

# **Software Engineering Tools Lab**

## **Assignment No-1**

### **Module 1- Introduction to FOSS**

**PRN : 2020BTECS00079**

**Batch : T7**

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#### **1 Differentiate in between free software, Open source software and proprietary software with respect to its properties.**

Free software refers to the software that is available free of cost and can be used, copied, modified, and distributed without any restriction. The focus of free software is on freedom of use, not necessarily the price.

Open source software refers to the software that has its source code available to the public, allowing anyone to inspect, modify, and distribute the code. The focus of open source is on transparency and collaboration in the development process.

Proprietary software, also known as closed-source software, is software that is owned by an individual or a company and is not freely available for use, modification, or distribution. The source code is not disclosed to the public and is kept proprietary. The focus of proprietary software is on the commercial exploitation of the product.

With respect to their properties, the main differences between these types of software are:

1. Availability: Free software and open source software are freely available to the public, while proprietary software is not.
2. Source code: Open source software and free software come with their source code, while proprietary software does not.
3. Modification: Free software and open source software can be modified by anyone, while proprietary software cannot.
4. Distribution: Free software and open source software can be distributed freely, while proprietary software can only be distributed with the permission of the owner.
5. Support: Free software and open source software have a large community of users who provide support, while proprietary software has limited support from its developers.
6. Security: Open source software is considered more secure as many people can review the code, while proprietary software is considered less secure as only a few individuals have access to the code.

**2.Enlist some examples along with its purpose and properties (at least 10) of FOSS and proprietary software with respect to database**

1. MySQL: A popular, relational database management system used for web applications and data warehousing. It is free and open-source.
2. PostgreSQL: An advanced, open-source relational database management system that supports complex data types, indexing, and transactions.
3. MongoDB: A NoSQL database management system that is designed for scalability and ease of use. It is open-source.
4. Cassandra: A highly scalable, distributed database management system designed for handling large amounts of data across multiple nodes. It is open-source.
5. MariaDB: A community-driven, open-source relational database management system that is a fork of MySQL.
6. Redis: An open-source, in-memory data store that is often used for caching, pub/sub messaging, and job queues.
7. Firebird: A relational database management system that is designed for fast performance and small footprint. It is open-source.
8. CouchDB: A NoSQL database management system that uses a document-oriented data model. It is open-source.
9. RethinkDB: A document-oriented database management system that provides real-time push notifications. It is open-source.
10. SQLite: A compact, lightweight, serverless relational database management system that is suitable for small and embedded applications. It is open-source.

**3. Enlist some examples of free open source exam software for online assessment.**

**TCExam**

**Moodle**

**Papershala**

**FlexiQuiz**

**Eklavya**

#### 4. Demonstrate any one exam software which is open source and freely available.

The image displays two screenshots of the FlexiQuiz web application, demonstrating its open-source and freely available nature.

