CS 591: Data Systems Architectures

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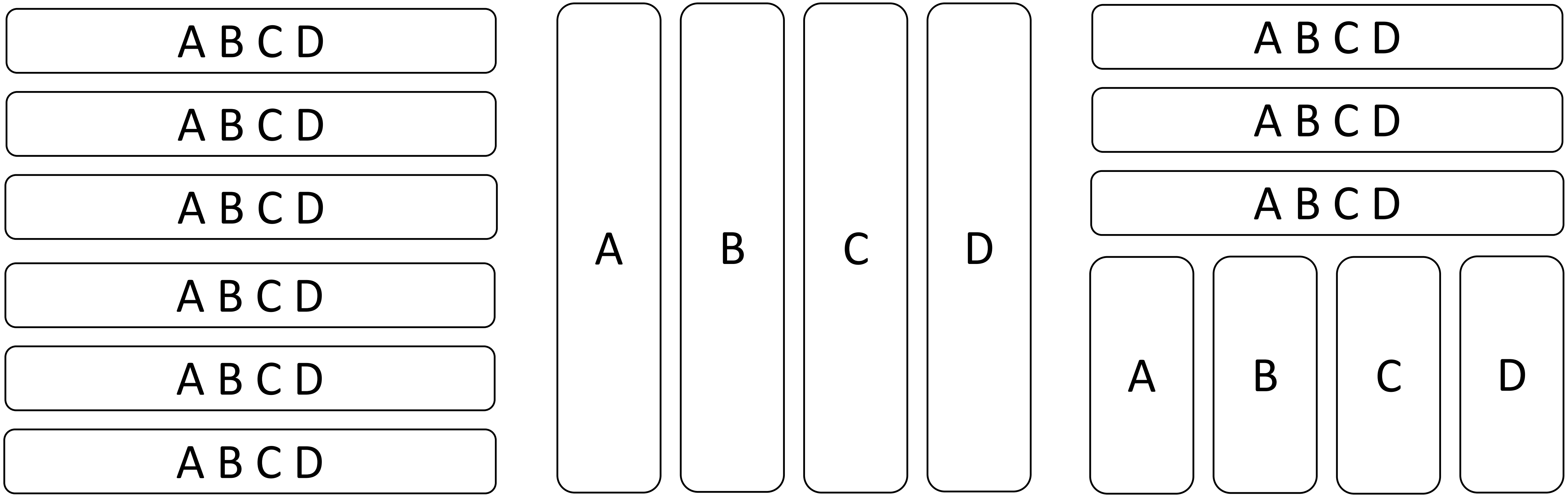
http://manos.athanassoulis.net/classes/CS591

CS591 progress bar

Storage Layouts
Rows vs Cols vs Hybrid



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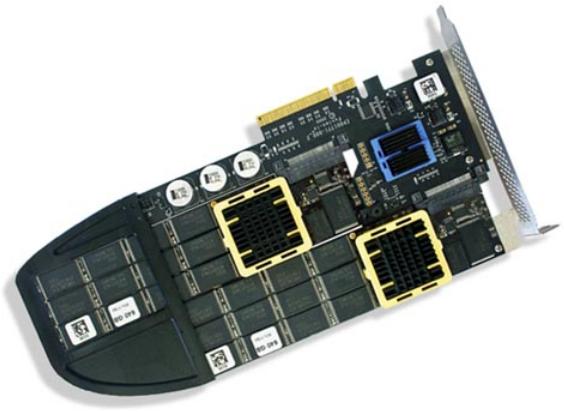
Storage Layouts
Rows vs Cols vs Hybrid

