

Solution to small exercises:

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libname asb 'C:\Documents and Settings\xx12345\Desktop';

* Assignment 1;
proc means data=asb.fltattnd clm mean std;
var salary;
run;

* Assignment 2 *;
proc print data=asb.weekrev;
var FlightID origin Date CargoRev PasRev;
run;

* Assignment 3a) *;
proc sort data=asb.sales121999;
by FlightID;
run;

*Assignment 3) *;
data total_rev;
set asb.sales121999;
Total = sum(FClassRev, BClassRev, EClassRev, CargoRev);
keep FlightID RouteID Total;
run;
proc print data= total_rev;
run;

*Assignment 4) *;
data new_pilots;
set asb.pilots;
if JobCode='PT2' and Salary gt 84000 then output;
run;
proc print data=new_pilots;
var IDNum Salary ;
run;

*Assignment 5) *;
Proc reg data=asb.b_fitness;
Model oxygen_consumption = runtime age performance weight;
Run;
quit;
```

Event study example:

```
/*Read in the data using a data step using the import function*/

data event; /*name of new dataset*/
set event; /*name of old which will be overwritten*/
count = _N_; /*adding a variable 'count' that is the observation number*/
run;

/*new dataset namede event200 with only the first 200 observations from the
dataset event*/
data event200;
set event;
where count <= 200;
run;

/*market model for the 5 stocks in the model the estimates are written to the
sas dataset beta*/
proc reg data=event200 outest=beta noprint;
model stock1 = market1;
model stock2 = market2;
model stock3 = market3;
model stock4 = market4;
model stock5 = market5;
run;
quit;

/*the following is made to make the alpha and beta estimates ready to merge with
the event dataset so the abnormal returns can be calculated*/
data betal; /*the estimates will be saved in the dataset betal*/
set beta;
if _n_=1 then do;
betal= market1;
alpha1= intercept;
end;
if _n_=2 then do;
beta2= market2;
alpha2= intercept;
end;
if _n_=3 then do;
beta3= market3;
alpha3= intercept;
end;
if _n_=4 then do;
beta4= market4;
alpha4= intercept;
end;
if _n_=5 then do;
beta5= market5;
alpha5= intercept;
end;
keep betal-beta5 alpha1-alpha5;
run;

/*to make all estimates appear in one row the follwoing means procedure is used
(this is a small trick)*/
/*the estimates will be in the dataset beta2*/
proc means data=betal mean noprint;
output out=beta2;
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run;
data beta2;
set beta2;
where _stat_='MEAN';
drop _type_ _freq_ _stat_;
run;

data abnorm; /*new dataset called abnorm*/
set event; /*the dataset is based on the event dataset i.e. data from both the
estimation and event period*/
if _n_=1 then set beta2; /*all the alpha and beta estimates are added to the
dataset*/
run;

/*the abnormal returns are calculated in the dataset abnorm by using the market
model estimates*/
data abnorm;
set abnorm;
abnor1 = stock1 - alpha1 - beta1*market1;
abnor2 = stock2 - alpha2 - beta2*market2;
abnor3 = stock3 - alpha3 - beta3*market3;
abnor4 = stock4 - alpha4 - beta4*market4;
abnor5 = stock5 - alpha5 - beta5*market5;
run;

/*first the average excess return is calculated for each day in the event and
estimation window (slide 81)*/
data a_bar;
set abnorm;
a_bar = mean(of abnor1 - abnor5);
run;

/*calculate a_bar_bar (which is the sum of a_bar in the estimation period
divided by the number of observations i.e. average a_bar)*/
/*The a_bar_bar estimate is now in the dataset a_bar_bar*/
proc means data=a_bar noprint;
where count<201; /*only in the estimation period*/
var a_bar;
output out=a_bar_bar mean=a_bar_bar;
run;

/*calculating std of a_bar*/
/*first the squared deviations from a_bar_bar is calculated*/
data std_a_bar;
if _n_=1 then set a_bar_bar; /* a_bar_bar is added to the table*/
set a_bar;
sqrd = (a_bar - a_bar_bar)**2;
run;

/*next we sum the squared deviation from the mean*/
proc means data=std_a_bar noprint;
where count<201; /*only in the estimation period*/
var sqrd;
output out=sum_sqrd mean=sum_sqrd;
run;

/*lastly the variance used in the calculation of the test statistics is
calculated*/
data sum_sqrd;

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set sum_sqrd;
std_a_bar = sqrt(sum_sqrd); /*std used in the T1 test statistic*/
std_car = sqrt(3*(std_a_bar**2)); /*this estimate is used later see slide 84*/
run;

/*calculating the T1 test statistic in each day of event window*/
data event_window; /*new dataset with only observations from the event window*/
set a_bar;
where count gt 200;
if _n_=1 then set sum_sqrd; /*the variance is added to the dataset*/
t1 = a_bar/std_a_bar;
pvalue_t1 = 2*(1- cdf('t',abs(t1), 199));
run;

/*print the t1 test statistics*/
proc print data=event_window;
var t1 pvalue_t1;
run;

/*calculating the T1_car test statistic*/
/*first the sum of a_bar is calculated*/
proc means data=event_window noprint;
var a_bar;
output out=car SUM=car;
run;

/*next the variance calculated above is added to the dataset*/
data car;
set car;
set sum_sqrd;
t1car = car/std_car; /*the value of the test statistic can then be found in the
dataset sum_a_bar2*/
pvalue_t1car = 2*(1- cdf('t',abs(t1car), 199));
run;

/*print the t1_bar test statistics*/
proc print data=car;
var t1car pvalue_t1car;
run;

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