicted=0.015073, expected=-0.350000  
predicted=0.021777, expected=1.950000  
predicted=0.089741, expected=0.250000  
predicted=-0.010752, expected=0.200000  
Test RMSE: 1.021  
[<matplotlib.lines.Line2D at 0x7f0f52301050>]
```



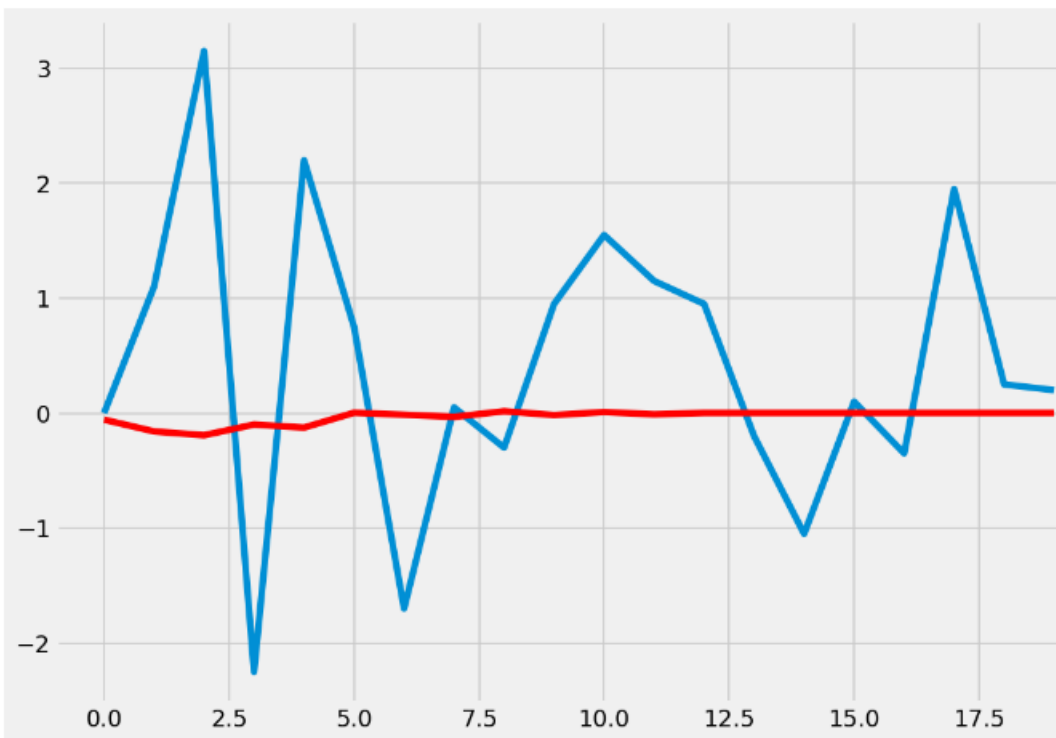
3: Model MA

Predict model AR tầm 0.016493

Expected : 1.95000

Test RMSE: 1.361

```
predicted=-0.056766, expected=0.000000
predicted=-0.159142, expected=1.100000
predicted=-0.192357, expected=3.150000
predicted=-0.099119, expected=-2.250000
predicted=-0.125886, expected=2.200000
predicted=0.003382, expected=0.750000
predicted=-0.013829, expected=-1.700000
predicted=-0.032604, expected=0.050000
predicted=0.016493, expected=-0.300000
predicted=-0.016743, expected=0.950000
predicted=0.009124, expected=1.550000
predicted=-0.010362, expected=1.150000
predicted=0.001770, expected=0.950000
predicted=0.001770, expected=-0.200000
predicted=0.001770, expected=-1.050000
predicted=0.001770, expected=0.100000
predicted=0.001770, expected=-0.350000
predicted=0.001770, expected=1.950000
predicted=0.001770, expected=0.250000
