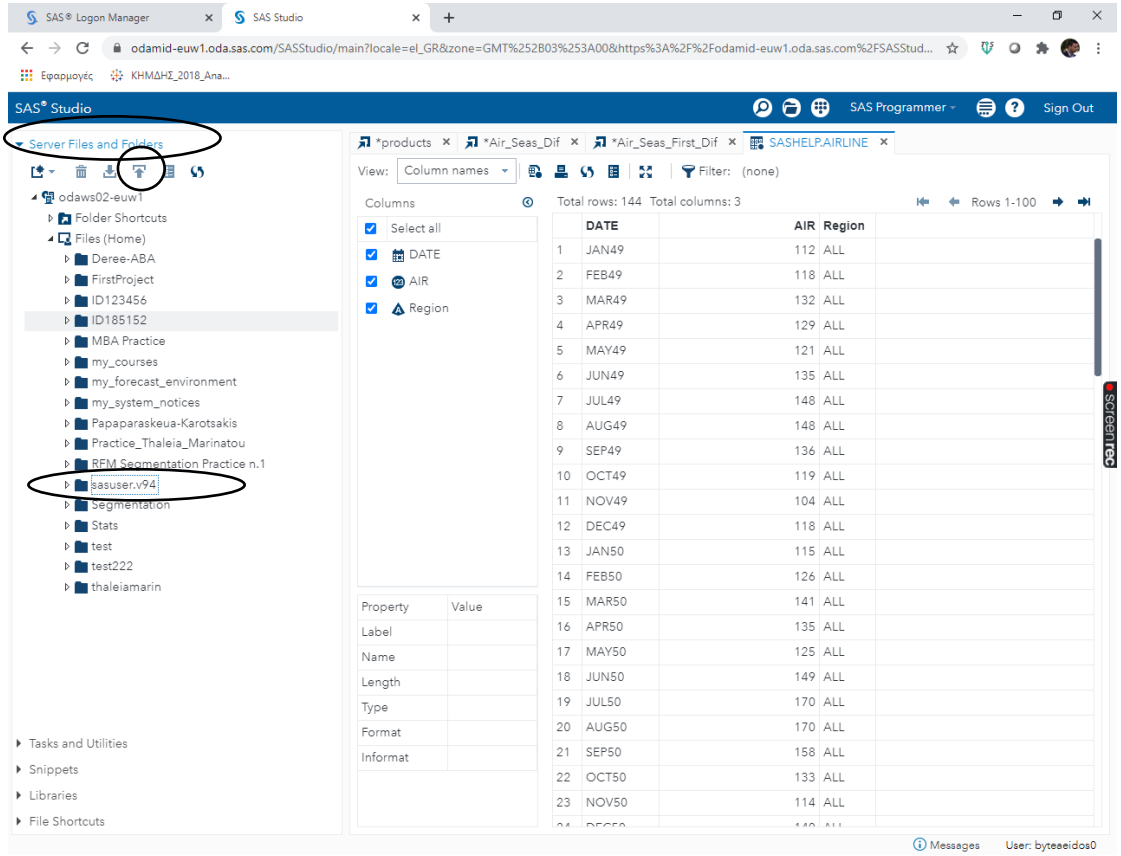
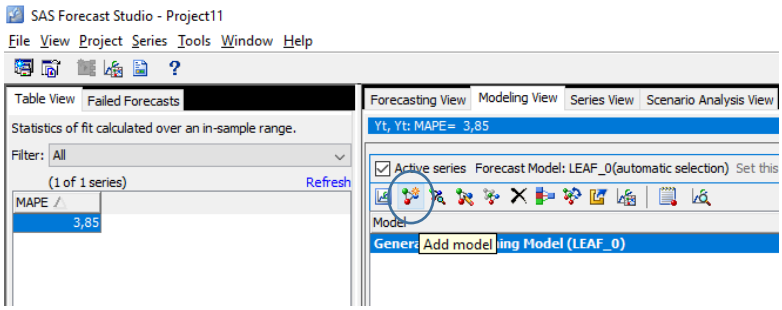
Exercise Time Series Regression

1) Open google chrome
2) Go to welcome.oda.sas.com
3) Select Europe in the drop down menu and press sign in
4) Insert your credentials
5) In the dashboard select SAS Studio
6) On the left hand side select Server Files and Folders and then sasuser.v94
7) Press the upload button (the one with the arrow heading upwards).



8) Select the file “beer_time_series_reg_for_sas.sas7bdat”
9) Press Upload
10) Open SAS Forecast Studio
11) In the projects window press New.
12) In step 1 name the project “Time Series Regression” and press next.
13) In step 2 open the sasuser library, Select the “beer_time_series_reg_for_sas” data set and press next.

14) In step 3 press next
15) In step 4 select Date as the time id variable.
16) In step 5 select Beer as the dependent variable. Select D1 – D11 as independent variables.
17) In step 6 press next
18) In step 7 set 12 in the Change the number of periods to forecast (horizon). Press Change Other Forecasting Settings and select the Model Generation tab. Select the Model Selection tab. Check the Use Holdout Sample for Model Selection option and input 12 and 25. Press OK. Press Next.
19) In step 8 press finish
20) In the Forecast Summary window double click on the Model Type box. What do you observe? Press close.
21) In the Forecasting view window, comment on the characteristics of the time series. Is your observation in line with the results of the previous step (model type)?
22) Select the Series View window. Select plot Unit Root Test. Which one of the three windows should you look (Zero Mean, Single Mean, Trend)? What do you conclude? Is this in line with the results in the two previous steps?
23) Select plot Seasonal Unit Root. What do you conclude? Note that we have monthly data. Select the ACF plot on the actual data. What do you conclude?
24) Select the Modelling View window. Take a note of the MAPE of the optimal model.
25) Select Add Model.



26) Select Multiple Regression and press OK
27) Select the independent variables tab and set D1 – D11 as independent. This action will model the seasonality. Press OK.
28) Compare the MAPE of the time series regression with the MAPE of the optimal model in step 24. This is because in Time Series Regression Dummy variables we assume that the seasonal

component is unchanging over time where as in the exponential smoothing model the coefficients are time varying i.e. they adjust to the data so we have better fit.