```
>my.boot.xy.conf(mat.train=x.auto2a.train,mat.test=x.auto2a.test,y.train=y.auto.train,y.test=y.
auto.test,xstring="lars",brep=10000,pred.int=T,alpha=.05)
[1]   200 10000
[1]   400 10000
[1]   600 10000
[1]   800 10000
[1]  1000 10000
[1]  1200 10000
[1]  1400 10000
[1]  1600 10000
[1]  1800 10000
[1]  2000 10000
[1]  2200 10000
[1]  2400 10000
[1]  2600 10000
[1]  2800 10000
[1]  3000 10000
[1]  3200 10000
[1]  3400 10000
[1]  3600 10000
[1]  3800 10000
[1]  4000 10000
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[1]  4600 10000
[1]  4800 10000
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[1]  5800 10000
[1]  6000 10000
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[1]  6400 10000
[1]  6600 10000
[1]  6800 10000
[1]  7000 10000
[1]  7200 10000
[1]  7400 10000
[1]  7600 10000
[1]  7800 10000
[1]  8000 10000
[1]  8200 10000
[1]  8400 10000
```

```
[1]  8600 10000
[1]  8800 10000
[1]  9000 10000
[1]  9200 10000
[1]  9400 10000
[1]  9600 10000
[1]  9800 10000
[1] 10000 10000
[1] -0.7835015
[1] -0.8057765

$bpred
     1       3       4       5       6       8       9      10
15.57821 15.08068 14.84649 15.53243 13.28724 13.22963 12.85828 13.70719
    17      18      20      22      26      30      32      36
19.80386 21.23737 29.62362 23.60612 10.01025 26.54663 24.99383 16.52625
    37      38      39      43      45      47      48      49
17.18498 16.86863 12.69000 12.35142 13.02658 22.79690 16.73341 17.87695
    50      51      52      53      54      57      59      62
24.18627 24.99680 27.57839 27.17159 31.00331 27.65143 25.85375 23.97368
    63      64      68      70      73      75      76      79
12.65760 13.04962 12.36703 12.50346 13.50110 12.93889 13.02630 20.22094
    81      83      84      85      86      87      88      94
23.01932 23.02640 25.73834 26.61586 12.48207 14.38645 14.07676 12.95403
   102     104     105     106     109     110     112     114
19.42536 14.06313 13.42588 12.37043 25.65111 23.09565 27.11572 22.29600
   117     118     120     121     123     124     125     126
11.28613 30.75137 22.65166 19.84836 21.08295 20.85454 13.48328 18.93930
   130     131     133     134     136     137     139     142
29.92472 23.54379 22.60882 15.76691 16.28097 13.91005 13.23538 25.89575
   144     150     154     158     161     165     166     167
25.85947 23.65396 17.00223 14.28210 15.76727 18.57387 18.34865 17.79725
   168     169     170     172     173     175     178     179
27.94403 22.26883 19.47915 22.78964 27.33580 20.68322 22.66472 21.44251
   180     182     184     185     188     190     196     198
21.17782 31.66325 26.45381 23.04521 15.19126 16.41050 30.21710 30.11555
   200     203     206     207     211     213     216     217
17.60274 18.92725 28.72015 24.17233 22.36478 13.66184 15.49881 30.49324
   218     219     220     221     224     225     227     231
27.96126 32.56165 25.83072 31.70426 15.89841 16.19829 18.83967 15.36261
   232     233     237     238     239     240     241     242
15.07058 15.71514 23.06231 29.81134 28.77906 31.05764 28.67543 24.68039
   245     246     248     249     251     252     254     258
32.52585 32.60453 31.85739 33.95565 18.01867 18.48221 21.76716 21.28925
```

```
   265     267     269     272     275     276     278     279
19.93626 29.97517 27.93257 22.81058 24.37748 21.83470 20.28084 31.58711
   282     283     288     293     294     295     300     302
24.09854 24.62696 19.16884 18.79720 33.31552 34.03765 24.67325 30.82395
   303     305     307     309     310     311     312     313
30.93339 31.90512 25.86869 26.15698 32.53542 35.36822 32.72913 35.01684
   315     318     320     326     328     329     334     335
26.05163 32.11444 29.94557 34.44497 28.36339 25.54416 25.96822 31.10583
   339     340     342     344     348     349     351     353
29.94569 28.60012 28.12434 38.98666 36.79568 36.29700 33.75112 32.81404
   354     358     361     363     364     366     369     371
33.62350 30.13470 28.36176 28.27591 23.82156 26.59101 31.40430 31.97383
   372     373     374     377     379     380     385     386
31.42474 29.44164 29.17314 38.12503 35.80004 34.95667 38.07792 28.19390
   388     390     391     392     394     395     396     397
30.17338 30.95534 32.59916 28.48300 37.14427 33.25400 31.58774 31.01051

$ypred0
     1      3      4      5      6      8      9     10
15.63401 15.08407 14.86014 15.54634 13.23626 13.11017 12.74534 13.61390
    17     18     20     22     26     30     32     36
19.84647 21.30929 29.84163 23.68647 10.02008 26.48178 24.92332 16.55532
    37     38     39     43     45     47     48     49
