EECS 484 HW4

1.1.a)

$$5000 + \left\lceil \frac{5000}{800-2} \right\rceil \times 15000 = 110000$$

1.1.b)

0

1.2.a)

$2 \times (5000 + 15000) = 40000$

1.2.b)

$5000 + 15000 = 20000$

1.3

$110,000 < 40000 + 20000X \Rightarrow 3.5 < X$

If $3.5 < X$, then BNL is better. On the other hand, if $3.5 > X$, the grace join is better

2.1

Since in this relational schema we only have three tables.

=> join(join(S,R), B)

join(join(R,S), B) => 4 different joins.

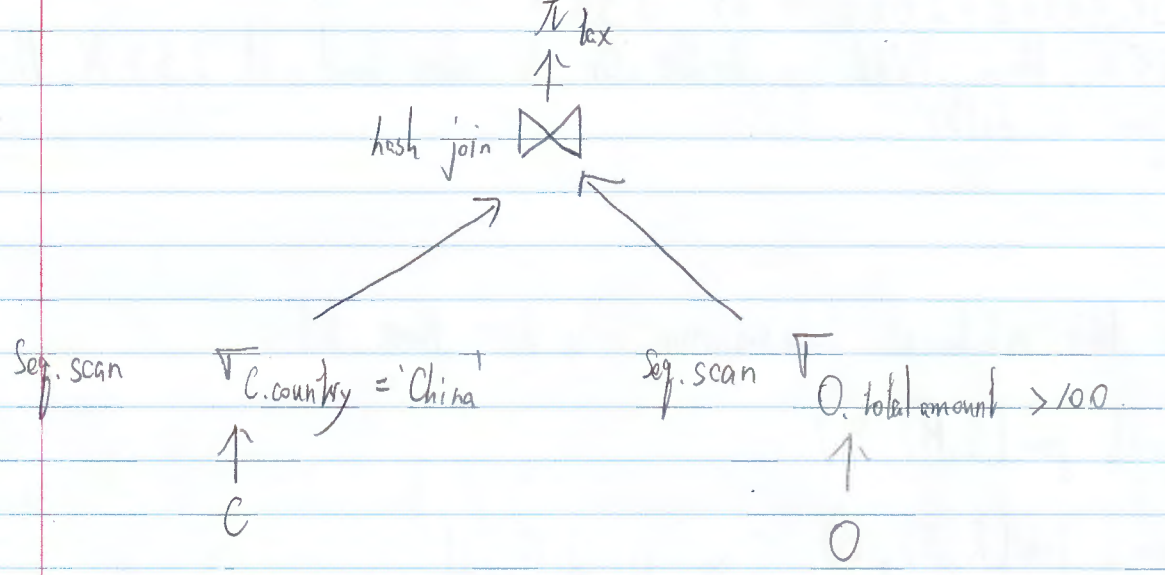
join(join(B,R), S)

join(join(R,B), S)

2.2

<sid, rid, color, rating, age>

3.



4.1

$$\frac{64 \times 4096 \times 0.71}{32 + 16} \approx 3878 \text{ tuples.}$$

4.2

$$3878 \times 48 \times \frac{1}{4096} \approx 46 \text{ pages.}$$

4.3

$$\frac{240 \times 1024 \times 32}{40964} \approx 1920 \text{ pages}$$

4.4

since gpa > 3.5 , we need only read $\frac{64}{8} = 8$ pages

after select the tuple, attribute age is useless. Therefore, we need to write $8 \times \frac{2}{3} \approx 6$ pages.

4.5.a)

Partition phase $= 2(|S| + |T|) = 2(46 + 1920) = 3932$

4.5.b)

probe phase $= |S| + |T| = 1966$

5.

(A)

$8000 + 400 + 4 = 8404$

(B)

$8000 \times 100 + 400 + 4 = 800404$

(C)

$\min\left[2N\left(1 + \text{ceil}\left(\log_{B-1}\frac{N}{B}\right)\right)\right] = 16000 \times 2 = 32000$

=) external sort will always need more IOs than clustered B+ Tree

However if the tree is unclusted, we can check for the value of B.