

Task2.1

환경

- Ubuntu
 - Description: Ubuntu 22.04.1 LTS
 - Release: 22.04
 - Codename: jammy
- node: v18.12.1
- minikube version: v1.27.1

구현 방법

코드 수정

- example-voting-app-task2.1 directory를 기준으로 한다.
- task1의 코드를 기반으로 수정했다.
- database에 time column을 추가하고, result를 조회할 때, 시간 조건을 주어 해당 시간 내에 포함되는 투표 결과만 표현하게 설정했다.

vote

- votoe/app.py 를 수정했다.

```
@app.route("/", methods=['POST', 'GET'])
def hello():
    # voter_id = request.cookies.get('voter_id')
    # if not voter_id:
    #     voter_id = hex(random.getrandbits(64))[2:-1]

    voter_id = hex(random.getrandbits(64))[2:-1]
    print(voter_id)
    vote = None
    vote_time = int(time.time())

    if request.method == 'POST':
        redis = get_redis()
        vote = request.form['vote']
        app.logger.info('Received vote for %s at %d', vote, vote_time)
        data = json.dumps({'voter_id': voter_id, 'vote': vote, 'vote_time': vote_time})
        redis.rpush('votes', data)

        resp = make_response(render_template(
            'index.html',
            option_a=option_a,
            option_b=option_b,
            hostname=hostname,
            vote=vote,
        ))
        # resp.set_cookie('voter_id', voter_id)
        return resp
```

- python time package에서 vote_time 변수를 선언하여 unix timestamp를 받아왔다.
- 해당 vote_time을 data json에 넣어서 worker 단에서 database에 넣도록 하였다.

worker

- worker/src/main/java/worker/worker.java를 아래와 같이 수정했다.
- bold**체 처리가 된 것이 수정한 코드이다.

```
// Worker.java
public static void main(String[] args) {
    try {
        Jedis redis = connectToRedis("redis");
```

```

Connection dbConn = connectToDB("db");

System.out.println("Watching vote queue");

while (true) {
    String voteJSON = redis.blpop(0, "votes").get(1);
    JSONObject voteData = new JSONObject(voteJSON);
    String voterID = voteData.getString("voter_id");
    String vote = voteData.getString("vote");
    // add to processing vote time
    int voteTime = voteData.getInt("vote_time");

    System.out.printf("Processing vote for '%s' by '%s'\n", vote, voterID);
    updateVote(dbConn, voterID, vote);
}
} catch (SQLException e) {
    e.printStackTrace();
    System.exit(1);
}

static void updateVote(Connection dbConn, String voterID, String vote, int voteTime) throws SQLException {
    PreparedStatement insert = dbConn.prepareStatement(
        "INSERT INTO votes (id, vote, time) VALUES (?, ?, ?)");
    insert.setString(1, voterID);
    insert.setString(2, vote);
    // add to insert vote time in database
    insert.setInt(3, voteTime);
    insert.executeUpdate();
    System.out.println("voterId");
    try {
        insert.executeUpdate();
    } catch (SQLException e) {
        PreparedStatement update = dbConn.prepareStatement(
            "UPDATE votes SET vote = ?, time = ? WHERE id = ?");
        update.setString(1, vote);
        update.setString(2, voterID);
        // add to update vote time in database
        update.setInt(3, voteTime);
        update.executeUpdate();
    }
}

static Connection connectToDB(String host) throws SQLException {
    Connection conn = null;

    try {
        Class.forName("org.postgresql.Driver");
        String url = "jdbc:postgresql://" + host + "/postgres";

        while (conn == null) {
            try {
                conn = DriverManager.getConnection(url, "postgres", "postgres");
            } catch (SQLException e) {
                System.out.println("Waiting for db");
                sleep(1000);
            }
        }

        // create table with vote time
        PreparedStatement st = conn.prepareStatement(
            "CREATE TABLE IF NOT EXISTS votes (id VARCHAR(255) NOT NULL UNIQUE, vote VARCHAR(255) NOT NULL, time INTEGER NOT NULL);");
        st.executeUpdate();

    } catch (ClassNotFoundException e) {
        e.printStackTrace();
        System.exit(1);
    }

    System.out.println("Connected to db");
    return conn;
}
}

```

- 비슷한 맥락으로 example-voting-app-task2.1/worker/src/Worker/Program.cs 를 수정했다.
- 수정한 부분에 주석을 추가했다.

