

RocksDB Festival

Supported by IITP, StarLab.

July 19, 2021

강정현, 김산, 허진

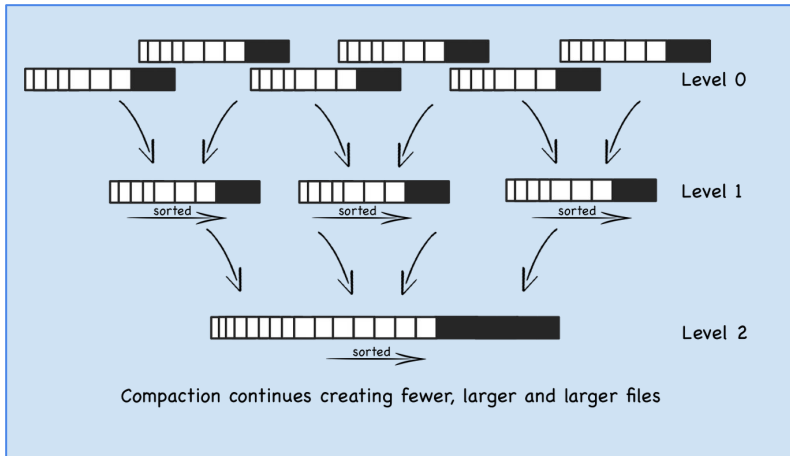
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Team: JSJ

RocksDB Festival

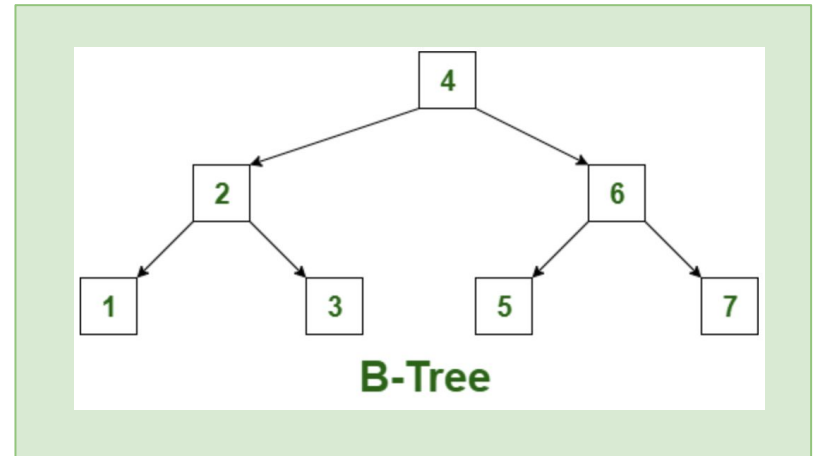
- RocksDB vs MongoDB
 - ✓ Data Structure

Rocks DB



LSM-Tree
(out-place update)
-> Write Good!