predicted=0.001770, expected=0.200000
Test RMSE: 1.361
```



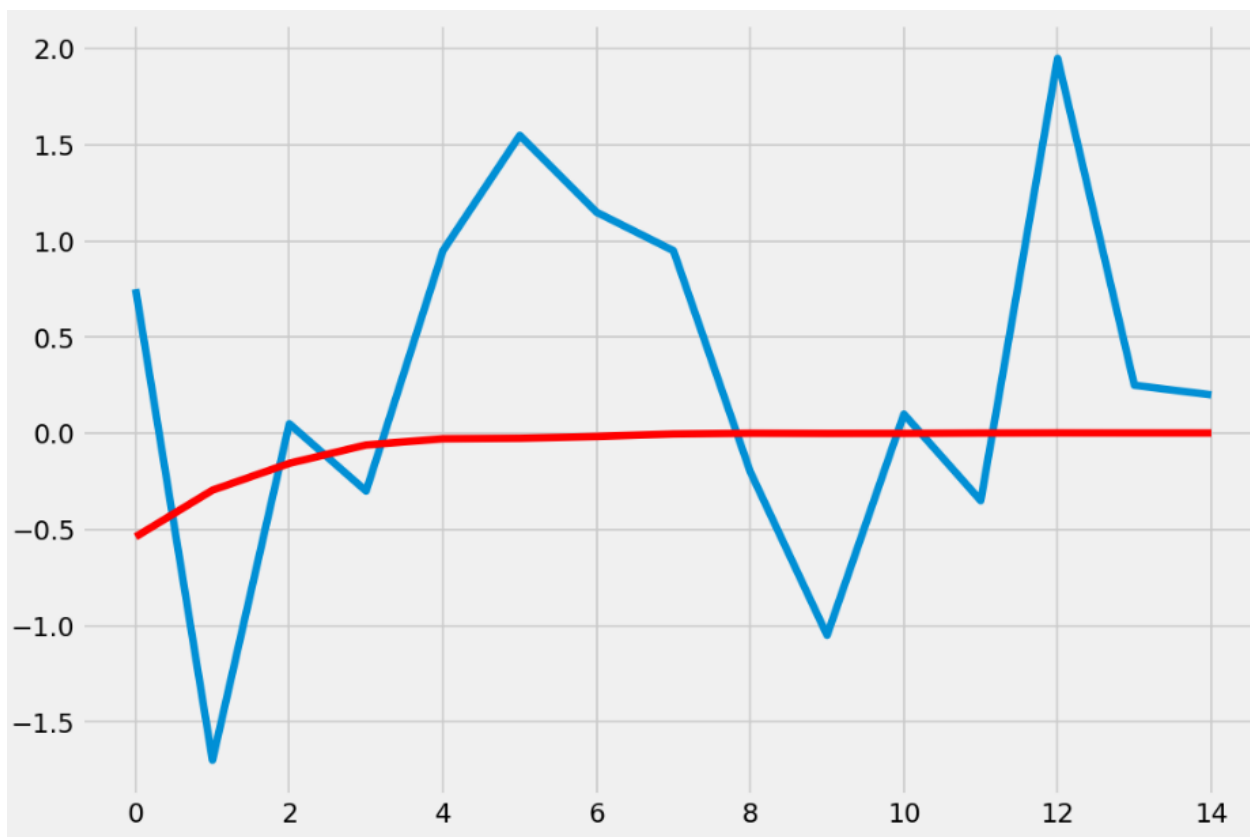
4: Model ARIMA

Predict model AR tần 0.0016493

Expected : 1.51000

Test RMSE: 0.987

```
predicted=-0.538296, expected=0.750000  
predicted=-0.295478, expected=-1.700000  
predicted=-0.156004, expected=0.050000  
predicted=-0.060313, expected=-0.300000  
predicted=-0.028166, expected=0.950000  
predicted=-0.025406, expected=1.550000  
predicted=-0.015961, expected=1.150000  
predicted=-0.003494, expected=0.950000  
predicted=0.000587, expected=-0.200000  
predicted=-0.000518, expected=-1.050000  
predicted=-0.000169, expected=0.100000  
predicted=0.001570, expected=-0.350000  
predicted=0.002245, expected=1.950000  
predicted=0.001924, expected=0.250000  
predicted=0.001815, expected=0.200000  
ARIMA(3,0,5) --> AIC=29935.266407829724; BIC=30004.468961978804  
Test RMSE: 0.987
```



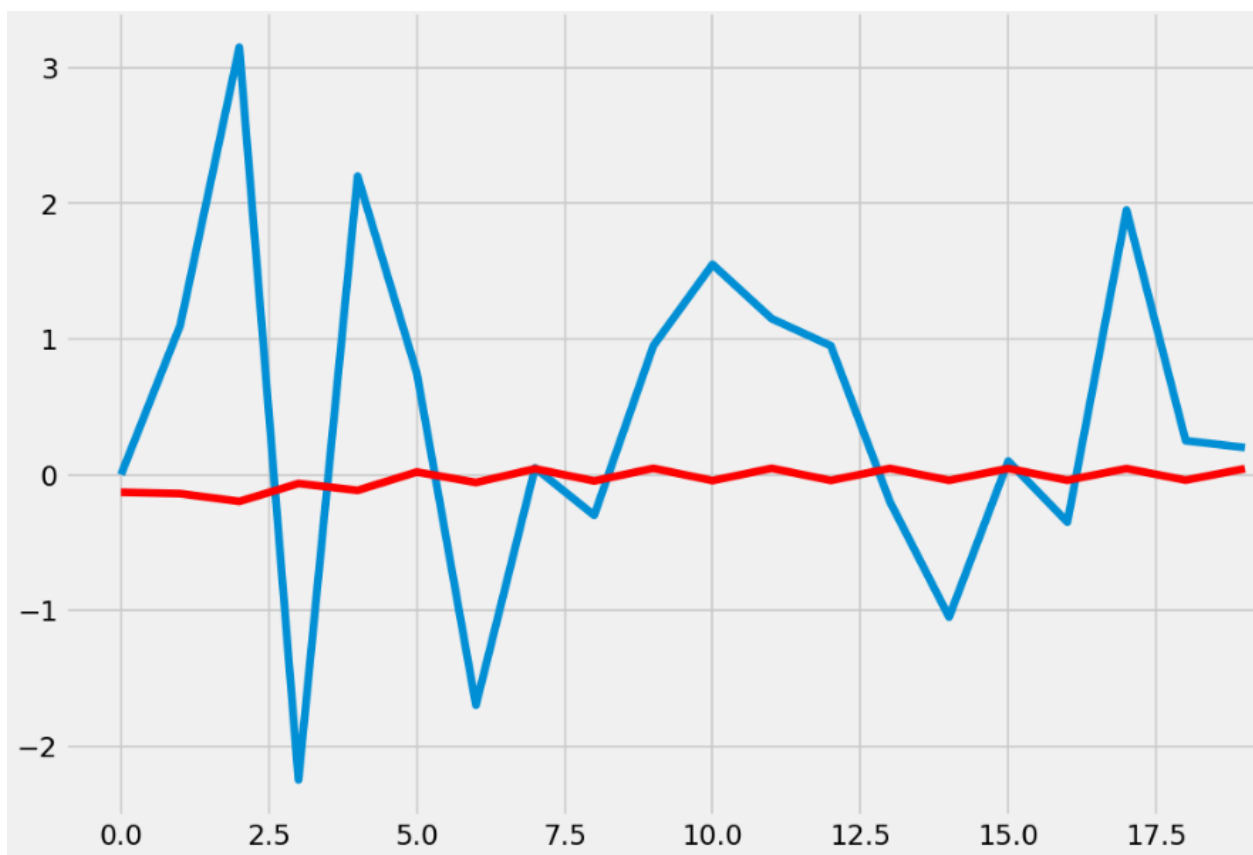
5: Model

Predict model AR tầm 0.046493

Expected : 3.15000

Test RMSE: 1.354

```
predicted=-0.130190, expected=0.000000  