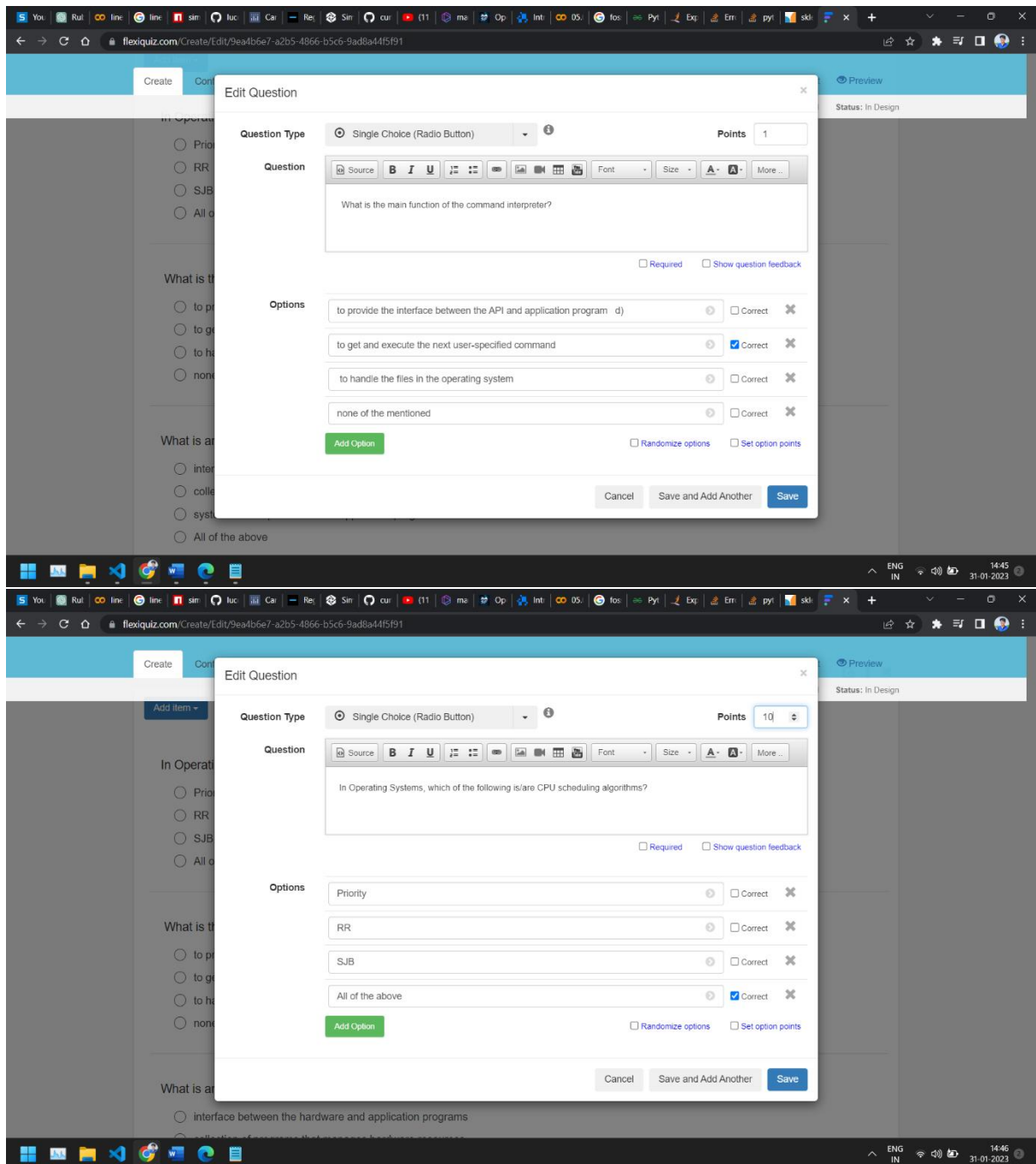
**Top Screenshot (Create Interface):**

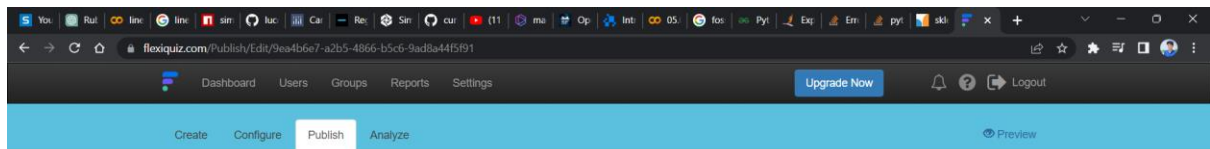
- The browser address bar shows the URL: `flexiquiz.com/Create/Edit/9ea4b6e7-a2b5-4866-b5c6-9ad8a44f5f91`.
- The navigation bar includes links for Dashboard, Users, Groups, Reports, and Settings, along with an Upgrade Now button and a Logout link.
- The main interface has tabs for Create, Configure, Publish, and Analyze.
- The 'Create' tab is active, showing a 'Page: 1' header and an 'Add item +' button.
- Two quiz questions are visible:
  - Question 1: "In Operating Systems, which of the following is/are CPU scheduling algorithms?" with options: Priority, RR, SJB, and All of the above.
  - Question 2: "What is the main function of the command interpreter?" with options: to provide the interface between the API and application program d, to get and execute the next user-specified command, to handle the files in the operating system, and none of the mentioned.