17.23361 16.88778 12.69402 12.41907 13.14071 22.81433 16.75671 17.91287
    50     51     52     53     54     57     59     62
24.13669 25.05809 27.67328 27.23408 31.00719 27.65640 25.78656 23.91271
    63     64     68     70     73     75     76     79
12.63599 13.01427 12.27162 12.53102 13.47433 13.00455 13.03442 20.26842
    81     83     84     85     86     87     88     94
22.94528 22.91798 25.65328 26.53724 12.40894 14.30776 14.05374 12.95936
   102    104    105    106    109    110    112    114
19.37518 14.16747 13.46423 12.37477 25.55180 23.05869 26.95733 22.18360
   117    118    120    121    123    124    125    126
11.05800 30.82527 22.62877 19.80459 21.03221 20.70599 13.34066 18.87831
   130    131    133    134    136    137    139    142
29.84639 23.44129 22.53201 15.75828 16.23697 13.90159 13.24137 25.89210
   144    150    154    158    161    165    166    167
25.84120 23.51118 16.95229 14.29600 15.75347 18.48682 18.31454 17.72221
   168    169    170    172    173    175    178    179
27.83147 22.16916 19.41834 22.63450 27.33532 20.57429 22.62025 21.42803
   180    182    184    185    188    190    196    198
21.12697 31.61981 26.47071 22.91757 15.17550 16.41704 30.16249 30.11995
   200    203    206    207    211    213    216    217
17.57267 18.90378 28.61354 24.06506 22.23903 13.57800 15.43573 30.43068
```

```
   218     219     220     221     224     225     227     231
27.85497 32.62526 25.70636 31.62126 15.88521 16.23943 18.79803 15.27715
   232     233     237     238     239     240     241     242
14.96429 15.72545 22.95340 29.74303 28.66878 30.98698 28.66528 24.56716
   245     246     248     249     251     252     254     258
32.63271 32.55122 31.79435 33.92481 17.99483 18.44325 21.74375 21.28830
   265     267     269     272     275     276     278     279
19.86424 29.90704 27.81946 22.71476 24.37333 21.81042 20.26951 31.62043
   282     283     288     293     294     295     300     302
24.11798 24.57602 19.19532 18.79660 33.37347 33.99531 24.78937 30.75504
   303     305     307     309     310     311     312     313
30.88477 31.95917 25.75822 26.08353 32.62167 35.39873 32.71647 35.01704
   315     318     320     326     328     329     334     335
26.04206 32.20296 29.94504 34.60849 28.49588 25.70862 25.85879 30.97517
   339     340     342     344     348     349     351     353
29.97519 28.64506 28.11687 39.06191 36.86093 36.35426 33.79061 32.86815
   354     358     361     363     364     366     369     371
33.75790 30.11318 28.55968 28.24248 23.89062 26.68052 31.47200 32.03304
   372     373     374     377     379     380     385     386
31.50900 29.53857 29.24439 38.23725 35.89917 35.02935 38.17993 28.28020
   388     390     391     392     394     395     396     397
30.24831 31.00870 32.66156 28.57363 37.40609 33.30376 31.67905 31.09738

$type
[1] "lars"

$bagged.beta
  cylinders  displacement    horsepower       weight  acceleration
 1.734735e+00 -6.617870e-02 -4.761806e-02 -1.137708e-02 -4.427427e-01
       year       origin    cylinders2 displacement2   horsepower2
-1.170019e+01 -7.246845e-01 -1.017939e-01  1.141496e-04  2.407095e-06
    weight2 acceleration2        year2      origin2
 1.197731e-06  1.159205e-02  8.214599e-02  2.969739e-01

$orig.beta
  cylinders  displacement    horsepower       weight  acceleration
 1.692354e+00 -6.461190e-02 -4.886594e-02 -1.162900e-02 -4.177510e-01
       year       origin    cylinders2 displacement2   horsepower2
-1.235114e+01 -2.616304e-01 -9.695654e-02  1.118972e-04  0.000000e+00
    weight2 acceleration2        year2      origin2
 1.240406e-06  1.105816e-02  8.646875e-02  1.817164e-01

$pred.int
[1] TRUE
```

```
>my.boot.xy.conf(mat.train=x.auto2a.train,mat.test=x.auto2a.test,y.train=y.auto.train,y.test=y.
auto.test,xstring="leaps",brep=10000,pred.int=T,alpha=.05)
[1]   200 10000
[1]   400 10000
[1]   600 10000
[1]   800 10000
[1]  1000 10000
[1]  1200 10000
[1]  1400 10000
[1]  1600 10000
[1]  1800 10000
[1]  2000 10000
[1]  2200 10000
[1]  2400 10000
[1]  2600 10000
[1]  2800 10000
[1]  3000 10000
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[1]  3400 10000
[1]  3600 10000
[1]  3800 10000
[1]  4000 10000
[1]  4200 10000
[1]  4400 10000
[1]  4600 10000
[1]  4800 10000
[1]  5000 10000
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[1]  5400 10000
[1]  5600 10000
[1]  5800 10000
[1]  6000 10000
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[1]  6600 10000
[1]  6800 10000
[1]  7000 10000
[1]  7200 10000
[1]  7400 10000
[1]  7600 10000
[1]  7800 10000
[1]  8000 10000
[1]  8200 10000
[1]  8400 10000
```