Mongo DB

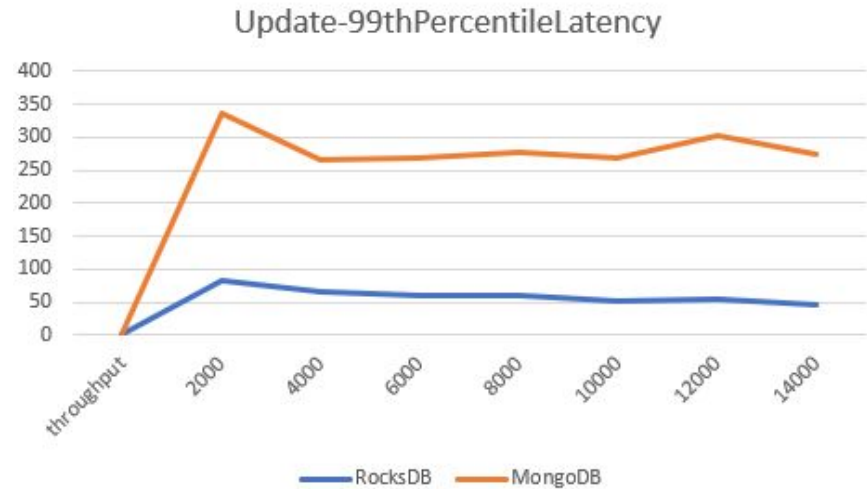
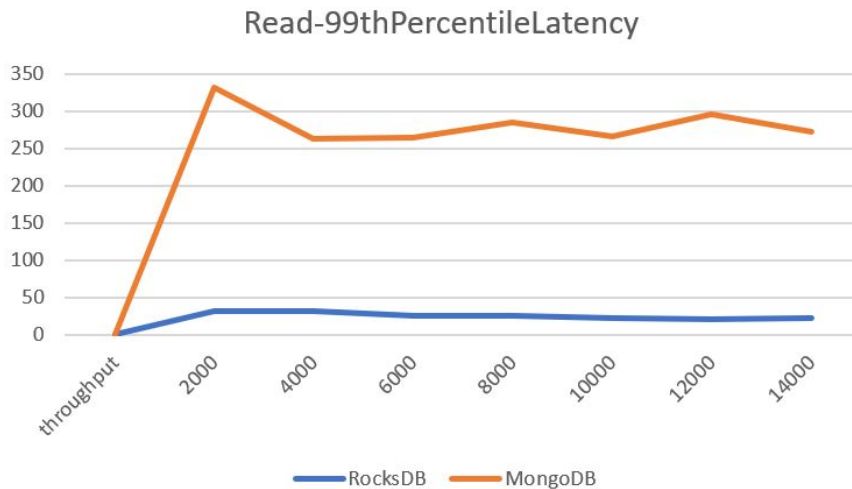


B-Tree
(in-place update)
-> Read Good!

