Intro to Database Systems	James Russo and Shiven Srivastava (jdr289 and ss2654)
CS4320 Spring 2015	Homework 1

1. (a) See txt file

   (b) See txt file

   (c) See txt file

   (d) See txt file

   (e) $\rho(temp, (Sells \bowtie_{Sells.iid=Item.iid} Item) \bowtie_{storeid} (Sells \bowtie_{Sells.iid=Item.iid} Item))$
   $\rho(temp1, temp \bowtie_{storeid} temp)$
   $\rho(tempf(2 \rightarrow iid1, 4 \rightarrow color1, 5 \rightarrow iid2, 7 \rightarrow color2, 8 \rightarrow iid3, 10 \rightarrow color3, 11 \rightarrow iid4, 13 \rightarrow color4), temp1)$
   $\rho(check1, \sigma_{color1 \neq color2 \neq color3 \neq color4} tempf)$
   $\rho(check2, \sigma_{color1 \neq color2 \neq color3}(\pi_{storeid,color1,color2,color3} tempf))$
   $\rho(ans, \pi_{storeid}(check2) - \pi_{storeid}(check1))$
   Table ans is our final result

   (f) Sells S1 and Sells S2
   $\rho(temp1, \pi_{iid}(\sigma_{storeid=S2.storeid} Sells))$
   $\rho(temp2, \pi_{storeid}(\sigma_{iid=temp1.storeid} Sells))$
   $\rho(temp3, \pi_{S1.storeid,S2.storeid}(\sigma_{S1.storeid \neq temp2.storeid}(S1 \times S2)))$
   $\rho(temp4(1 \rightarrow storeid1, 2 \rightarrow storeid2), temp3)$
   $\rho(ans, \pi_{storeid1,storeid2}(\sigma_{storeid1 > storeid2} temp4))$
   Table ans is our final result

   (g) $\rho(sells2, sells)$
   $\rho(cross, sells2 \times sells)$
   $\rho(cross2(1 \rightarrow iid1, 2 \rightarrow storeid1, 3 \rightarrow price1, 4 \rightarrow iid2, 5 \rightarrow storeid2, 6 \rightarrow price2), cross)$
   $\rho(notmin1, \sigma_{price2 > price1 \wedge iid2 = iid1 \wedge storeid2 \neq storeid1} cross2)$
   $\rho(notmin2, \pi_{iid2,storeid2,price2} notmin1)$
   $\rho(ans, Sells - notmin2)$
   Table ans is our final result

2. see txt file

3. (a)