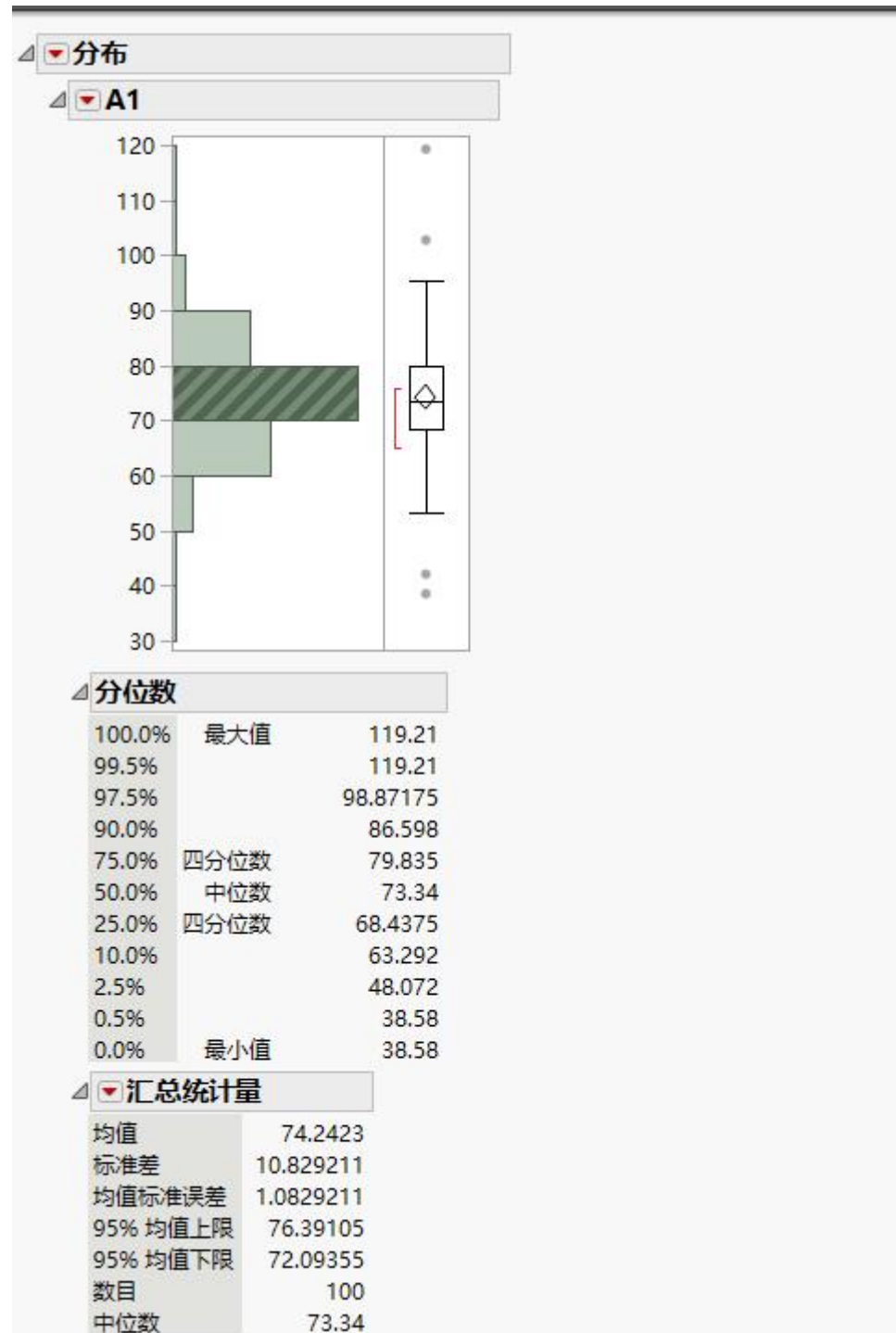


Weilin Lu
CS-699 HW2
Question 1

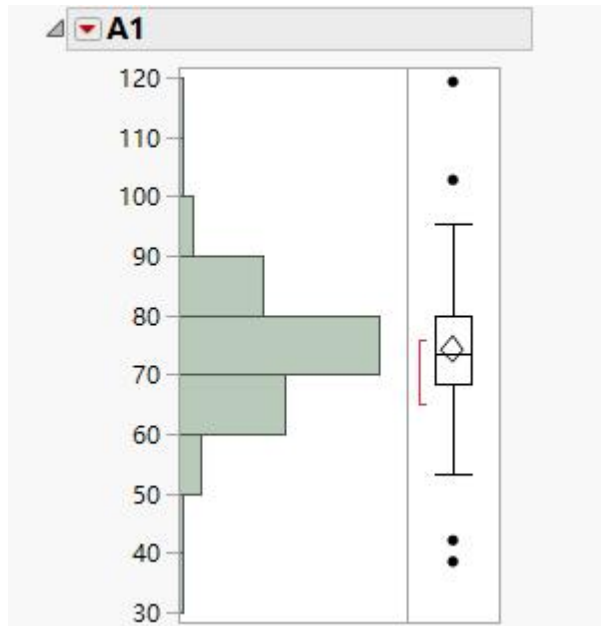


1: mean = 74.2423; median = 73.34; standard deviation = 10.829211

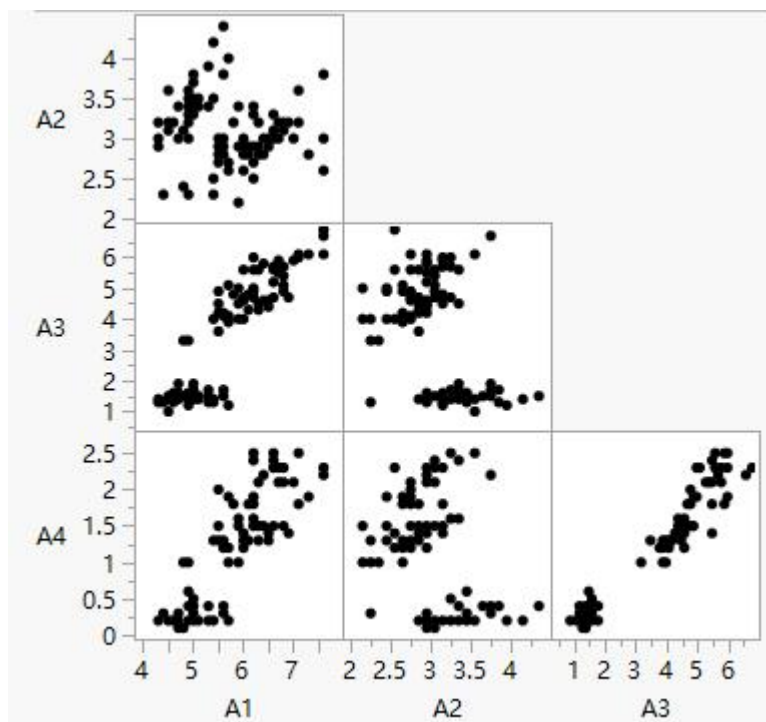
2: Q1 = 68.4375; Q2 = 73.34; Q3 = 79.835

3: IQR = Q3-Q1=79.835-68.4375=11.3975

4:



Question2:



By visual observation, it seems like A1A3 and A3A4 have the strongest correlation.

Question3:

$$d(P8, P9) = (p-m)/p = (7-2)/7 = 5/7$$

$$d(P8, P10) = (p-m)/p = (7-2)/7 = 5/7$$

According to the result showed above, they have same distance

Question4:

Object	A1	A2	A3	A4
O1	2	0.5	1	1
O2	5	1	0.5	0