New Hardware
Flash Storage
Multi-core



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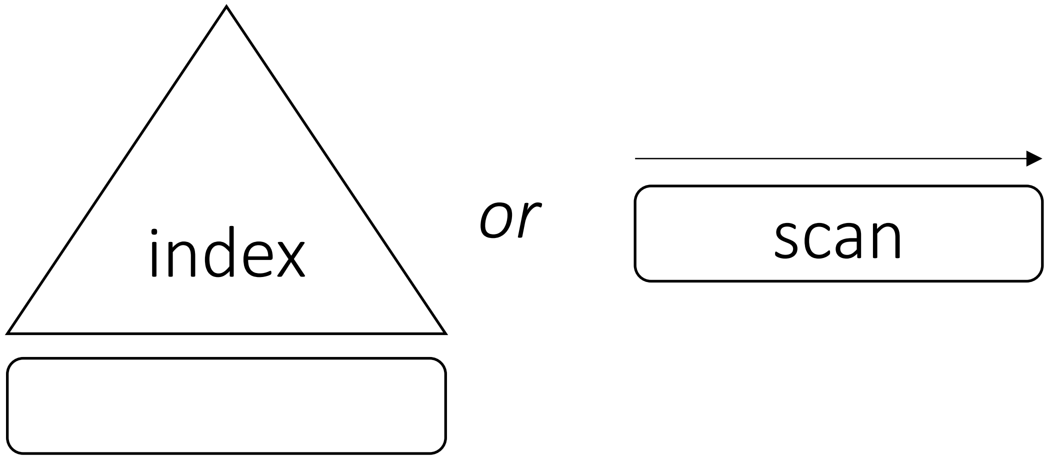
Indexing
When to use?
UpBit



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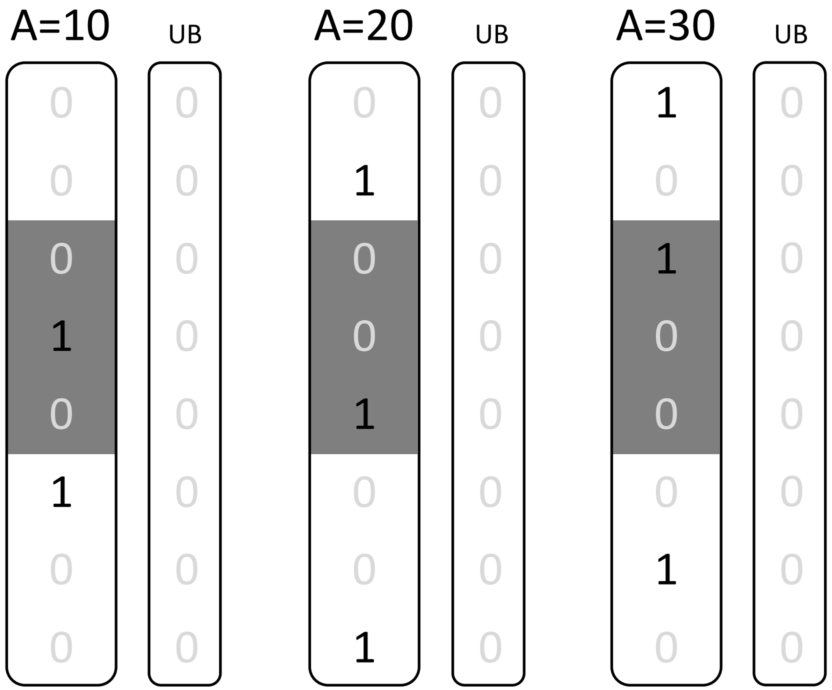

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LSM-Trees
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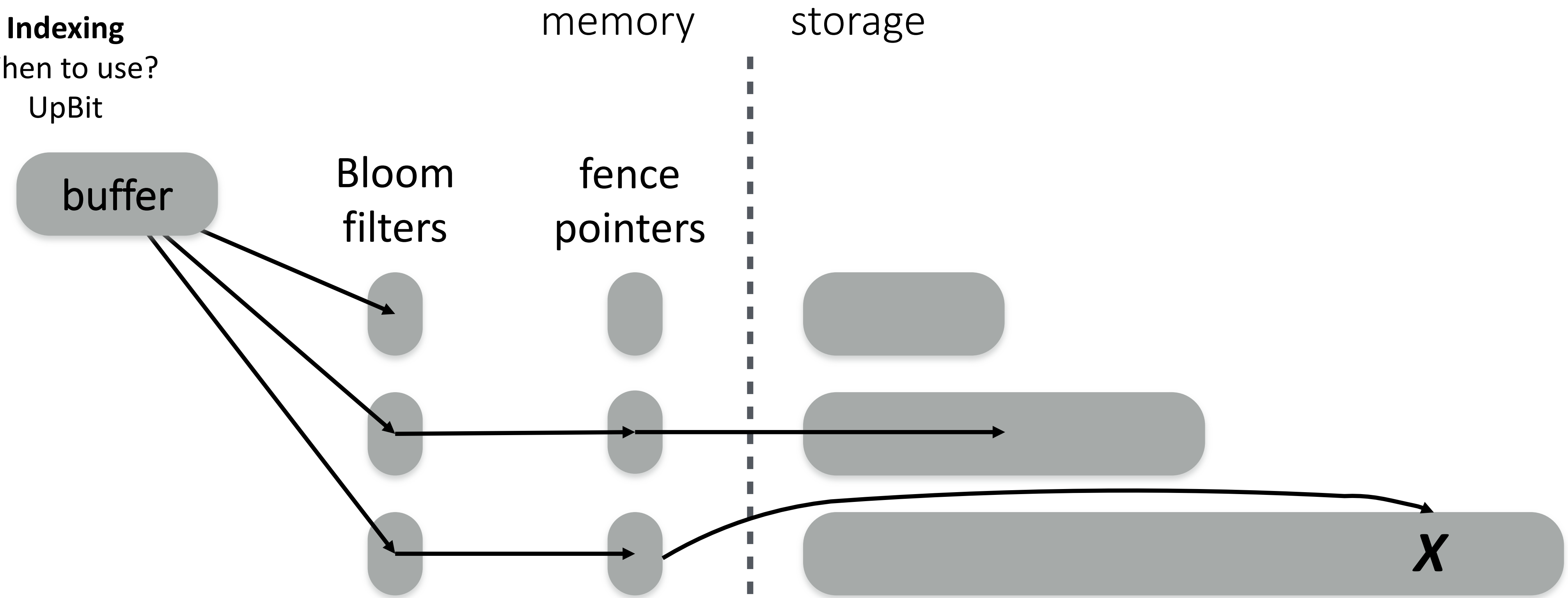

