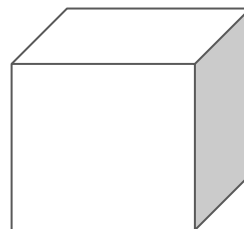
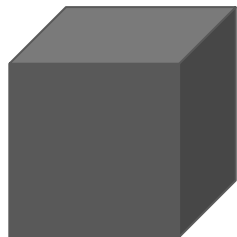


cartVersion and cartRewrite.c

Black Box -> Translucent Box

<https://redmine.soe.ucsc.edu/issues/27517>



Why?

Allows for supertrack creation without affecting sessions

Collapse DbSNP tracks into dbSNP Archive: <https://redmine.soe.ucsc.edu/issues/26719>

dbSNP 153
hide

1000G Ph1 Accsbl
[No data-chrX]
All SNPs(141)
hide

1000G Ph1 Vars
All SNPs(144)
Common SNPs(138)
hide

1000G Ph3 Accsbl
[No data-chrX]
All SNPs(146)
Common SNPs(142)
hide

1000G Ph3 Vars
All SNPs(147)
Common SNPs(144)
hide

All SNPs(138)
All SNPs(150)
Common SNPs(146)
hide

Hg19, hides 23 links

dbSNP 153
hide

1000G Ph1 Accsbl
[No data-chrX]
Common SNPs(151)
hide

1000G Ph1 Vars
New dbSNP Archive...
hide

1000G Ph3 Accsbl
[No data-chrX]
dbVar Common Struct Var...
hide

1000G Ph3 Vars
All SNPs(151)
DGV Beta (old)
hide

All SNPs(151)
All SNPs(151)
DGV Struct Var
hide



Hg38, hides 21 links

dbSNP 153
hide

All SNPs(141)
hide

All SNPs(142)
hide

Common SNPs(142)
hide

Common SNPs(144)
hide

Flagged SNPs(142)
hide

Mult. SNPs(142)
hide

Mult. SNPs(144)
hide

1000 Genomes Trios
hide

1000G Ph3 Vars
hide

All SNPs(144)
hide

All SNPs(147)
hide

All SNPs(150)
hide

All SNPs(151)
hide

Common SNPs(141)
hide

Common SNPs(146)
hide

All SNPs(146)
hide

All SNPs(150)
hide

All SNPs(151)
hide

Common SNPs(147)
hide

Common SNPs(150)
hide

Common SNPs(151)
hide

dbVar Common Struct Var...
hide

DGV Struct Var
hide

Flagged SNPs(146)
hide

Flagged SNPs(147)
hide

Flagged SNPs(150)
hide

Flagged SNPs(151)
hide

Genome In a Bottle
hide

gnomAD Variants...
hide

Common SNPs(147)
hide

Common SNPs(150)
hide

Common SNPs(151)
hide

Flagged SNPs(146)
hide

Mult. SNPs(141)
hide

Mult. SNPs(146)
hide

Mult. SNPs(147)
hide

Mult. SNPs(150)
hide

Mult. SNPs(151)
hide

Platinum Genomes
hide

What?

Versioned Carts for conditional cart changes

- Allows systematic updates to each cart as it is interpreted to retroactively conform to new trackDb changes

```
cartVersion 1
```

- Hg.conf controlled, turned off by default and easily turned on:

```
cartVersion on
```

How?

cartVersion is a record of cart modifications

- Somewhat like a blockchain ledger or change-log, the cartVersion number indicates which modifications have been made and which have not.
- Modifications live in the following location, where engineers can create a cartEdit function:



`~/kent/src/hg/lib/cartRewrite.c`



Where?

There's a "track" entry in the trackDb table of every database called cartVersion with version as a negative of the priority field.

- HgTracks goes through every track in the selected assembly and checks the user cart for the track name. cartVersion is the latest "track".
- cartVersion operates like a cart "header"
- If cartVersion doesn't exist, make changes and add "cartVersion 1" to the cart
- If not the highest version, make changes up to the current cartVersion.
- If userCart > cartVersion, it gives a warning

```
hgsql hg38 -Ne "select * from trackDb where tableName='cartVersion'"
```

```
***** 1. row *****  
  tableName: cartVersion  
  shortLabel: cartVersion  
    type: cartVersion  
  longLabel: cartVersion  
  visibility: 0  
    priority: -1  
      colorR: 0  
      colorG: 0  
      colorB: 0  
  altColorR: 0  
  altColorG: 0  
  altColorB: 0  
  useScore: 0  
  private: 0  
restrictCount: 0  
restrictList:  
  url: cartVersion  
  html: cartVersion  
  grp: cartVersion  
  canPack: 0  
  settings: cartVersion
```

Documentation

http://genomewiki.ucsc.edu/index.php/Cart_editing

Needs work to make it easy to handoff for future engineers.



The future

What about CGIs other than hgTracks?

Speed impacts?

The cartFile format?

Cross-Db impacts with generic track names?

More archives, CADD/REVEL, Affy tracks, others indicated by usage stats

The End