$$D(O1,O2)=\text{Sqr root}\{(2-5)^2+(0.5-1)^2+(1-0.5)^2+(1-0)^2\}=3.24$$

Question5:

$$A1: |27-52|/(73-12)=0.41$$

$$A2: 1$$

$$A3: 1$$

$$A4: 1$$

$$A6: 1$$

$$A7: |0.5-0|/(1-0)=0.5$$

$$D(T6,T7)=(0.41+1+1+1+1+0.5)/6 =0.82$$

Question6:

$$D1*D2=(3*1+3*1+2*0+1*3+2*4+2*2+4*2+2*3+2*1+1*1)=38$$

$$D1*D3=(3*2+3*2+2*1+1*4+2*0+2*1+4*0+2*1+2*2+1*2)=28$$

$$||D1||=(3*3+3*3+2*2+1*1+2*2+2*2+4*4+2*2+2*2+1*1)^{0.5}=7.48$$

$$||D2||=(1*1+1*1+0*0+3*3+4*4+2*2+2*2+3*3+1*1+1*1)^{0.5}=6.78$$

$$||D3||=(2*2+2*2+1*1+4*4+0*0+*1+0*0+1*1+1*1+2*2)^{0.5}=5.92$$

$$\cos(D1,D2)=38/(7.48*6.78)=0.75$$

$$\cos(D1,D3)=28/(7.48*5.92)=0.63$$

So, D1 is closer to D3