

DASC 5333 Database Systems for Data Science
CSCI 4333 Design of Database Systems
Spring 2025
Homework #8

Simple MongoDB Assignment

Create the 'toyu' database in MongoDB.

- [1] Download the file: toyu-db.gz.
- [2] Ensure that you have download MongoDB tools: command line utilities including import and export, <https://www.mongodb.com/try/download/database-tools>.
- [3] Run the command:

```
mongorestore --archive="toyu-db.gz" --gzip --nsFrom='toyu.*' --nsTo='toyu.*'
```

Note that the design of toyu is not the typical way one would design a MongoDB. Instead, it is intended to look like the toyu MySQL database for ease of comparison.

Construct JS code *that works inside Mongosh* for the following data problems. Use mongosh to test your solution. Do not develop standalone Node JS program. Put your solution in a JS file (such as h8sol.js) and turn it in through Canvas. It may be necessary for you to add a .txt extension (such as h8sol.js.txt). The TA will execute your .js submission in Mongosh.

- [1] Show the first name, last name, and deptCode of all assistant professors as a JSON array.

```
[
  { fname: 'Sharon', lname: 'Mannes', deptCode: 'CSCI' },
  { fname: 'Art', lname: 'Allister', deptCode: 'ARTS' },
  { fname: 'Jorginlo', lname: 'Neymar', deptCode: 'ACCT' }
]
```

- [2] Show the name, deptCode and rank for all CSCI or CINF tenured or tenure track faculty (i.e. Professor, Associate Professor or Assistant Professor) in the following format.

toyu> // your mongosh JS code here...

```
[
  {
    fname: 'Paul',
    lname: 'Smith',
    deptCode: 'CSCI',
    rank: 'Professor'
  },
  {
    fname: 'Mary',
    lname: 'Tran',
    deptCode: 'CSCI',
    rank: 'Associate Professor'
  }
]
```

```

    },
    {
      fname: 'Sharon',
      lname: 'Mannes',
      deptCode: 'CSCI',
      rank: 'Assistant Professor'
    },
    {
      fname: 'Daniel',
      lname: 'Kim',
      deptCode: 'CINF',
      rank: 'Professor'
    },
    {
      fname: 'Andrew',
      lname: 'Byre',
      deptCode: 'CINF',
      rank: 'Associate Professor'
    }
  ]

```

toyu> // your mongosh JS code here...
CSCI/CINF tenured or tenure-track faculty members

toyu> // your mongosh JS code here...

```

[1] Paul Smith: CSCI Professor
[2] Mary Tran: CSCI Associate Professor
[3] Sharon Mannes: CSCI Assistant Professor
[4] Daniel Kim: CINF Professor
[5] Andrew Byre: CINF Associate Professor

```

[3] Show the major code and the average number of credits of students enrolled in the major in the following manner.

```

[
  { major: 'ARTS', 'average # credits': 107.5 },
  { major: 'CSCI', 'average # credits': 47 },
  { major: 'ITEC', 'average # credits': 43 },
  { major: 'CINF', 'average # credits': 15.5 },
  { major: null, 'average # credits': 8 }
]

```

[4] Show the faculty id of advisors of CSCI students with the number of CSCI advisees in the following format.

```

[
  { 'Advisor facId': 1012, 'number of advisees': 1 },
  { 'Advisor facId': 1011, 'number of advisees': 2 }
]

```