result

- result/server.js를 아래와 같이 수정했다..

```

// handle url period parameter
app.get('/period?', function (req, res) {
  const period = req.query.period;
  const period_time = setPeriodTime(period);
  period_global = period_time;

  async.retry(
    { times: 1000, interval: 1000 },
    function (callback) {
      pool.connect(function (err, client, done) {
        if (err) {
          console.error("Waiting for db");
        }
        callback(err, client);
      });
    },
    function (err, client) {
      if (err) {
        return console.error("Giving up");
      }
      console.log("Connected to db");
      getVotes(client, period_time, period);
    }
  );
  res.sendFile(path.resolve(__dirname + '/views/index.html'));
});

// get votes with period
function getVotes(client, period_time, period) {
  if (period_global !== period_time)
    return;

  const cur_time = Math.floor(new Date().getTime() / 1000);

  client.query(`SELECT vote, COUNT(id) AS count FROM votes WHERE ${cur_time} - time <= ${period_time} GROUP BY vote`, [], function (err, result) {
    if (err) {
      console.error("Error performing query: " + err);
    } else {
      let votes = collectVotesFromResult(result, period);
      io.sockets.emit("scores", JSON.stringify(votes));
    }
    setTimeout(function () {
      getVotes(client, period_time, period);
    }, 1000);
  });
}

// collect vote result including period in string
function collectVotesFromResult(result, period) {
  let tem;
  if (period === '') {
    switch (period.charAt(period.length - 1)) {
      case "d":
        let day = period.split("d")[0];
        if (day === '') {
          tem = 1 + " day";
        } else tem = day + " days";
        break;
      case "h":
        let hour = period.split("h")[0];
        if (hour === '') {
          tem = 1 + " hour";
        } else {
          tem = hour + " hours";
        }
        break;
      case "m":
        let minute = period.split("m")[0];
        if (minute === '') {
          tem = 1 + " minute";
        } else {
          tem = minute + " minutes";
        }
        break;
      default:
        break;
    }
  }
  let votes = { a: 0, b: 0, period: tem };
  result.rows.forEach(function (row) {
    votes[row.vote] = parseInt(row.count);
  });
}

```

```

        return votes;
    }

    // set period string to perdio seconds
    function setPeriodTime(period) {
        let tem;
        switch (period.charAt(period.length - 1)) {
            case "d":
                let day = period.split("d")[0];
                tem = 60 * 60 * 24 * day;
                break;
            case "h":
                let hour = period.split("h")[0];
                tem = 60 * 60 * hour;
                break;
            case "m":
                let minute = period.split("m")[0];
                tem = 60 * minute;
                break;
            default:
                break;
        }
        return tem;
    }

```

- app.get('/period?', function (req, res);
 - url에서 period로 넘어오는 인자들에 따라 다른 처리를 하기 위해서 해당 함수를 추가하였다.
 - parameter로 가능한 것은 m, h, d로 끝나는 모든 시간 단위이다.
 - setPeriodTime(period)를 호출해서 인자로 들어온 period를 실제 초로 변환한 period_time을 return 받는다.
 - url parameter를 비교하기 위해서 period_global을 설정한다.
 - getVote(client, period_time, period)를 호출한다.
- function getVotes(client, period_time, period) ;
 - database와 시간을 비교하기 위한 period_time과 url parameter를 period로 입력을 받는다.
 - url parameter로 들어온 period가 변했는지 여부를 확인하기 위해 period_global과 period_time을 비교한다.
 - database에서 period 내에 속하는 투표 결과를 가져온다.
 - collectResult를 통해 결과를 받아오고, front로 보내준다.
- function collectVotesFromResult(result, period);
 - front에서 period를 적절한 string으로 표현하기 위해서, 들어온 period parameter를 변환한다.
- result/views/app.js를 아래와 같이 수정했다.

```

var updateScores = function () {
    socket.on('scores', function (json) {
        data = JSON.parse(json);
        var a = parseInt(data.a || 0);
        var b = parseInt(data.b || 0);
        let period_data = data.period;

        var percentages = getPercentages(a, b);

        bg1.style.width = percentages.a + "%";
        bg2.style.width = percentages.b + "%";

        $scope.$apply(function () {
            $scope.aPercent = percentages.a;
            $scope.bPercent = percentages.b;
            $scope.total = a + b;
            $scope.period = period_data;
        });
    });
};

```

- app.controller('statsCtrl', function (\$scope) 내의 updateScores 함수에 period scope에 period data를 전달하도록 수정했다.
- result/views/index.html을 아래와 같이 수정했다.

```

<div id="result">
  <span ng-if="total == 0">No votes yet in {{period}}</span>
  <span ng-if="total == 1">{{total}} vote in {{period}}</span>
  <span ng-if="total >= 2">{{total}} votes in {{period}}</span>
</div>

```

- o period data를 표현하도록 추가했다.

K8s image 생성 및 push

```

# in example-voting-app-task2.1 dir
$ docker login
  hkyeo98
  ${password}
$ docker build ./result -t example-voting-app-result-task2.1
$ docker tag example-voting-app-result-task2.1:latest kyuber/example-voting-app-result-task2.1
$ docker push kyuber/example-voting-app-result-task2.1

$ docker build ./vote -t example-voting-app-vote-task2.1
$ docker tag example-voting-app-vote-task2.1:latest kyuber/example-voting-app-vote-task2.1
$ docker push kyuber/example-voting-app-vote-task2.1

$ docker build ./worker -t example-voting-app-worker-task2.1
$ docker tag example-voting-app-worker-task2.1:latest kyuber/example-voting-app-worker-task2.1
$ docker push kyuber/example-voting-app-worker-task2.1

```

vote-deployment.yaml 적용

```

# vote-deployment.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: vote
  name: vote
  namespace: vote
spec:
  replicas: 1
  selector:
    matchLabels:
      app: vote
  template:
    metadata:
      labels:
        app: vote
    spec:
      containers:
        - image: kyuber/example-voting-app-vote-task2.1:latest
          name: vote
        ports:
          - containerPort: 80
            name: vote

```

result-deployment.yaml 적용

```

apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: result
  name: result
  namespace: vote
spec:
  replicas: 1
  selector:
    matchLabels:
      app: result
  template:
    metadata:
      labels:
        app: result
    spec:
      containers:
        - image: kyuber/example-voting-app-result-task2.1