predicted=-0.140092, expected=1.100000  
predicted=-0.197406, expected=3.150000  
predicted=-0.065498, expected=-2.250000  
predicted=-0.115726, expected=2.200000  
predicted=0.019225, expected=0.750000  
predicted=-0.057688, expected=-1.700000  
predicted=0.042824, expected=0.050000  
predicted=-0.046564, expected=-0.300000  
predicted=0.046482, expected=0.950000  
predicted=-0.043941, expected=1.550000  
predicted=0.046540, expected=1.150000  
predicted=-0.042867, expected=0.950000  
predicted=0.045957, expected=-0.200000  
predicted=-0.042084, expected=-1.050000  
predicted=0.045266, expected=0.100000  
predicted=-0.041362, expected=-0.350000  
predicted=0.044566, expected=1.950000  
predicted=-0.040661, expected=0.250000  
predicted=0.043874, expected=0.200000  
Test RMSE: 1.354
```



Kết luận: Quan sát thấy khi train model AR và ARIMA có dự đoán tốt hơn MA và ARMA. Và test RMSE của Model AR và ARIMA sai số bé hơn của MA và ARMA ta nhận định rằng mức độ tin cậy của mô hình AR và ARIMA tốt hơn MA và ARMA trong tập dữ liệu :

[Water_Spring_Amiata.csv](#)