[1] 8600 10000
[1] 8800 10000
[1] 9000 10000
[1] 9200 10000
[1] 9400 10000
[1] 9600 10000
[1] 9800 10000
[1] 10000 10000
[1] 36.79736
[1] 36.74382

$bpred
 [1] 15.74365 15.23501 15.02986 15.64345 13.27588 13.07460 12.71550 13.67858
 [9] 19.95041 21.42728 30.01837 23.81434 10.30718 26.53430 25.06130 16.65182
[17] 17.28186 16.94229 12.80004 12.57905 13.31761 23.08509 16.84930 17.96661
[25] 24.33596 25.27783 27.67847 27.23801 31.00500 27.80980 25.85090 24.11305
[33] 12.69047 13.03690 12.24997 12.62595 13.49970 13.08767 13.10470 20.29239
[41] 23.07460 22.97021 25.66308 26.59284 12.46115 14.27706 14.04835 13.00166
[49] 19.28458 14.22683 13.50344 12.44569 25.54383 23.24453 27.04804 22.02466
[57] 10.98124 30.62359 22.58472 19.84634 21.08674 20.45275 13.36249 18.72419
[65] 29.70825 23.46096 22.61170 15.71126 16.14377 13.86201 13.23935 25.85682
[73] 25.70047 23.50781 16.91620 14.27669 15.73614 18.46768 18.16060 17.66482
[81] 27.69368 22.23960 19.41279 22.58942 27.16478 20.27430 22.54117 21.32453
[89] 21.02161 31.51051 26.52222 22.99616 15.08714 16.29000 30.00856 29.99985
[97] 17.45199 18.91398 28.48242 24.01800 21.89476 13.56255 15.41746 30.35763
[105] 27.85150 32.50665 25.80604 31.47931 15.83930 16.17244 18.72906 15.22359
[113] 14.90958 15.71687 22.98961 29.65576 28.65167 30.88651 28.53165 24.13454
[121] 32.52150 32.54700 31.64871 33.84146 17.95071 18.38842 21.61075 21.21281
[129] 19.81668 29.80986 27.85813 22.94033 24.15541 21.53430 20.02557 31.51070
[137] 23.99968 24.64495 19.16320 18.78561 33.29610 33.82721 24.81988 30.64639
[145] 30.83718 31.81705 25.59173 26.21941 32.59516 35.33614 32.68556 34.89405
[153] 26.16836 32.18768 29.92923 34.52201 28.15811 25.74201 25.63704 30.99829
[161] 30.16322 28.89053 28.01698 39.02595 36.85372 36.28990 33.76664 32.85778
[169] 33.78645 30.17568 28.22050 27.97991 23.94630 26.62654 31.61236 32.13251
[177] 31.75256 29.87507 29.46568 38.31867 36.01279 35.25426 38.21729 28.31148
[185] 30.58872 31.22208 32.88466 28.84289 37.51193 33.51506 31.83053 31.24370

