

# CSE 344 Section 8 Worksheet

1. Estimate the cardinality at **each stage** of the query plan below based on the following information about a library system:

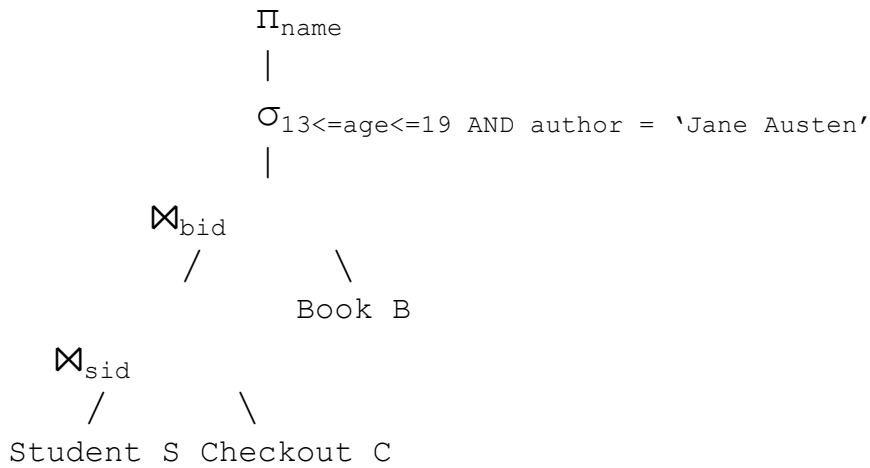
Students(sid, name, age)  
Books(bid, title, author)  
Checkout(sid, bid, date)

T(S) = 10,000  
T(B) = 30,000  
T(C) = 150,000

V(B, author) = 500

Student ages are in the range:  $5 \leq \text{age} \leq 25$

,



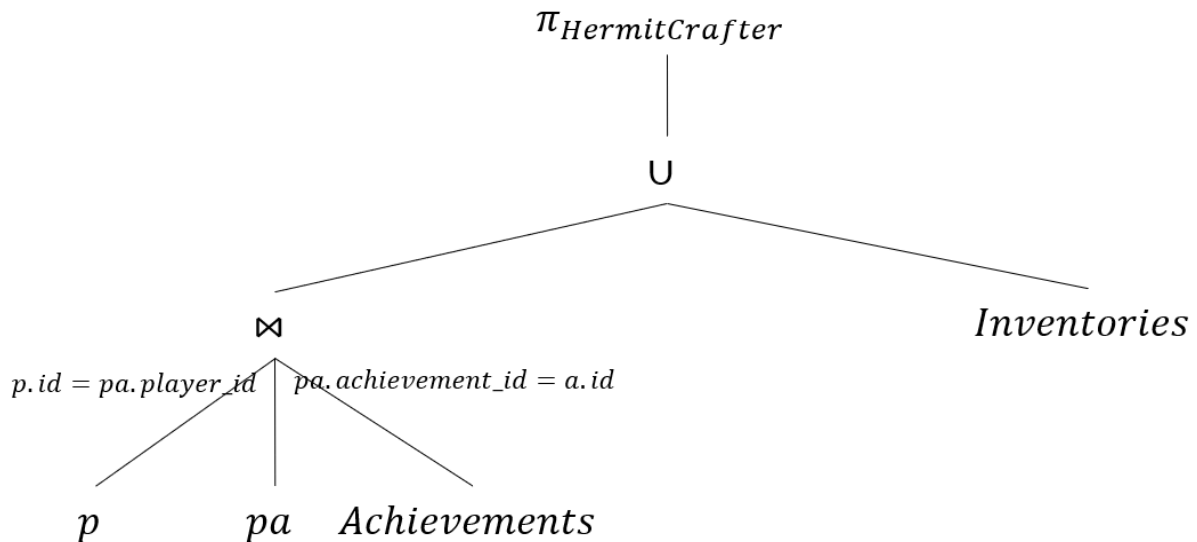
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2. This question is themed around *HermitCraft*, a Minecraft SMP Let's Play involving 20+ Minecraft YouTubers. Sumedh will be sad if no students understand his references, but no domain knowledge of Minecraft is required to answer this question.

With the *HermitCraft Season 10* wrapping up, Xisumavoid wanted to collect some statistics on the players. Some of the Hermits defeated the Ender Dragon and earned the achievement "The End". Others skipped the boss fight and just bought an Elytra (an end-game item) from another player. To find the players who defeated the dragon and owned an elytra, Xisuma wrote this query:

```
SELECT DISTINCT p.name AS HermitCrafter
FROM Players p,
     PlayerAchievements pa,
     Achievements a,
     Inventories i
WHERE p.id = pa.player_id
     AND pa.achievement_id = a.id
     AND a.title = 'The End'
     AND p.id = i.pid
     AND i.item = 'Elytra';
```

Xisuma started to convert this query into an RA tree, but he thinks something has gone wrong. Figure out what's wrong with this RA tree and submit a corrected version (as a hint, you should expect to make 5-6 modifications to this tree).



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