The Chandler Repository
A Database for Python Objects

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OSAF

What is it for ?

Early requirements

Early design decisions

A Language-neutral Data Model

Modelling classes with Kinds

Storing bags of attribute values

A Pythonic Schema API

By Phillip Eby

Declaring Attributes for Persistence

Class-centric vs. Kind-centric

```python
class ContentItem(schema.Item):

    body = schema.One(schema.Text,
                      displayName=_(u"Body"),
                      indexed = True,
                      defaultValue = _(u""))

    modifiedOn = schema.One(schema.DateTimeTZ,
                            displayName=_(u"Last Modified"),
                            doc="DateTime this item was last modified")

    contentsOwner = schema.Sequence("osaf.framework.blocks.Block.Block",
                                    inverse="contents")

    tags = schema.Sequence('Tag',
                           displayName=u'Tags',
                           description='All the Tags associated',
                           inverse='items',
                           initialValue=[])

    shares = schema.Sequence(initialValue=[], otherName="contents")
    sharedIn = schema.Sequence(initialValue=[], otherName="items")
    viewContainer = schema.Sequence(otherName="views")

    collections = schema.Sequence(otherName='inclusions', notify=True)
```

Neither Relational nor Object

Using Berkeley DB for the underlying storage persistence

Concurrency

No locking

Using versioned repository views

Concurrent changes are merged

Repository Views

Consistent, versioned, MVCC
A cache purging LRU items
Typically one thread per view

Finding Items

By UUID (universal pointer)

By Reference (bi-directional)

By Path (typically schema only)

By Item Collections

By Full-Text Queries (PyLucene)

Item Collections

Bi-directional References
Abstract Sets instead of Queries
Set Arithmetic, Filters, Kind Sets

Indexing Item Collections

Natural Indexes: Ref Collections

Numeric Indexes: Skip Lists

(ftp://ftp.cs.umd.edu/pub/skipLists/skiplists.pdf)

Sorted Indexes

Synchronous Notifications

Attribute Monitors

Item Watchers

Collection Watchers

Asynchronous Notifications

User Notifications (UI)

View Refresh Notifications

Questions ?

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