RocksDB Festival

- RocksDB vs MongoDB

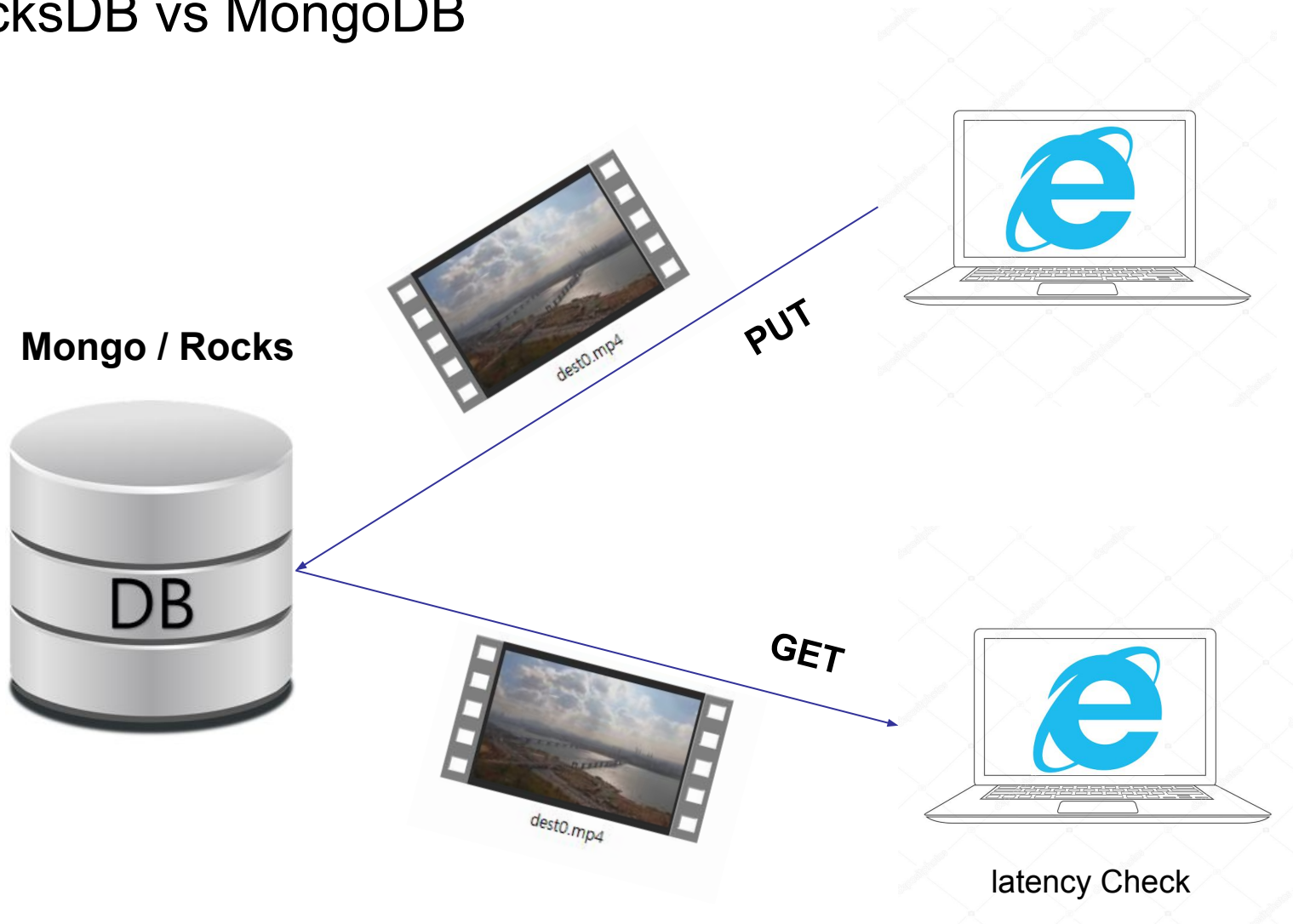
- ✓ YCSB Bench



Latency : 99thPercentile Latency
Throughput : Operation/sec (YCSB의 target 옵션을 통해 제한하면서 실험 진행)
Record : 100,000
Workload : Read(50%), Write(50%)

RocksDB Festival

- RocksDB vs MongoDB



- RocksDB PUT & GET API

RocksDB API only supports std::string types.

```
template<typename T, typename... Args>
unique_ptr<T> make_unique(Args&&... args) {
    return unique_ptr<T>(new T(forward<Args>(args)...));
}

template <typename T>
string Pack(const T* data, int _size)
{
    string d(_size, L'\0');
    memcpy(&d[0], data, d.size());
    return d;
}

template <typename T>
unique_ptr<T> Unpack(const string& data)
{
    if (data.size() != sizeof(T))
        return nullptr;

    auto d = make_unique<T>();
    memcpy(d.get(), data.data(), data.size());
    return d;
}
```

**Need to pack
input string(binary)**

RocksDB Festival

```
while (!fin.eof()) {
    fin.read(value, 1024);           // ÃÖ'ë 1024 ðÚÁÏÆ® ÅDîi ðèì- sîi ÁúÃã.
    int n = fin.gcount();           // ¼ÇÁ! ÅÐÀ° ðÚÁÏÆ® ¼ö ðYÉ~

    string key = key_name + to_string(default_key++);

    if(n < 1024){
        char *temp_value = new char[n];

        for(int i=0; i<n; i++){
            temp_value[i] = value[i];
        }

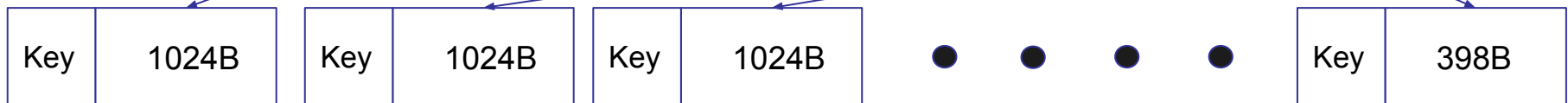
        if(s.ok()) s = db->Put(rocksdb::WriteOptions(), key, Pack(&temp_value, n));
    }
    else{
        if(s.ok()) s = db->Put(rocksdb::WriteOptions(), key, Pack(&value, n));
    }
}

fin.close();
```

