

# National University of Computer and Emerging Sciences, Lahore Campus



**Course:** Data Warehousing & Data Mining  
**Program:** BS(Computer Science)  
**Duration:** 20 Minutes  
**Paper Date:** 01-Nov-16  
**Section:** A  
**Exam:** Quiz (Indexing Techniques)

**Course Code:** CS409  
**Semester:** Fall 2016  
**Total Marks:** 10  
**Weight**  
**Page(s):** 1  
**Roll No:** .....

**Instruction/Notes:**

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## Question:

Consider the following tables and statistics which are part of a bank system:

ACCOUNT (accId, title, accType, rating, openingDate, ... );

Block Size= 16 KB; Available Memory= 100 Blocks; Rows= 250,000; Row Width= 500 bytes; Index entry size (i.e. RID Width)= 8 bytes. Assume accounts with 'SAVING' accType are 1%, accounts with 'CHECKING' accType are 5%, and accounts with '1' rating are 2%.

Query: SELECT title, openingDate FROM account WHERE (accType= 'SAVING' OR accType= 'CHECKING') AND Rating= 1

Calculate the I/O cost for the above query using:

- 1) Combining multiple indexes (Assume indexes exist on accType and rating columns separately)
- 2) Single index access (Assume indexes exist on accType and rating columns separately)
- 3) Composite index access (Assume a composite index exist on accType and rating columns)
- 4) Static Bitmap Indexes (Assume static bitmap indexes exist on accType and rating columns)