```

```
name: result
ports:
- containerPort: 80
  name: result
```

worker-deployment.yaml 적용

```
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: worker
  name: worker
  namespace: vote
spec:
  replicas: 1
  selector:
    matchLabels:
      app: worker
  template:
    metadata:
      labels:
        app: worker
    spec:
      containers:
        - image: kyuber/example-voting-app-worker-task2.1
          name: worker
```

실행 방식

kubernetes

```
# in example-voting-app-task2.1 dir
$ kubectl create namespace vote
$ kubectl create -f k8s-specifications/

# vote url. enter below address to browser to see the vote ui.
$ minikube service vote -n vote --url
http://192.168.49.2:31000/

# result url.
$ minikube service result -n vote --url
http://192.168.49.2:31001

# to use period thing, should type url in browser like
http://192.168.49.2:31001/period?period=5m
http://192.168.49.2:31001/period?period=15m
http://192.168.49.2:31001/period?period=1h
http://192.168.49.2:31001/period?period=1d
```

- db연동에 다소 시간이 걸릴 수 있습니다.

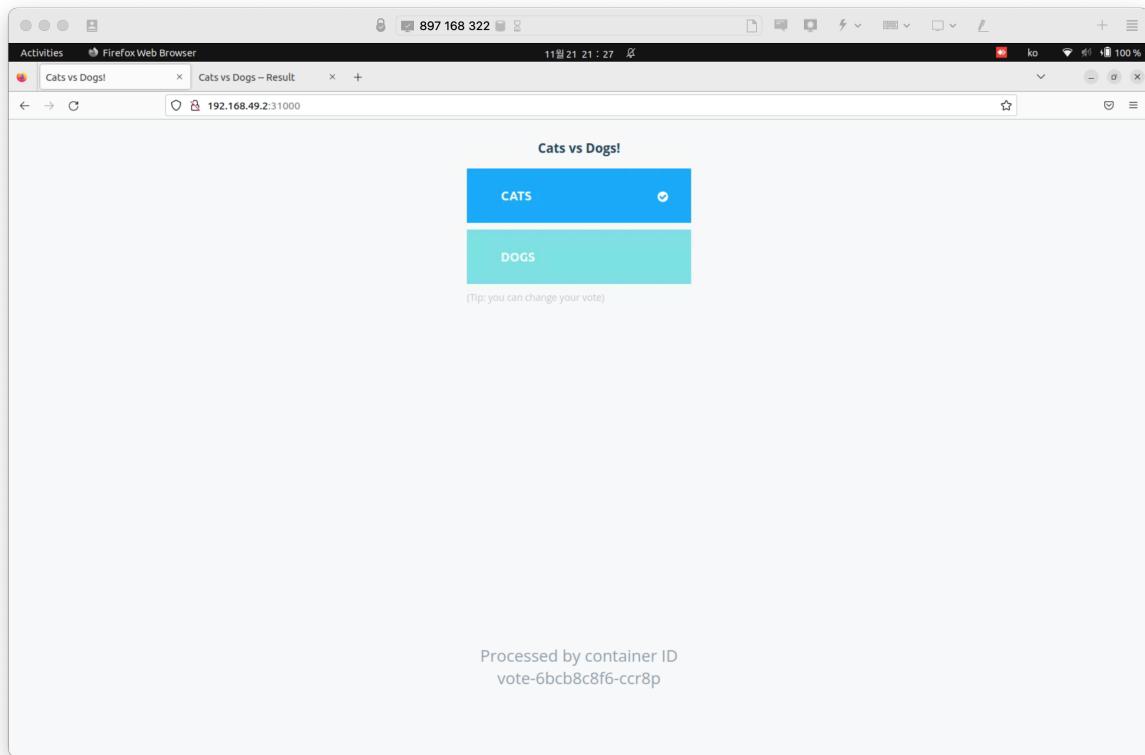
실행 결과

kubernetes

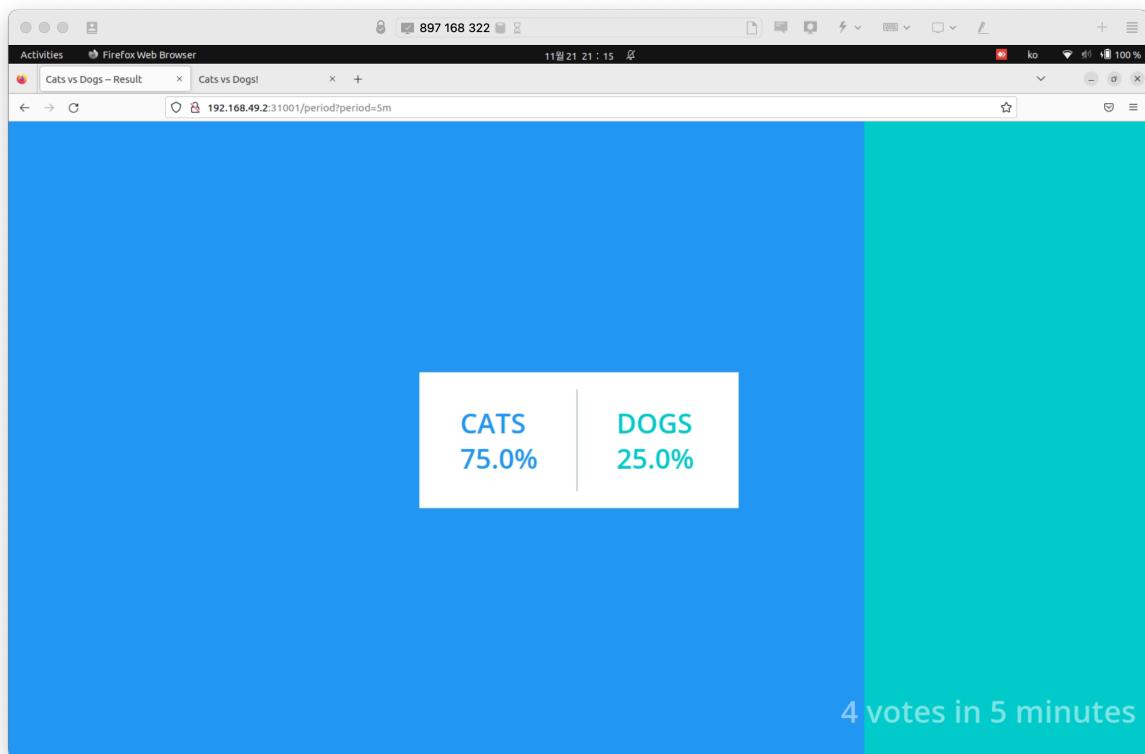
- 4표를 먼저 투표하고 3표를 나중에 투표했다고 가정

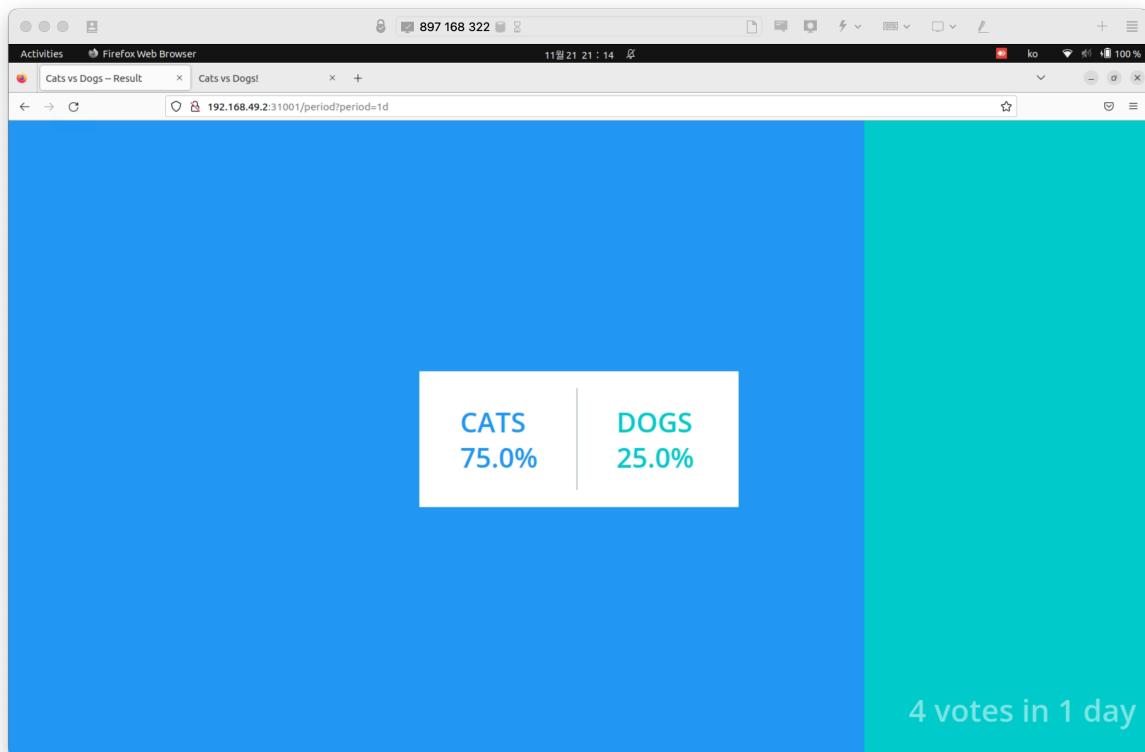
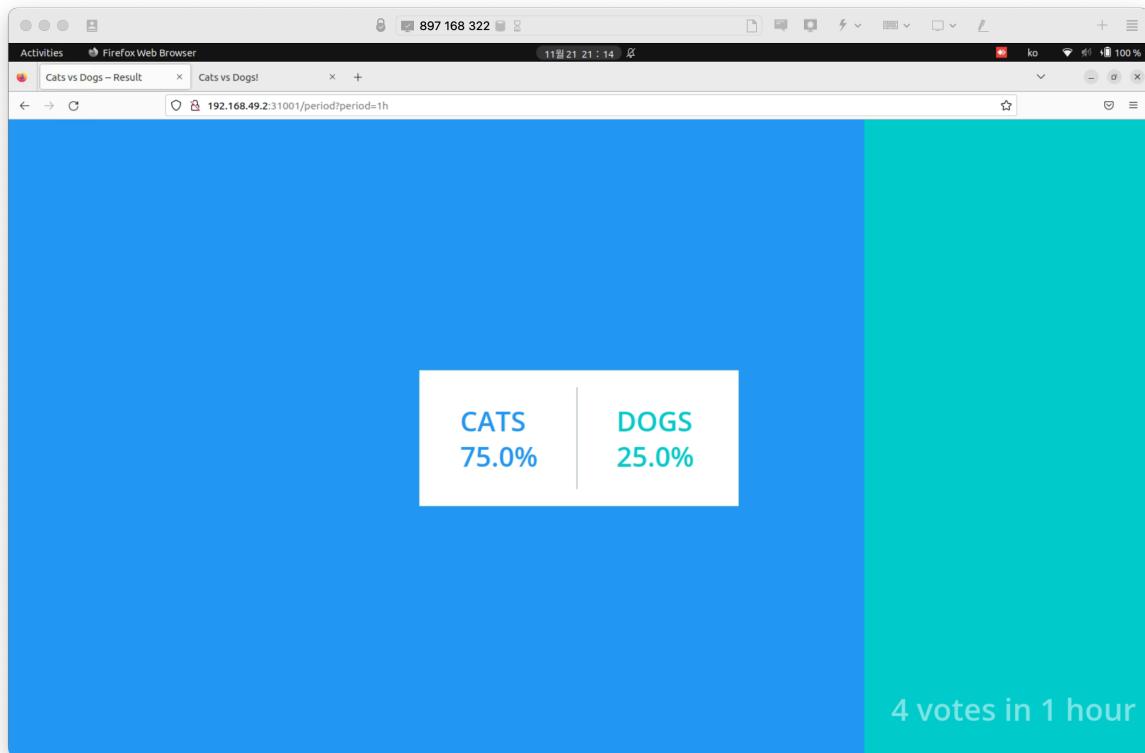
투표 UI

