STUDENT NO.	EXAMINATION SCRIPT	DEPARTMENT:	
1705045		CSE	L-2 T-2
1705045			

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY

COURSE NO.	~~Database~~ CSE 215	DATE	23/1/2021
COURSE TITLE	Database		

SECTION A

Declaration on the Online Course Conduct by Undergraduate Student of BUET for COVID-19 Situation

Please write the declaration (as per no. 2 of 'Instructions' given in the footer) below in your own handwriting and sign it.

On my honour, I bearing Student No. 1705045 hereby declare that,

I shall not misuse, in any form or method, the course materials, Audio and Video Records of the lectures of this course. I shall not adopt any unfair means during the Final examination and shall not receive any help or offer/provide help to anyone. I shall preserve hard copy and soft copies of the answer scripts and will not expose the the same to any person/party/media. I agree to accept any punitive measure taken by BUET authority if at any time during or after the completion of the course it is revealed/violated otherwise

Signature..... Iftekhar Hakim Kawsar Date..... 23/1/2021

Instructions

1. Clearly enter your Student ID, Course Number, Course Title, and Date in the space provided. *Complete the declaration exactly as below with your signature and date.* You can also insert the scanned image of your handwritten declaration in this box.
2. Declaration: I shall not misuse, in any form or method, the course materials including Lecture Notes, Reading Materials, Audio and Video Records of the lectures of this course. I shall not adopt any unfair means during the Final Examination and shall not receive any help or offer/ provide help to anyone. I shall preserve hard copy and soft copies of the answer scripts and will not expose the same to any person/party/media. I agree to accept any punitive measure taken by BUET Authority if at any time during or after the completion of the course it is revealed/ violated otherwise.
3. Do not put your name or any other form of identification except the Student No. anywhere in the answer script.
4. Use offset/normal white paper of A4 size for writing the answer. Use only one side of the paper for writing. On each page, clearly write your Student ID and Page numbers.

Ans. to q. no - 3(a)

(i) SELECT * FROM INSTRUCTOR WHERE ID = 22222;

It is in sparse indexing.

So, at first largest ~~key~~ index entry with search key < 22222 will be looked up in index file. It is (10101, ptr). Now, a linear search from tuple (10101, Srinivasan, Comp. Sci, 65000) will occure ~~until it finds~~ in main relation file until it finds record with id = 22222. This linear search will iterate 4 records in main relation file.

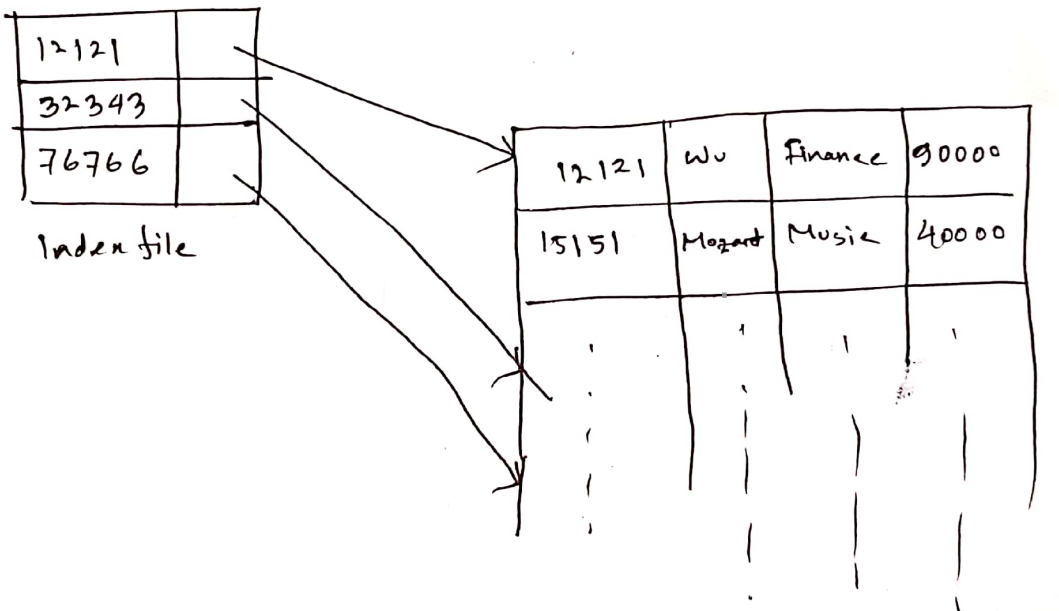
(ii) SELECT * FROM INSTRUCTOR WHERE ID = 99999;

Largest index entry with search key < 99999 is (76766, ptr). So, it will iterate from (76766, Crick, Biology, 72000) in main relation ~~file~~ file. After 3rd iteration, it will reach end of file, and will not return any

record.

Ans. to – q – 3(b)

After deleting record with id = 10101,



This will delete 10101 from ~~index file and~~ main relation file. As next search key 12121 ~~is~~ was not present in index file, it will replace 10101 in index file.