**Bottom Screenshot (Publish Interface):**

- The browser address bar shows the URL: `flexiquiz.com/Publish/Edit/9ea4b6e7-a2b5-4866-b5c6-9ad8a44f5f91`.
- The navigation bar is similar to the top screenshot.
- The main interface has tabs for Create, Configure, Publish, and Analyze.
- The 'Publish' tab is active, showing the 'Quiz status' as 'In Design' and a 'Publish Quiz' button.
- The 'Distribution' section is checked, indicating 'Use Quiz Link'. It includes a URL field with the value: `https://www.flexiquiz.com/SC/N/4a39b5b2-28f1-4853-bafe-52a87cb7f35a` and a 'Customize URL' button.
- The 'Register for quiz' option is checked, with a 'Customize Registration' button.
- There are also checkboxes for 'Send Email Invites' and 'Assign Users / Groups'.

The bottom of the page features a footer with links for Terms and Conditions, Anti-Spam, Privacy, Help, Blog, and Contact Us, along with the copyright notice: © 2023 - nextSpark Pty Ltd.





Quiz status: In Design

[Publish Quiz](#)

Distribution ☒ Use Quiz Link

Copy and share this link using your email, social media, website, blog etc:

URL:  [Customize URL](#)

☒ Register for quiz

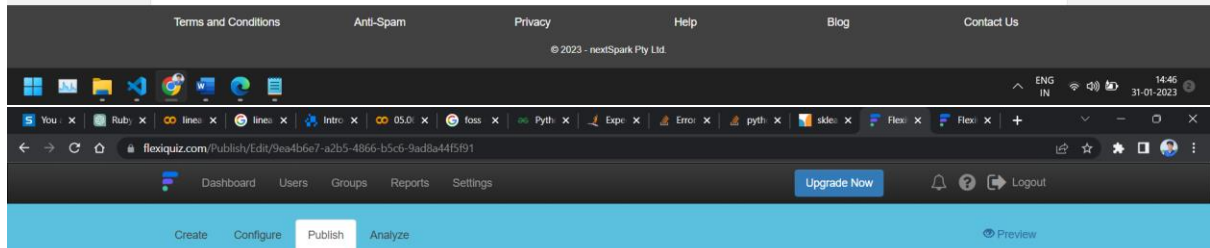
Participants are required to enter a first name, last name and optional email address to access your quiz. Or you can customize the fields with dates, passwords and more: [?](#) [Customize Registration](#)

☐ Send Email Invites

FlexQuiz will send an email to your invitees. Completed quizzes are tracked using the Unique Link and invitees email address.

☐ Assign Users / Groups

Users login to their own customized portal to access assigned quizzes. Groups allow you to assign a group of users to your quiz. You will need to manually notify a user that a quiz has been assigned to their portal.



Quiz status: Open

[Close Quiz](#)

Distribution ☒ Use Quiz Link

Copy and share this link using your email, social media, website, blog etc:

URL:  [Customize URL](#)

☒ Register for quiz

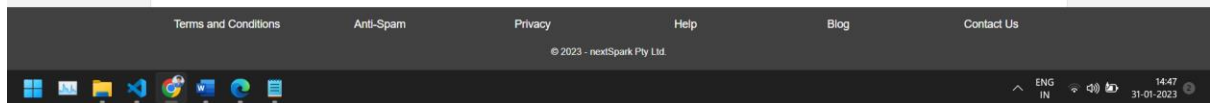
Participants are required to enter a first name, last name and optional email address to access your quiz. Or you can customize the fields with dates, passwords and more: [?](#) [Customize Registration](#)

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Quiz 1

In Operating Systems, which of the following is/are CPU scheduling algorithms?

☐ Priority

☐ RR

☐ SJB

☒ All of the above

What is the main function of the command interpreter?