$ypred0
 [1] 15.40200 14.81803 14.65597 15.05174 13.24649 12.83355 12.81515 13.21020
 [9] 19.71852 21.29727 30.18456 23.71509 10.52771 26.45275 25.09129 16.79044
[17] 17.45391 16.93219 12.68435 12.63620 13.54055 23.44014 16.96380 18.09435
[25] 24.32658 25.32505 27.48912 27.03747 30.89387 27.65655 25.74494 24.24527
[33] 12.57602 13.17080 12.40967 12.68581 13.16098 13.02296 13.00621 20.35913
[41] 23.14593 23.04935 25.46815 26.62371 12.45656 13.81915 14.04715 12.94513

```
 [49] 19.04575 14.63337 13.74513 12.52562 25.54145 23.58646 27.20546 21.27462
 [57] 10.81021 30.43016 22.49083 19.83590 21.01603 19.74744 13.11798 18.47355
 [65] 29.63429 23.55291 22.92002 15.87277 16.07304 13.66342 13.10991 25.81917
 [73] 25.53949 23.62204 17.05043 14.38187 15.63339 18.42346 17.70616 17.31652
 [81] 27.72137 22.50138 19.47038 22.70574 27.06254 19.65730 22.49665 21.39722
 [89] 20.96322 31.69638 26.71769 23.15389 14.81431 16.11663 29.70144 29.85272
 [97] 17.41126 19.20434 28.52824 24.13538 21.33601 13.46483 15.31656 30.49540
[105] 27.79791 32.44658 25.84285 31.46160 15.71174 16.05204 18.73111 15.02023
[113] 15.06749 15.85474 23.16783 29.62748 28.51348 31.00658 28.36376 23.44547
[121] 32.47308 32.45717 31.60583 33.96823 17.78088 18.08054 21.39127 21.28611
[129] 19.34213 29.71918 27.97937 23.28982 23.74072 20.79084 19.39521 31.37874
[137] 23.82802 24.84571 19.18431 18.82574 33.11529 33.75964 24.69460 30.40339
[145] 30.74782 31.66185 24.68092 26.36305 32.49849 35.40418 32.55168 34.86738
[153] 26.37658 32.12382 30.17790 34.42639 27.72117 26.00048 24.77554 30.93955
[161] 30.34103 29.24546 27.24939 39.03096 36.83555 36.32392 33.68106 32.66836
[169] 33.73112 30.21925 27.56736 27.16170 23.89308 26.42333 31.52977 32.03911
[177] 31.93434 30.22011 29.63170 38.38169 35.93519 35.42600 38.24291 27.86427
[185] 30.88225 31.48225 32.88250 29.14530 37.16806 33.36570 31.87291 31.23106

$type
[1] "leaps"

$bagged.beta
        1          2          3          4          5
 1.918965e+02  1.752640e+02  1.175686e+02  4.424038e+01 -6.185773e-03
        6          7          8          9          A
-3.795021e-01 -4.571371e+00 -2.314616e+00 -4.988850e+00 -5.165519e-01
        B          C          D          E
-1.075614e+00  1.084712e-05  1.028980e-02  3.595146e-02

$orig.beta
        1          2          3          4          5
 0.000000e+00  5.276342e+02 -4.005432e-02 -4.705358e-02  0.000000e+00
        6          7          8          9          A
-1.304511e-02  0.000000e+00  0.000000e+00 -1.321286e+01  0.000000e+00
        B          C          D          E
 8.415241e-05  0.000000e+00  1.415310e-06  9.211239e-02

$pred.int
[1] TRUE
```

Answers to Questions

- When it comes to predictive correlation in both lars and leaps, we can see that the prediction line in both lars and leaps is very similar in the direction and collection of

points plotted in each graph. Due to the similarity amongst the graphs, we decided to state that lars and leaps are pretty similar to each other in terms of predictive correlation, but we ultimately feel that lars is better due to the resulting line being much smoother and less jagged.

- When it comes to comparing the bagged beta to the original beta, we decided to take the mean of the bagged beta data, and the mean of the original beta data. Upon taking the means, we get…

    - Lars:
        - - 0.7835015 (bagged)
        - - 0.8057765 (original)

    - Leaps:
        - 36.79736 (bagged)
        - 36.74382 (original)

    We can see that in both cases, the means are very similar, so we conclude that both the bagged beta data and the original beta data are very similar to each other.