~~Deleting~~

After deleting 12121;

similarly 12121 will be removed from relation file. But, as next search key 15151 is ~~present~~ absent in index file, it will replace (12121, ptr) entry in index file.

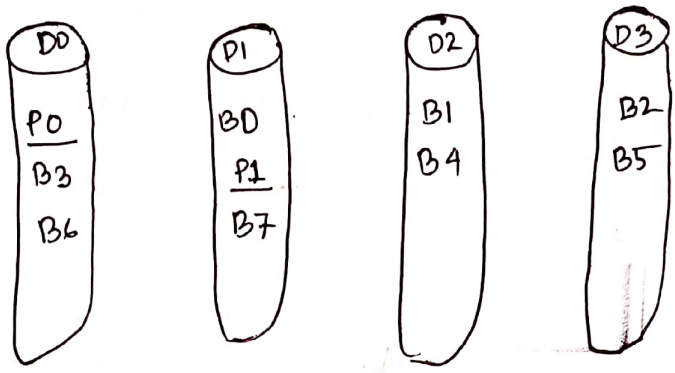
After deleting 15151;

again ~~15t~~ record with id = 15151 will be deleted from relation file. Next search key 22222 is absent in index entries. Hence, 22222 will replace 15151 in index entry.

Finally, after deleting 22222,

record with id = 22222 will be removed from relation file. As next search key 32343 is already present in index file, now it will simply delete index entry with search key = 15151. So, there will be 2 entries in index file now.

Ans. q no-4(a)



Description:-

Here the storage mechanism is— it will place all blocks serially, but there will be an error correction block/parity block residing in different disks.

1st error correction block or parity block will store XOR of contents of all 1st blocks in disks. Similarly, 2nd error correction block or parity block will compute & similar for 2nd blocks of all disks.

For reading data, we will read from blocks from different disks parallely. There is no need to read error correction

blocks here.

To update any block, first ~~will~~ we will read current block content and corresponding error correction block content. Then, we will update the block (which was asked to update) and the corresponding error correction block. So, there will be 2 block read + 2 block write for a single block update.

Recovery :-

If disk ~~D~~ D1 fails, we will have to recover B0, P1, B7. To retrieve B0, we will read all 1st blocks in D0, D2, D3 and corresponding ~~error cor~~ parity block P0. Hence, we will get B0 again.

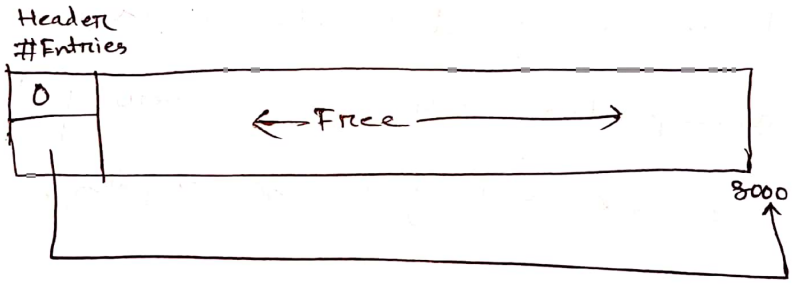
To retrieve P1, we will read all 2nd 2nd blocks in disks D0, D2, D3. By taking XOR, we will get P1 again.

To retrieve B7, we will read all 2nd blocks for D0, D2, D3 and corresponding parity block. Hence, we will get B7 again.

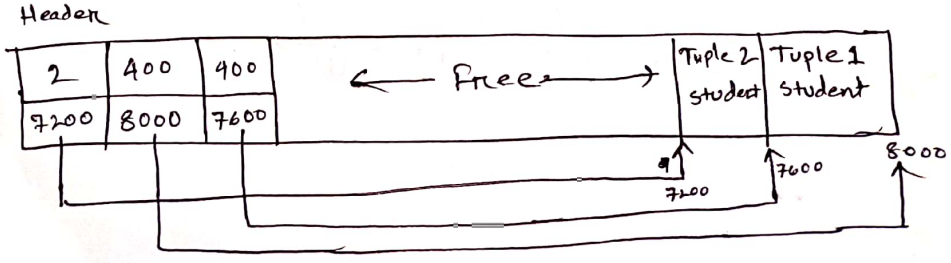
To retrieve P1, we will read all 2nd blocks in D0, D1, D2, D3, from this, we can recompute value of P1.