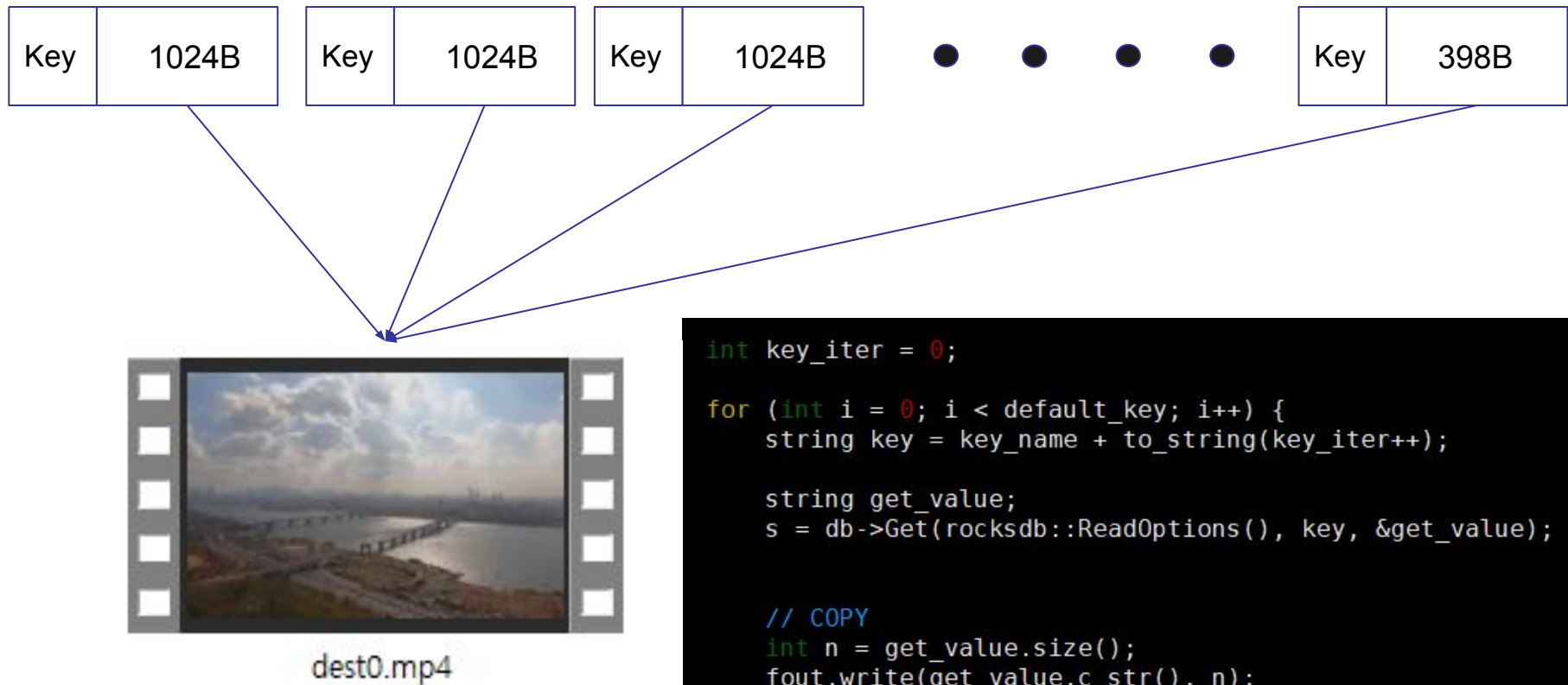


temp0.mp4

```
0007f000: 1221 3575 f0c2 8f85 307f 7207 1002 2a70 07ad f0f0 f0f0 f0f0
0007f000: 9667 8270 4c85 f4aa e4a1 2d73 10b7 12ef .g.pL.....s....
0007f000: 766d ad32 6130 f68b de82 953a 2f74 6f04 vm.2a0.....:/to.
0007f000: 97b1 856e 74eb 921e d93e 57db 1e5e 65f6 ..nt...>W..^e.
0007f000: a4e3 51cc bf12 5c87 9433 143b 7bdd 72ff ..Q...\.3.;{.r.
0007f100: 5e2e 12f7 7a4a e3ee 00ae cf72 fbfc 2124 ^...zJ.....r..!$
0007f110: fc3b 46b6 d1fe 6a84 c6b4 6f0e a118 e9cf .;F...j...o.....
0007f120: ef79 bf7e e42d da7f 42b2 bf7c d6bc de57 .y.~...B..|...W
0007f130: a2fe dad1 0a7f bf9c b3fc ba5e de69 efd9 .....^i...
0007f140: 33e5 3dd4 1096 6feb e811 7749 cd86 b282 3.=...o...wI...
0007f150: 3bea fce1 1d5e efbd e5a5 572a e963 9b14 ;....^...W$.c...
0007f160: 5205 3bbe f73a 07dc 5874 4825 1012 f9e7 R.;...XtH%....
