12 . a.

```
  GNU nano 6.2                          count_votes.sh
#!/bin/bash

# Input: votes.txt

# Extract constituency and candidate, count votes
cat votes.txt | \
  awk -F',' '{print $2","$3}' | \
  sort | uniq -c | \
  awk '{print $2"\t"$3"\t"$1}' | \
  sort -k1,1 -k3,3nr

# Output format: constituency candidate votes
```

```
  GNU nano 6.2                          find_winner.sh
#!/bin/bash

# Read the counted votes and find winner per constituency

./count_votes.sh | \
  awk '
  {
    constituency = $1
    candidate = $2
    votes = $3
    if (votes > max_votes[constituency]) {
      max_votes[constituency] = votes
      winner[constituency] = candidate
    }
  }
  END {
    for (c in winner) {
      print c, winner[c], max_votes[c]
    }
  }' | sort
```

```
  GNU nano 6.2                          find_winner.sh
#!/bin/bash

# Read the counted votes and find winner per constituency
# Expects input like: constituency,candidate<TAB or SPACE>count

./count_votes.sh | \
  awk 'BEGIN {FS="[\t ]+"} # Set field separator to tab or space
  {
    # Split the first field (e.g., "constituency1,candidateA") by comma
    split($1, parts, ",");

    constituency = parts[1];
    candidate = parts[2];
    votes = $2; # The vote count is now the second field

    # Logic to find the winner for each constituency
    if (votes > max_votes[constituency]) {
      max_votes[constituency] = votes;
      winner[constituency] = candidate;
    }
  }
  END {
    # Print the winners
    for (c in winner) {
      print c, winner[c], max_votes[c];
    }
  }' | sort -k1,1 # Sort the final output by constituency#!/bin/bash

# Read the counted votes and find winner per constituency

./count_votes.sh | \
  awk '
  {
    constituency = $1
    candidate = $2
    votes = $3
    if (votes > max_votes[constituency]) {
      max_votes[constituency] = votes
      winner[constituency] = candidate
    }
  }
  END {
    for (c in winner) {
      print c, winner[c], max_votes[c]
    }
  }' | sort
```

```
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ bash
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ cat > votes.txt << EOF
voter1,constituency1,candidateA
voter2,constituency1,candidateB
voter3,constituency1,candidateA
voter4,constituency2,candidateC
voter5,constituency2,candidateC
voter6,constituency2,candidateD
EOF
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ nano votes.txt
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ chmod +x count_votes.sh
./count_votes.sh
chmod: cannot access 'count_votes.sh': No such file or directory
bash: ./count_votes.sh: No such file or directory
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ nano count_votes.sh
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ chmod +x count_votes.sh
./count_votes.sh
constituency1,candidateA                2
constituency1,candidateB                1
constituency2,candidateC                2
constituency2,candidateD                1
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ nano find_winner.sh
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ chmod +x find_winner.sh
./find_winner.sh
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ ./find_winner.sh
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ chmod +x find_winner.sh
./find_winner.sh
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ #!/bin/bash
echo "Vote Counts:"
./count_votes.sh

echo
echo "Winners:"
./find_winner.sh
Vote Counts:
constituency1,candidateA                2
constituency1,candidateB                1
constituency2,candidateC                2
constituency2,candidateD                1

Winners:
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ nano count_votes.sh
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ nano find_winner.sh
```

```
constituency1,candidateA                2
constituency1,candidateB                1
constituency2,candidateC                2
constituency2,candidateD                1

Winners:
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ nano count_votes.sh
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ nano find_winner.sh
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ #!/bin/bash
echo "Vote Counts:"
./count_votes.sh

echo
echo "Winners:"
./find_winner.sh
Vote Counts:
constituency1,candidateA                2
constituency1,candidateB                1
constituency2,candidateC                2
constituency2,candidateD                1

Winners:
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ nano find_winner.sh
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ chmod +x find_winner.sh
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ ./find_winner.sh
constituency1 candidateA 2
constituency2 candidateC 2
hadoop@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ #!/bin/bash
echo "Vote Counts:"
./count_votes.sh

echo
echo "Winners:"
./find_winner.sh
Vote Counts:
constituency1,candidateA                2
constituency1,candidateB                1
constituency2,candidateC                2
constituency2,candidateD                1

Winners:
constituency1 candidateA 2
constituency2 candidateC 2
```

12.
b.