- 투표를 위한 UI



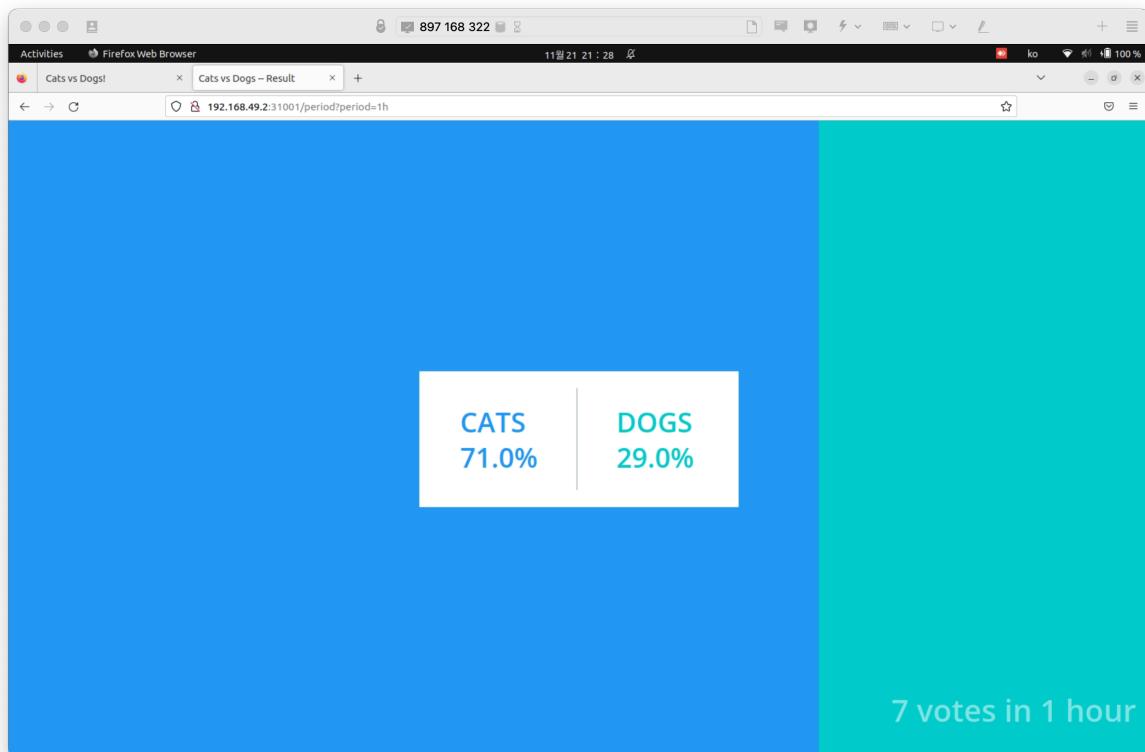
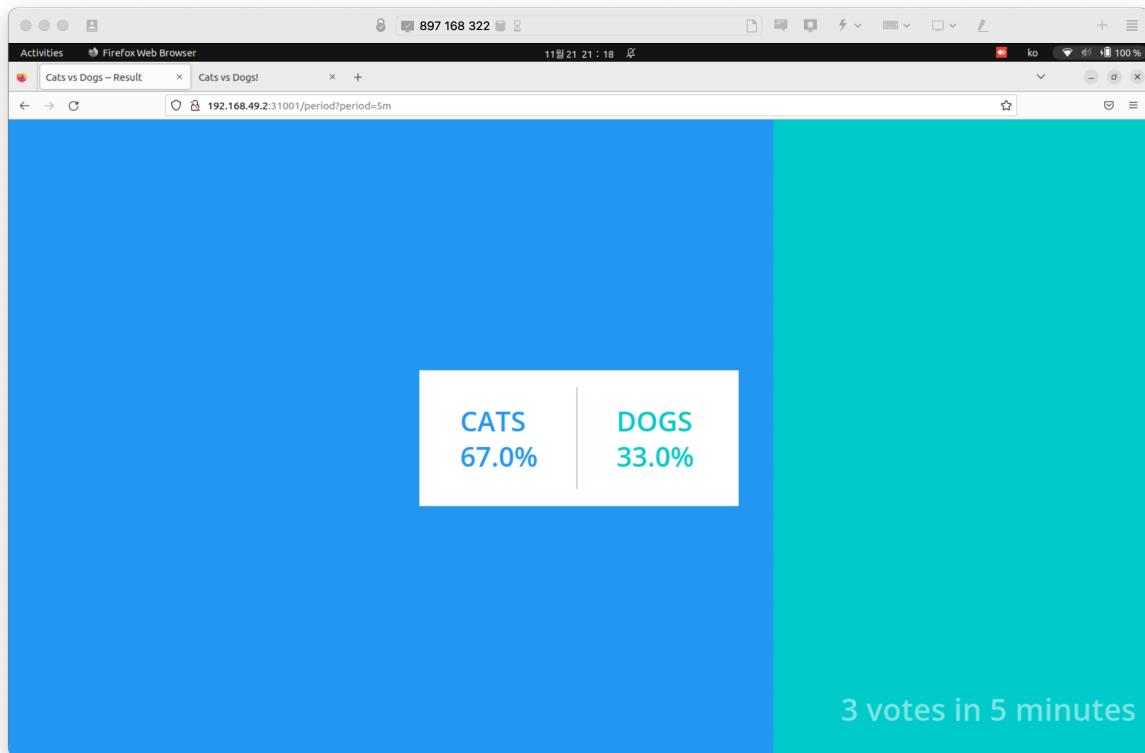
- 4표를 먼저 투표한 후, 5분, 1시간, 하루에 대한 결과를 나타내는 화면





