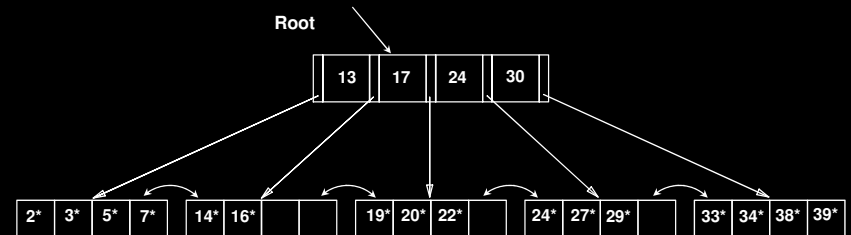


Hw5: B+ Tree

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Fall 2010

Example B+ Tree

- Search for 5*, 15*



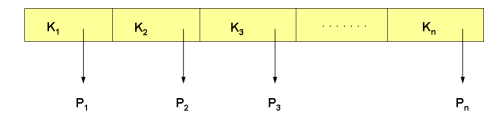
2

B+ Tree Page Level Classes

- HFPAGE:
 - the base class (which you have implemented)
- SortedPage
 - maintain records on a HFPAGE in a **sorted order**
- BTIndexPage
 - records of the type **[key, pageNo]**
- BTLeafPage
 - records of the type **[key, dataRid]**

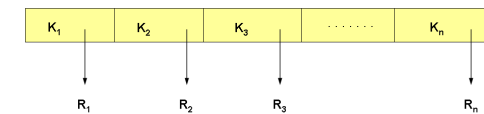
BTIndexPage & BTLeafPage

- BTIndexPage



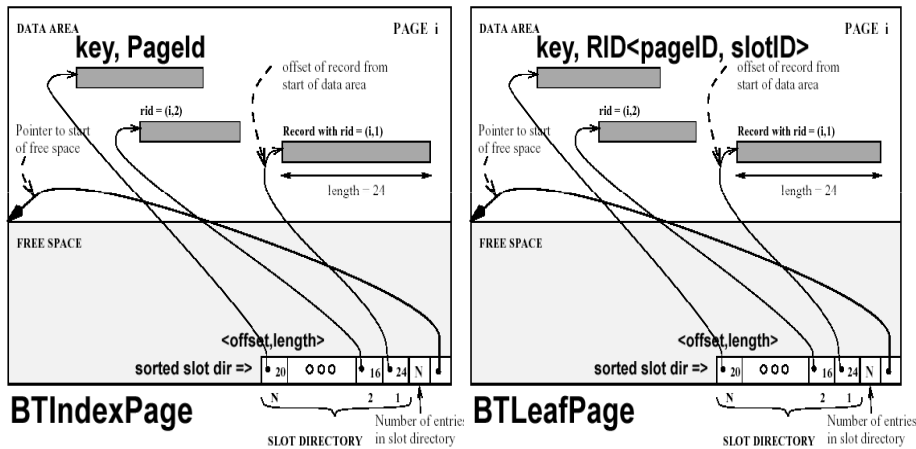
K_n : key value of n record
P_n : pageNo of page where values of keys ≥ K_n

- BTLeafPage



K_n : key value of n record
R_n : recordID in data files of record with key = K_n

BTIndexPage & BTLeafPage



Instruction

- **btfile.h**
 - Defines the structure of header page of Btrees
- **btfile.C** (The function you need to implement)
 - **insert, _insert**
 - Follow the tips in README
 - **new_scan, findRunStart**
 - See the following page

new_scan, findRunStart

- **new_scan**
 - create a scan from lo_key to hi_key, but what you have to do is find the lo_key in leafPages. It will call scan->get_next() after calling this.
 - Set up:
 1. store the leafPage where the record with lo_key located in scan->leafp
 2. store the RID of record with lo_key in scan->curRid
 3. store the hi_key in scan->endkey
- **findRunStart**
 - Find the RID and leafPage of the record with **lo_key**

APIs

- **bt.h**
 - Defines the structure of the record in btindex_page and btleaf_page → KeyDataEntry
 - There are two structures defined in KeyDataEntry → Keytype and Datatype
- **btindex_page.h, btleaf_page.h**
 - Check this two files first!!
 - init(...)
 - insertKey(...), insertRec(...)
 - get_first(...), get_next(...)

APIs

- buf.h
 - MINIBASE_BM->newPage(...)
 - MINIBASE_BM->pinPage(...)
 - // load a page into buffer pool when using
 - MINIBASE_BM->unpinPage(...)
 - // unload a page from buffer pool when not using
- key.C (defined in bt.h)
 - keyCompare(...)
 - get_key_data(...)
 - get_key_data_length(...)
 - make_entry(...)

Handin

- 23:59 Dec 22(Wednesday), 2010
- Email to: 204ta@csie.ntu.edu.tw
- 繳交格式
 - hw5_b95902080_b95902091_v1.zip
 - 解壓縮後
 - ./hw5_b95902080_b95902091_v1 + ---- ./include -- ...
 - |
 - + -----./src --