Ans to – 4(b)

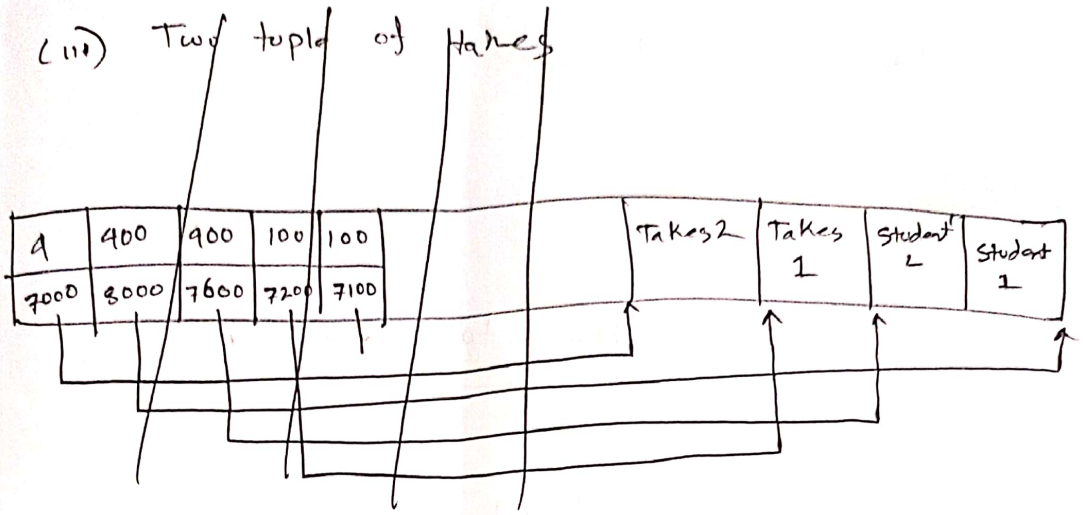
Initial:-



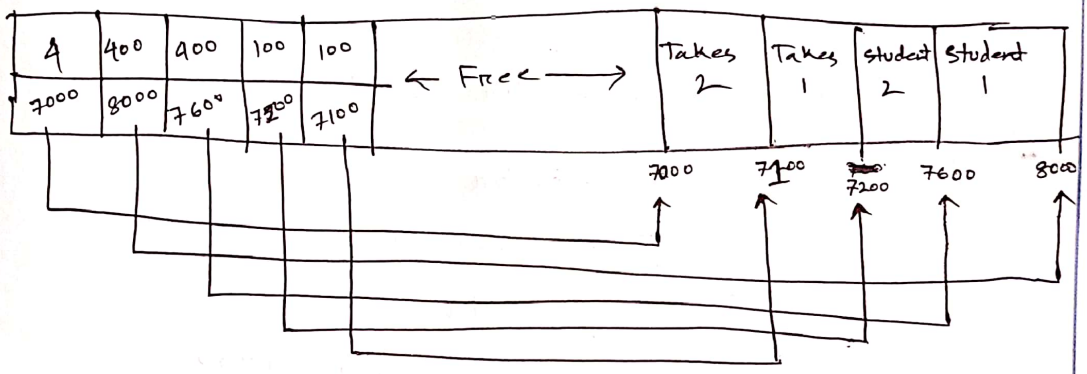
(i) Insert 2 tuple of students:



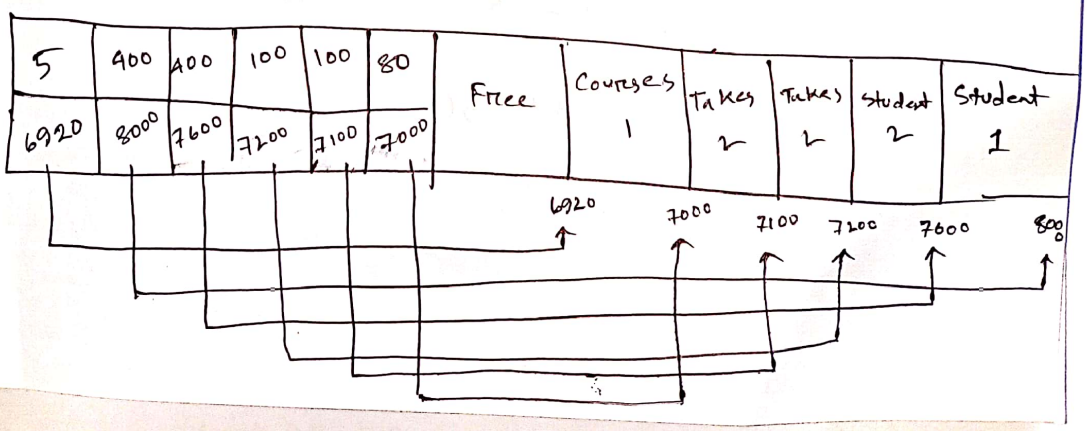
(iii) Two tuple of Takes



(ii) Two tuple of takes



(iii)



This is final structure.

Ans. to – 2(a)

Created runs = $\lceil \frac{b_R}{M} \rceil = 9$

Number of merge pass = $\log_3 9$

$= 2$

So, block transfer for create run

$= 2b_R$

$= 2 \times 36$

$= 72$

block transfer for merge pass

$= 2b_R \times (\text{number of pass}) - b_R$

$= 72 \times 2 - 36$

$= 144 - 36$

$= 108$

Total block transfer = 108 + 72

= 180