5분 후 투표 UI

- 5분 이후에 추가로 투표했을 때, 다른 결과가 나옴을 알 수 있다.



terminal log message

- 위의 2장은 4표를 먼저 투표했을 때를 의미하고, 그 아래 1장은 이후에 3장을 추가로 투표했을 때 결과를 의미한다.

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS JUPYTER COMMENTS bash - example-voting-app-task2.1 + ○ ×
```

yeo@kyber:~/development/distributed_system/example-voting-app-task2.1\$ kubectl -n vote get po
NAME READY STATUS RESTARTS AGE
db-f57abff55-ktcl 1/1 Running 0 23s
redis-79f984f6b5-knglj 1/1 Running 0 23s
result-5f676b7bc-6tz5v 1/1 Running 0 23s
vote-6bc8c8f6ccr8b 1/1 Running 0 23s
worker-6d5b85c88-vm6rd 1/1 Running 0 26s
yeo@kyber:~/development/distributed_system/example-voting-app-task2.1\$ kubectl -n vote logs vote-6bc8c8f6-ccr8b
[2022-11-21 12:12:52 +0000] [1] [INFO] Starting unicorn 20.1.0
[2022-11-21 12:12:52 +0000] [1] [INFO] Listening at: http://0.0.0.0:80 (1)
[2022-11-21 12:12:52 +0000] [1] [INFO] Using worker: sync
[2022-11-21 12:12:52 +0000] [1] [INFO] Booting worker with pid: 7
[2022-11-21 12:12:52 +0000] [8] [INFO] Booting worker with pid: 8
[2022-11-21 12:12:52 +0000] [9] [INFO] Booting worker with pid: 9
[2022-11-21 12:12:52 +0000] [10] [INFO] Booting worker with pid: 10
[2022-11-21 12:12:53,294] INFO in app: Received vote for a at 1669032773
[2022-11-21 12:12:53 +0000] [9] [INFO] Received vote for a at 1669032773
a4a236e369998
17.2.17.0.1 -- [21/Nov/2022:12:12:53 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
17.2.17.0.1 -- [21/Nov/2022:12:12:53 +0000] "GET /static/styleheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:13:01,542] INFO in app: Received vote for b at 1669032781
[2022-11-21 12:13:01 +0000] [9] [INFO] Received vote for b at 1669032781
52475c0e745260
17.2.17.0.1 -- [21/Nov/2022:12:13:01 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
17.2.17.0.1 -- [21/Nov/2022:12:13:01 +0000] "GET /static/styleheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:13:02,144] INFO in app: Received vote for a at 1669032782
[2022-11-21 12:13:02 +0000] [8] [INFO] Received vote for a at 1669032782
9a7f3dc0d0ff857
17.2.17.0.1 -- [21/Nov/2022:12:13:02 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
17.2.17.0.1 -- [21/Nov/2022:12:13:02 +0000] "GET /static/styleheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:13:04,971] INFO in app: Received vote for a at 1669032784
[2022-11-21 12:13:04 +0000] [7] [INFO] Received vote for a at 1669032784
9ce2355999576aa
17.2.17.0.1 -- [21/Nov/2022:12:13:04 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
17.2.17.0.1 -- [21/Nov/2022:12:13:04 +0000] "GET /static/styleheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
yeo@kyber:~/development/distributed_system/example-voting-app-task2.1\$ kubectl -n vote logs worker-6d5b85c88-vm6rd
Waiting for db
Waiting for db
Waiting for db
Waiting for db
Connected to db
Connecting to redis
Found redis at 10.100.216.34
Processing vote for 'a' by 'a4a236e369998'
1669032781
Processing vote for 'b' by '52475c0e745260'
1669032781
Processing vote for 'a' by '9a7f3dc0d0ff857'
1669032782
Processing vote for 'a' by '9ce2355999576aa'
1669032782
yeo@kyber:~/development/distributed_system/example-voting-app-task2.1\$ kubectl -n vote logs result-5f676b7bc-6tz5v
Mon, 21 Nov 2022 12:12:54 GMT body-parser deprecated bodyParser: use individual json/urlencoded middlewares at server.js:97:9
Mon, 21 Nov 2022 12:12:54 GMT body-parser deprecated undefined extended: provide extended option at ..//node_modules/body-parser/index.js:105:29
App running on port 80
Connected to db
yeo@kyber:~/development/distributed_system/example-voting-app-task2.1\$

The screenshot shows a terminal window with several tabs open, each displaying log output from a Kubernetes pod named 'example-voting-app-task2'. The logs include messages about booting workers, receiving votes, and application startup. The terminal has a dark theme with light-colored text. A status bar at the bottom provides information about the SSH connection (SSH: 218.144.180.252), the current file (server.js), and the system load (top).