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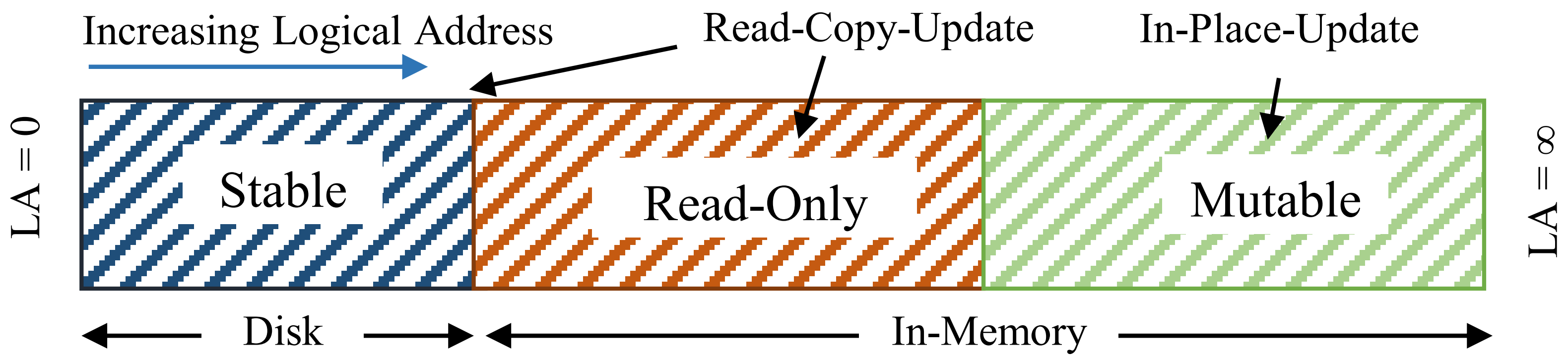

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Indexing
Data Skipping
Adaptive Indexing