```
bmscecse@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ mongosh --version
2.5.1
bmscecse@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ mongosh "mongodb+srv://cluster1.mfbv4ju.mongodb.net/" --apiVersion 1 --username manyacs22
Enter password: ***************
Current Mongosh Log ID: 68358205662ad65f24c59f34
Connecting to:          mongodb+srv://<credentials>@cluster1.mfbv4ju.mongodb.net/?appName=mongosh+2.5.1
Using MongoDB:          8.0.9 (API Version 1)
Using Mongosh:          2.5.1

For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/


To help improve our products, anonymous usage data is collected and sent to MongoDB periodically (https://www.mongodb.com/legal/privacy-policy).
You can opt-out by running the disableTelemetry() command.
```

```
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.createCollection("Student");
{ ok: 1 }
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.insert({Stud_ID : "121" , StudName : "Ananya" , Grade : "VII", Hobbies : "Swimming" , DOJ : "2020-06-12"});
DeprecationWarning: Collection.insert() is deprecated. Use insertOne, insertMany, or bulkWrite.
{
  acknowledged: true,
  insertedIds: { '0': ObjectId('68358350662ad65f24c59f35') }
}
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.insertOne({Stud_ID : "121" , StudName : "Ananya" , Grade : "VII", Hobbies : "Swimming" , DOJ : "2020-06-12"});
{
  acknowledged: true,
  insertedId: ObjectId('68358368662ad65f24c59f36')
}
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.insertOne({Stud_ID : "122" , StudName : "Aditi" , Grade : "VII", Hobbies : "Swimming" , DOJ : "2020-05-12"});
{
  acknowledged: true,
  insertedId: ObjectId('68358386662ad65f24c59f37')
}
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.insertOne({Stud_ID : "123" , StudName : "Aryan" , Grade : "VII", Hobbies : "Cycling" , DOJ : "2020-05-21"});
{
  acknowledged: true,
  insertedId: ObjectId('68358407662ad65f24c59f38')
}
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.insertOne({Stud_ID : "124" , StudName : "Varun" , Grade : "VII", Hobbies : "Cricket" , DOJ : "2020-04-21"});
{
  acknowledged: true,
  insertedId: ObjectId('6835841e662ad65f24c59f39')
}
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.insertOne({Stud_ID : "125" , StudName : "Vani" , Grade : "VII", Hobbies : "Running" , DOJ : "2020-03-21"});
{
  acknowledged: true,
  insertedId: ObjectId('68358437662ad65f24c59f3a')
}
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.find();
[
  {
    _id: ObjectId('68358350662ad65f24c59f35'),
    Stud_ID: '121',
    StudName: 'Ananya',
    Grade: 'VII',
    Hobbies: 'Swimming',
    DOJ: '2020-06-12'
  },
  {
    _id: ObjectId('68358368662ad65f24c59f36'),
    Stud_ID: '121',
    StudName: 'Ananya',
    Grade: 'VII',
    Hobbies: 'Swimming',
    DOJ: '2020-06-12'
  },
  {
    _id: ObjectId('68358386662ad65f24c59f37'),
    Stud_ID: '122',
    StudName: 'Aditi',
```

```
  },
  {
    _id: ObjectId('68358368662ad65f24c59f36'),
    Stud_ID: '121',
    StudName: 'Ananya',
    Grade: 'VII',
    Hobbies: 'Swimming',
    DOJ: '2020-06-12'
  },
  {
    _id: ObjectId('68358386662ad65f24c59f37'),
    Stud_ID: '122',
    StudName: 'Aditi',
    Grade: 'VII',
    Hobbies: 'Swimming',
    DOJ: '2020-05-12'
  },
  {
    _id: ObjectId('68358407662ad65f24c59f38'),