```
problems output debug console terminal ports 1 jupyter comments bash - example-voting-app-task2.1 + x x x

1669032781 Processing vote for 'a' by '9a7f3cd0d0f857'
1669032782 Processing vote for 'a' by '9ce235599576aa'
...
yourkyber@development:~/distributed_system/example-voting-app-task2.1$ kubectl -n vote logs result-5f67b7b5c-6tz5v
Mon, 21 Nov 2022 12:12:54 GMT body-parser deprecated bodyParser: use individual json/urlencoded middlewares at server.js:97:9
Mon, 21 Nov 2022 12:12:54 GMT body-parser deprecated extended: provide extended option at ../node_modules/body-parser/index.js:105:29
App running on port 80
Connected to db
yourkyber@development:~/distributed_system/example-voting-app-task2.1$ kubectl -n vote logs vote-6bcb8cf6-ccr8p
[2022-11-21 12:12:52 +0000] [1] [INFO] Starting unicorn 20.1.0
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[2022-11-21 12:12:53,294] INFO in app: Received vote for a at 1669032773
[2022-11-21 12:12:53 +0000] [9] [INFO] Received vote for a at 1669032773
...
17_17.0.1 -- [21/Nov/2022:12:12:53 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
17_17.0.1 -- [21/Nov/2022:12:12:53 +0000] "GET /static/stylesheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
[2022-11-21 12:13:01 +0000] [1] [INFO] Received vote for b at 1669032781
[2022-11-21 12:13:01 +0000] [9] [INFO] Received vote for b at 1669032781
S475c0e745926
17_17.0.1 -- [21/Nov/2022:12:13:01 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
17_17.0.1 -- [21/Nov/2022:12:13:01 +0000] "GET /static/stylesheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
[2022-11-21 12:13:02 +0000] [1] [INFO] Received vote for a at 1669032782
[2022-11-21 12:13:02 +0000] [8] [INFO] Received vote for a at 1669032782
9a7f3cd0d0f857
17_17.0.1 -- [21/Nov/2022:12:13:02 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
17_17.0.1 -- [21/Nov/2022:12:13:02 +0000] "GET /static/stylesheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
[2022-11-21 12:13:02 +0000] [1] [INFO] Received vote for a at 1669032782
[2022-11-21 12:13:02 +0000] [7] [INFO] Received vote for a at 1669032782
9c235599576aa
17_17.0.1 -- [21/Nov/2022:12:13:04 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
17_17.0.1 -- [21/Nov/2022:12:13:04 +0000] "GET /static/stylesheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
[2022-11-21 12:13:04 +0000] [1] [INFO] Received vote for a at 1669032784
[2022-11-21 12:13:04 +0000] [7] [INFO] Received vote for a at 1669032784
9c235599576aa
17_17.0.1 -- [21/Nov/2022:12:13:04 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
17_17.0.1 -- [21/Nov/2022:12:13:04 +0000] "GET /static/stylesheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
[2022-11-21 12:13:04 +0000] [1] [INFO] Received vote for a at 1669032784
[2022-11-21 12:13:04 +0000] [7] [INFO] Received vote for a at 1669032784
e7777298fb17b0
17_17.0.1 -- [21/Nov/2022:12:17:06 +0000] "GET / HTTP/1.1" 200 1223 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
17_17.0.1 -- [21/Nov/2022:12:17:06 +0000] "GET /static/stylesheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
[2022-11-21 12:17:06 +0000] [1] [INFO] Received vote for a at 1669033088
[2022-11-21 12:17:06 +0000] [7] [INFO] Received vote for a at 1669033088
9ed58c4ca5f77
17_17.0.1 -- [21/Nov/2022:12:18:08 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
17_17.0.1 -- [21/Nov/2022:12:18:08 +0000] "GET /static/stylesheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
[2022-11-21 12:18:08 +0000] [1] [INFO] Received vote for b at 1669033088
[2022-11-21 12:18:08 +0000] [7] [INFO] Received vote for b at 1669033088
550d7a2d6e60
17_17.0.1 -- [21/Nov/2022:12:18:08 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
17_17.0.1 -- [21/Nov/2022:12:18:08 +0000] "GET /static/stylesheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
[2022-11-21 12:18:08 +0000] [1] [INFO] Received vote for a at 1669033089
[2022-11-21 12:18:08 +0000] [8] [INFO] Received vote for a at 1669033089
71222ebf16d9ba
17_17.0.1 -- [21/Nov/2022:12:18:09 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
17_17.0.1 -- [21/Nov/2022:12:18:09 +0000] "GET /static/stylesheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/201001 Firefox/107.0"
[2022-11-21 12:18:09 +0000] [1] [INFO] Received vote for a at 1669033089
[2022-11-21 12:18:09 +0000] [7] [INFO] Received vote for a at 1669033089
...
yourkyber@development:~/distributed_system/example-voting-app-task2.1$
```