	year	grade	course
t_1	2012	A	DB
t_2	2011	A	AI
t_3	2011	B	OS
t_4	2013	C	DB

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t_4	C	t_4	2013	DB

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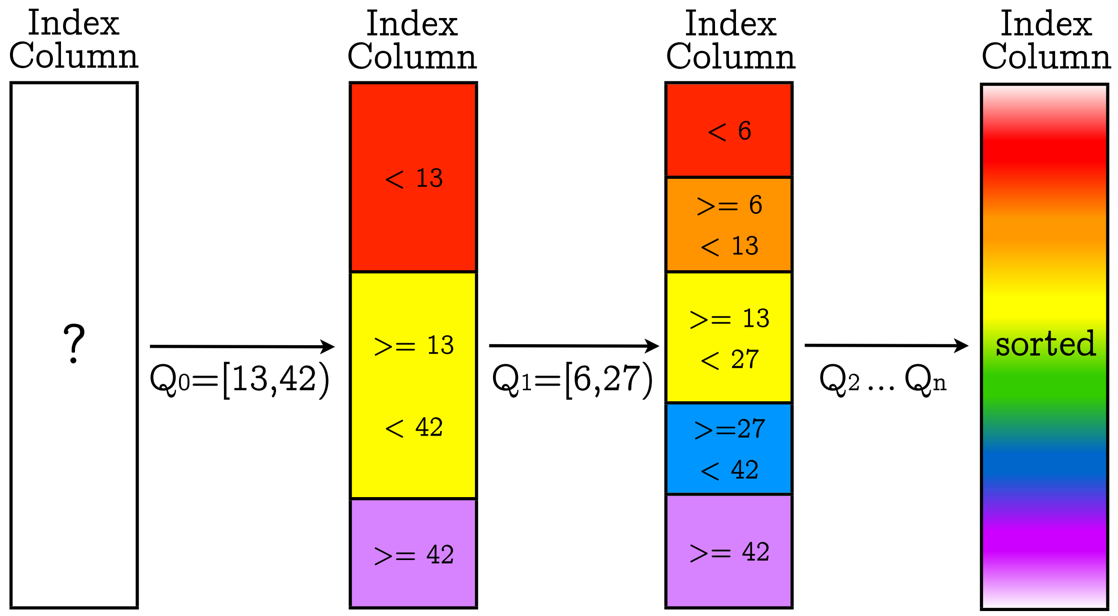

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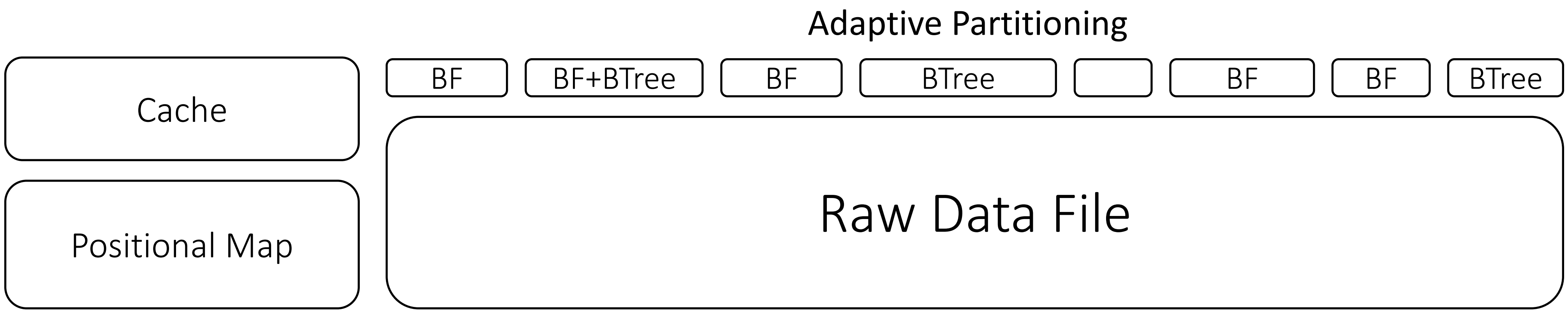
Scientific Data Management
In-situ Query Processing



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Scientific Data Management
In-situ Query Processing
Today: Array Data

Today: Array Data Storage Manager

Up to now: ***uni-dimensional*** data (integers, real, string)

Array Data: ***multi-dimensional*** data

why is this a challenge?

No unique order (cannot sort!)

How to store?

Concepts: multi-dimensional arrays, storage manager, tiles, thread-safe, dense vs. sparse arrays, global cell order, fragments, dense vs. sparse fragments, consolidation

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New Paradigms

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Distributed DB
Database Systems
at Global Scale

MapReduce
Computing at Scale

Systems for ML
ML building blocks

ML for Systems
Automatic Data
System Design

Learned Indexes
Learn Data Distributions
for Indexing

Data Calculator
Synthesize Indexes

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Do not forget: *reviews*

You can skip up to 3 reviews

18 classes: 5 long + 10 short + 3 skipped

new rule: you can do extra long reviews, 1 long counts as 3 short

Normally for full marks: 5 long + 10 short

or 6 long + 7 short

or 7 long + 4 short

or 8 long + 1 short

Do not forget: *project*

Do not leave your project work for last minute!

Until *Tuesday April 16th* every group in OH to discuss progress

April 30 and May 2 project presentations:

problem + approach + results + open questions

Project presentations will also be peer-evaluated

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