    Stud_ID: '123',
    StudName: 'Aryan',
    Grade: 'VII',
    Hobbies: 'Cycling',
    DOJ: '2020-05-21'
  },
  {
    _id: ObjectId('6835841e662ad65f24c59f39'),
    Stud_ID: '124',
    StudName: 'Varun',
    Grade: 'VII',
    Hobbies: 'Cricket',
    DOJ: '2020-04-21'
  },
  {
    _id: ObjectId('68358437662ad65f24c59f3a'),
    Stud_ID: '125',
    StudName: 'Vani',
    Grade: 'VII',
    Hobbies: 'Running',
    DOJ: '2020-03-21'
  }
]
```

```
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.find({}, { StudName: 1});
[
  { _id: ObjectId('68358350662ad65f24c59f35'), StudName: 'Ananya' },
  { _id: ObjectId('68358368662ad65f24c59f36'), StudName: 'Ananya' },
  { _id: ObjectId('68358386662ad65f24c59f37'), StudName: 'Aditi' },
  { _id: ObjectId('68358407662ad65f24c59f38'), StudName: 'Aryan' },
  { _id: ObjectId('6835841e662ad65f24c59f39'), StudName: 'Varun' },
  { _id: ObjectId('68358437662ad65f24c59f3a'), StudName: 'Vani' }
]
```

```
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.find({Stud_ID:'121'}, { StudName: 1, Grade : 1 , Stud_ID : 1});
[
  {
    _id: ObjectId('68358350662ad65f24c59f35'),
    Stud_ID: '121',
    StudName: 'Ananya',
    Grade: 'VII'
  },
  {
    _id: ObjectId('68358368662ad65f24c59f36'),
    Stud_ID: '121',
    StudName: 'Ananya',
    Grade: 'VII'
  }
]
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.find({ Grade : {$ne:'VII'}});
```

```
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.find({StudName :/a$/});
[
  {
    _id: ObjectId('68358350662ad65f24c59f35'),
    Stud_ID: '121',
    StudName: 'Ananya',
    Grade: 'VII',
    Hobbies: 'Swimming',
    DOJ: '2020-06-12'
  },
  {
    _id: ObjectId('68358368662ad65f24c59f36'),
    Stud_ID: '121',
    StudName: 'Ananya',
    Grade: 'VII',
    Hobbies: 'Swimming',
    DOJ: '2020-06-12'
  }
]
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.find({StudName :/n$/});
[
  {
    _id: ObjectId('68358407662ad65f24c59f38'),
    Stud_ID: '123',
    StudName: 'Aryan',
    Grade: 'VII',
    Hobbies: 'Cycling',
    DOJ: '2020-05-21'
  },
  {
    _id: ObjectId('6835841e662ad65f24c59f39'),
    Stud_ID: '124',
    StudName: 'Varun',
    Grade: 'VII',
    Hobbies: 'Cricket',
    DOJ: '2020-04-21'
  }
]
```

```
Atlas atlas-p6uomx-shard-0 [primary] db_1> db.Student.find({ Grade : {$eq:'VII'}});
[
  {
    _id: ObjectId('68358350662ad65f24c59f35'),
    Stud_ID: '121',
    StudName: 'Ananya',
    Grade: 'VII',
    Hobbies: 'Swimming',
    DOJ: '2020-06-12'
  },
  {
    _id: ObjectId('68358368662ad65f24c59f36'),
    Stud_ID: '121',
    StudName: 'Ananya',
    Grade: 'VII',
    Hobbies: 'Swimming',
    DOJ: '2020-06-12'
  },
  {
    _id: ObjectId('68358386662ad65f24c59f37'),
    Stud_ID: '122',
    StudName: 'Aditi',
    Grade: 'VII',
    Hobbies: 'Swimming',
    DOJ: '2020-05-12'
  },
  {
    _id: ObjectId('68358407662ad65f24c59f38'),
    Stud_ID: '123',
    StudName: 'Aryan',
    Grade: 'VII',
    Hobbies: 'Cycling',
    DOJ: '2020-05-21'
  },
  {
    _id: ObjectId('6835841e662ad65f24c59f39'),
    Stud_ID: '124',
    StudName: 'Varun',
    Grade: 'VII',
    Hobbies: 'Cricket',
    DOJ: '2020-04-21'
  },
  {
    _id: ObjectId('68358437662ad65f24c59f3a'),
    Stud_ID: '125',
    StudName: 'Vani',
    Grade: 'VII',
    Hobbies: 'Running',
    DOJ: '2020-03-21'
  }
]
```