0/5 Questions Answered

Vitamin 4

STUDENT NAME

Search students by name or email...   ▾

Q1 LRU
2 Points

For the following questions, assume the following page access pattern:

A P R O P E R C O P P E R C O F F E E P O T

Assume you start off with 4 empty buffer frames, and that, when a page is requested, it is brought in and pinned as normal, and then immediately unpinned before the next page request.

Q1.1

Using LRU replacement policy, how many buffer pool hits are there?

Enter your answer here

Q1.2

At the end of this access pattern which pages are left in the buffer pool?

☐ A

☐ A

☐ P

☐ O

☐ E

☐ R

☐ C

☐ F

☐ T

[Save Answer]

Q2 MRU

2 Points

For the following questions, assume the following page access pattern:

A P R O P E R C O P P E R C O F F E E P O T

Assume you start off with 4 empty buffer frames, and that, when a page is requested, it is brought in and pinned as normal, and then immediately unpinned before the next page request.

Q2.1

Using MRU replacement policy, how many buffer pool hits are there?

Enter your answer here

Q2.2

At the end of this access pattern which pages are left in the buffer pool?

- [ ] A

- [ ] P

- [ ] O

- [ ] E

- [ ] R

- [ ] C

- [ ] F

- [ ] T

Save Answer

Q3 Clock
3 Points

For the following questions, assume the following page access pattern:

A P R O P E R C O P P E R C O F F E E P O T

Assume you start off with 4 empty buffer frames, and that, when a page is requested, it is brought in and pinned as normal, and then immediately unpinned before the next page request.

Q3.1

Using Clock replacement policy, how many buffer pool hits are there?

Enter your answer here

Q3.2

At the end of this access pattern which pages are left in the buffer pool?

- [ ] A
- [ ] P
- [ ] O
- [ ] E
- [ ] R
- [ ] C
- [ ] F
- [ ] T

Q3.3

How many reference bits are set at the end of the Clock algorithm?

○ 1

○ 2

○ 3

○ 4

Save Answer

Q4 Quick Facts
2 Points

Q4.1
True or False: For any sequential access pattern and buffer size, LRU will always have a cache hit rate strictly less than MRU

○ True

○ False

Q4.2
Which of the following statements are true? There may be zero, one, or more than one correct answer.

☐ After a request is finished, the requester of the page must set the dirty bit if the page was modified.

☐ A page in a pool cannot be requested multiple times.

☐ Clock policy is a good approximation for MRU

☐ Evicting a page from the buffer pool where the pin count is nonzero may cause unintended behavior

Save Answer

Q5 Relational Algebra
3 Points

```sql
CREATE TABLE Users(

uid INTEGER PRIMARY KEY,

uname TEXT,

country TEXT);


CREATE TABLE Artists(

aid INTEGER PRIMARY KEY,

aname TEXT);


CREATE TABLE Albums(

albumid INTEGER PRIMARY KEY,

albumname TEXT,

genre TEXT,

aid INTEGER,

FOREIGN KEY (aid) REFERENCES Artists(aid));


CREATE TABLE Ratings(

uid INTEGER,

aid INTEGER,

rating INTEGER,

PRIMARY KEY (uid,aid),

FOREIGN KEY (uid) REFERENCES Users(uid),
```

```
                                            `  `,
    FOREIGN KEY (aid) REFERENCES Artists(aid));


    CREATE TABLE Follows(

    uid INTEGER, /* Id of the user doing the following */

    fuid INTEGER, /* Id of the user being followed */

    FOREIGN KEY (uid) REFERENCES Users(uid),

    FOREIGN KEY (fuid) REFERENCES Users(uid));
```

There may be zero, one, or more than one correct answer.

Q5.1 Rated Artists

For each instance of an artist rated by a user, return the name of the user, the name of the artist, and the rating.

☐ π_uname,aname,rating(Users ⋈ Ratings ⋈ Artists)

☐ π_uname,aname,rating(Users ⋈ Artists)

☐ π_uname,aname,rating(Users ⋈ Ratings ⋈ σ aid != Ratings.aid (Artists))

Q5.2 Tuvan Throat Singing & Modern Pan Flute

Find the name of the artists who have albums of genre 'Tuvan Throat Singing' and 'Modern Pan Flute Music'.

☐ π_Artists.aname ((σ Albums.genre = 'Tuvan Throat Singing' (Albums))) ∩ π_Artists.aname((σ Albums.genre = 'Modern Pan Flute Music' (Albums)))

☐ π_Artists.aname ((σ Albums.genre = 'Tuvan Throat Singing'

(Albums)) ⋈ Artists) ∩ π_Artists.aname((σ Albums.genre = 'Modern Pan Flute Music' (Albums)) ⋈ Artists)

☐ π_Artists.aname ((σ Albums.genre = 'Tuvan Throat Singing' AND Albums.genre = 'Modern Pan Flute Music' (Albums)) ⋈ Artists)

☐ π_Artists.aname ((σ Albums.genre = 'Tuvan Throat Singing' (Albums))) UNION π_Artists.aname((σ Albums.genre = 'Modern Pan Flute Music' (Albums)))

Q5.3 Unrated Albums

Return the names of artists who have not been rated by any user.

☐ π_aname(π_aid,aname(Artists) − π_aid,aname(Artists ⋈ Users))

☐ π_aname(π_aid,aname(Artists) − π_aid,aname(Artists ⋈ Ratings))

☐ π_aname(π_aid,aname(Artists) − π_aid,aname(Artists ⋈ Ratings ⋈ Users))

☐ π_aname(Ratings − π_aid,aname(Artists ⋈ Ratings ⋈ Users))

Save Answer

Save All Answers   Submit & View Submission ❯