```
server.js – distributed_system [SSH: 218.144.189.252]
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS ① JUPYTER COMMENTS bash - example-voting-app-task2.1 + - × ◻ ◻ ◻ ×
17.17.0.1 -- [21/Nov/2022:12:13:01 +0000] "GET /static/styleSheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:13:01.542] INFO In app: Received vote for b at 1669032781
[2022-11-21 12:13:01 +0000] [9] [INFO] Received vote for b at 1669032781
52475c0e74582e0
17.17.0.1 -- [21/Nov/2022:12:13:01 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:13:01.542] INFO In app: Received vote for a at 1669032782
[2022-11-21 12:13:02 +0000] [8] [INFO] Received vote for a at 1669032782
9a7f73dc0d0f857
17.17.0.1 -- [21/Nov/2022:12:13:02 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:13:02.144] INFO In app: Received vote for a at 1669032782
[2022-11-21 12:13:02 +0000] [8] [INFO] Received vote for a at 1669032782
17.17.0.1 -- [21/Nov/2022:12:13:02 +0000] "GET /static/styleSheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:13:02.144] INFO In app: Received vote for a at 1669032784
[2022-11-21 12:13:04 +0000] [7] [INFO] Received vote for a at 1669032784
9e2c35599576a0
17.17.0.1 -- [21/Nov/2022:12:13:04 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:13:04 +0000] [7] [INFO] Received vote for a at 1669032784
17.17.0.1 -- [21/Nov/2022:12:13:04 +0000] "GET /static/styleSheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
e7f777298fb17b6
17.17.0.1 -- [21/Nov/2022:12:17:06 +0000] "GET / HTTP/1.1" 200 1232 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:17:06.000] INFO In app: Received vote for a at 1669033088
[2022-11-21 12:17:06.000] [7] [INFO] Received vote for a at 1669033088
17.17.0.1 -- [21/Nov/2022:12:17:06 +0000] "GET /static/styleSheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:17:06.000] [7] [INFO] Received vote for a at 1669033088
17.17.0.1 -- [21/Nov/2022:12:18:08 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:18:08 +0000] [7] [INFO] Received vote for a at 1669033088
9ed584c54ff7e
17.17.0.1 -- [21/Nov/2022:12:18:08 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:18:08 +0000] [7] [INFO] Received vote for a at 1669033088
17.17.0.1 -- [21/Nov/2022:12:18:08 +0000] "GET /static/styleSheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:18:08 +0000] [7] [INFO] Received vote for b at 1669033088
59d0d584c54ff7e
17.17.0.1 -- [21/Nov/2022:12:18:08 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:18:08 +0000] [7] [INFO] Received vote for b at 1669033088
17.17.0.1 -- [21/Nov/2022:12:18:08 +0000] "GET /static/styleSheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:18:08 +0000] [7] [INFO] Received vote for b at 1669033088
17.17.0.1 -- [21/Nov/2022:12:18:09 +0000] "POST / HTTP/1.1" 200 1613 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:18:09 +0000] [8] [INFO] Received vote for a at 1669033089
17.17.0.1 -- [21/Nov/2022:12:18:09 +0000] "GET /static/styleSheets/style.css HTTP/1.1" 304 0 "http://192.168.49.2:31000/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:107.0) Gecko/20100101 Firefox/107.0"
[2022-11-21 12:18:09 +0000] [8] [INFO] Received vote for a at 1669033089
yeo@kyuber:~/development/distributed_system/example-voting-app-task2.1$ kubectl -n vote logs worker-6d55d85c88-vm6rd
Waiting for db
Waiting for db
Waiting for db
Waiting for db
Connected to db
Connecting to redis
Found redis at 10.100.216.34
Processing vote for 'a' by '3a4236fe369989'
1669032773
Processing vote for 'b' by '52475c0e74582e0'
1669032782
Processing vote for 'b' by '9a7f73dc0d0f857'
1669032782
Processing vote for 'a' by '9ce235599576a0'
1669032784
Processing vote for 'a' by '90d584c54ff7e'
1669033088
Processing vote for 'b' by '550d7a4a26de60e'
1669033088
Processing vote for 'a' by '7122eebf1fd9b0'
1669033088
yeo@kyuber:~/development/distributed_system/example-voting-app-task2.1$ █
SSH: 218.144.189.252 master ○ ⊖ ⊙ ⊛ ⊜ ⊞ ⊟ o tabnine starter
Ln 141, Col 1 Spaces: 2 UTF-8 LF () JavaScript

```