0007f170: fc6c ceb7 ae3e 6a96 fa96 bd32 6ff5 b690 .l...>j....2o...
0007f180: ffb5 18ac 07be d2ef 3ded 3b1c bf95 b63c .....=.;...<
0007f190: a32e f320 1c86 6543 5537 ab71 5b4e 54ce .....eCU7.q[NT.
0007f1a0: 5201 3f29 48e5 9a11 89b4 31fa d491 8480 (R.)H.....1....
0007f1b0: d313 c384 3db4 37f1 7a80 40fc b7b7 d81c .....=.7.z.@.....
0007f1c0: f925 ac2d 2861 923e 5f3c 8892 423a 53de .%.- (a.> <.B:S.
0007f1d0: 2a37 2457 4759 2620 8b3a a602 95d3 3b5d *7$WGY& :.....;]
0007f1e0: 0d5f 152d d0fb 445b a00a fb55 70ff f360 .....Bf.....v..i
```



RocksDB Festival



```
int key_iter = 0;

for (int i = 0; i < default_key; i++) {
    string key = key_name + to_string(key_iter++);

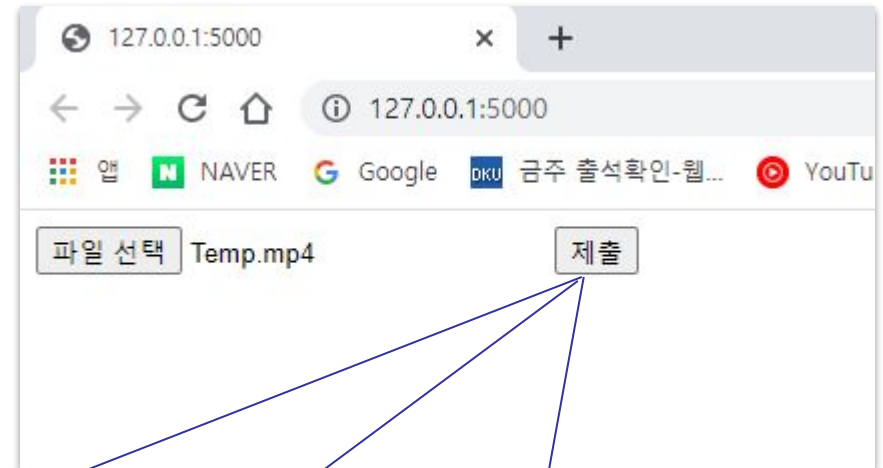
    string get_value;
    s = db->Get(rocksdb::ReadOptions(), key, &get_value);

    // COPY
    int n = get_value.size();
    fout.write(get_value.c_str(), n);
}
```


RocksDB Festival

- MongoDB
 - ✓ GridFS

```
15 @app.route('/upload', methods=['POST'])
16 def upload():
17     file = request.files.get("file")
18     file_name = request.form.get("file_name")
19     data = file.read()
20     content_type = file.content_type
21     insertimg = gfs.put(data, content_type=content_type, filename=file_name)
22     return str(insertimg)
23
```



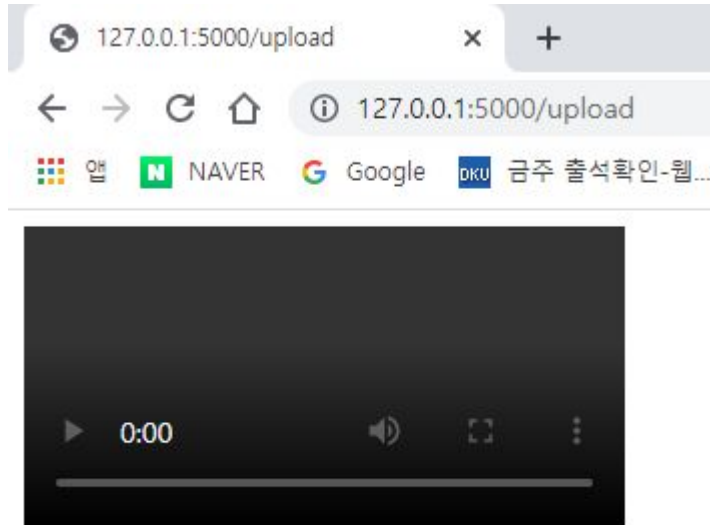
```
{
  "_id": {
    "$oid": "60f3fb9ab4bcbc98a6b8b00a"
  },
  "files_id": [
    {
      "$oid": "60f3fb9ab4bcbc98a6b8b009"
    }
  ],
  "n": 0,
  "data": {
    "$binary": {
      "base64": "AAAAIGZ0eXBpc29tAAACAGlzb21pc28yYXZjMW1wAAAAADGAAA7pwAAQAAAAQAAAAAAAAAAAAAAAAAAAAAAEAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAwAA
BAAAAAAAA7pwAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA"
    }
  }
}
```

```
{
  "_id": {
    "$oid": "60f3fb9ab4bcbc98a6b8b00b"
  },
  "files_id": [
    {
      "$oid": "60f3fb9ab4bcbc98a6b8b009"
    }
  ],
  "n": 1,
  "data": {
    "$binary": {
      "base64": "40tkNZbKaf3deWle+zXvrtldlEukWF79vnqK6yy1vNL8vSyd1y31W33VgnJrX2bCTmnzm0G11duLrmpBZv0usycFPqu+ED+zKgT4n5jd0Rh94pCyicYZcnu+KxBud+axrDQkIGVBev+vItTpRDP0vJWSeTh0/xbMEbc"
    }
  }
}
```

```
{
  "_id": {
    "$oid": "60f3fb9ab4bcbc98a6b8b00c"
  },
  "files_id": [
    {
      "$oid": "60f3fb9ab4bcbc98a6b8b009"
    }
  ],
  "n": 2,
  "data": {
    "$binary": {
      "base64": "eKF64960QzjCVgEy1CDEJHXWmGSS1AKA+TvX5tcveQ0Y5OUFKSt1BYCx2BIGVAAuFS4sAMkAAIcgXE6nPnflvn4l8gADyJXnQJ54GhN6xD2/RX1Huh0Q4Kpm+L5JVCKbkvIrMaeSevIQCDhBrPZ8Ue1qnVHMUASJ0QwARAEB8AIiIVSmFbzKX6TAAARvE3iwBv70IRqPU7/6f"
    }
  }
}
```


RocksDB Festival

- MongoDB
 - ✓ Video Upload



```
<html>  
  <body>  
    <video src="" controls></video>  
  </body>  
</html>
```

???

Discussion