☐ to provide the interface between the API and application program d)

☒ to get and execute the next user-specified command

☐ to handle the files in the operating system

☐ none of the mentioned

What is an operating system?

☐ interface between the hardware and application programs

☐ collection of programs that manages hardware resources

☐ set of programs that act as a provider to the application programs

Answered 3 of 3 (100%)

Submit

Powered by FlexiQuiz.

Results for Quiz 1

Score 30/30 (100%)

Duration 15s

Review Answers



Results

Review Answers PDF

✓ In Operating Systems, which of the following is/are CPU scheduling algorithms?  
Points: 10/10

- ☐ Priority
- ☐ RR
- ☐ SJB
- ☒ All of the above ✓

✓ What is the main function of the command interpreter?  
Points: 10/10

- ☐ to provide the interface between the API and application program d)
- ☒ to get and execute the next user-specified command ✓
- ☐ to handle the files in the operating system
- ☐ none of the mentioned

✓ What is an operating system?  
Points: 10/10

- ☐ interface between the hardware and application programs
- ☐ collection of programs that manages hardware resources
- ☐ system service provider to the application programs
- ☒ All of the above ✓

14:48 31-01-2023

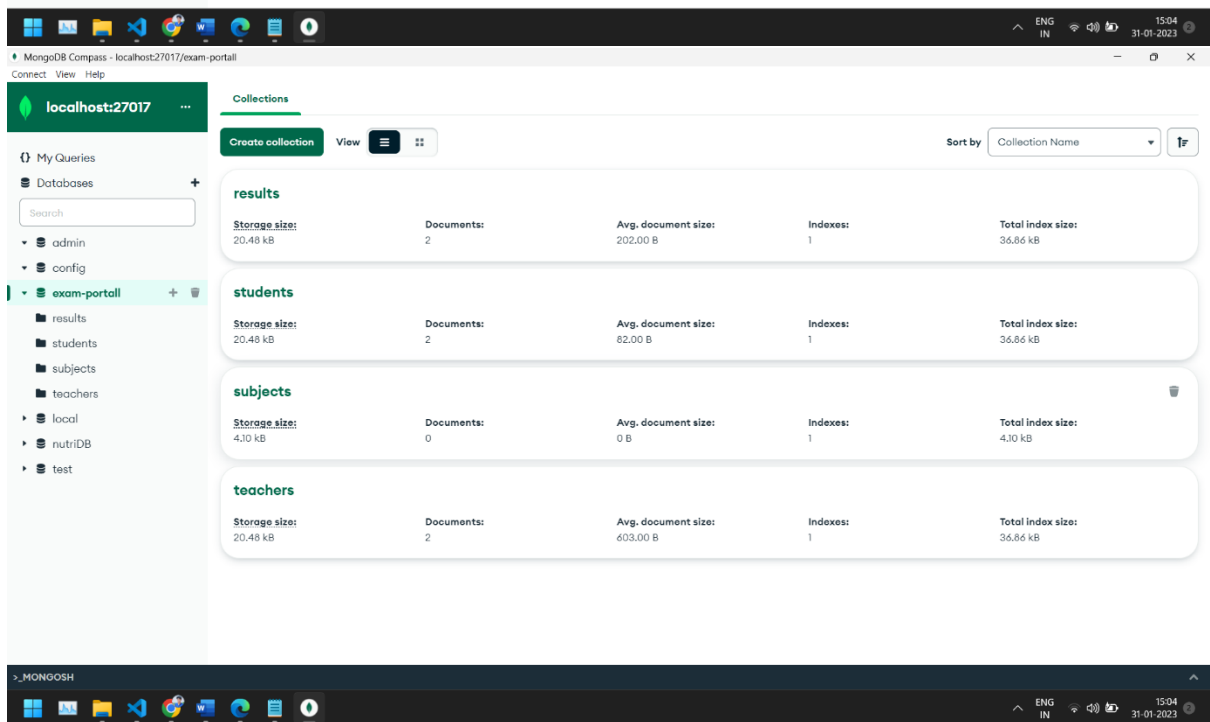
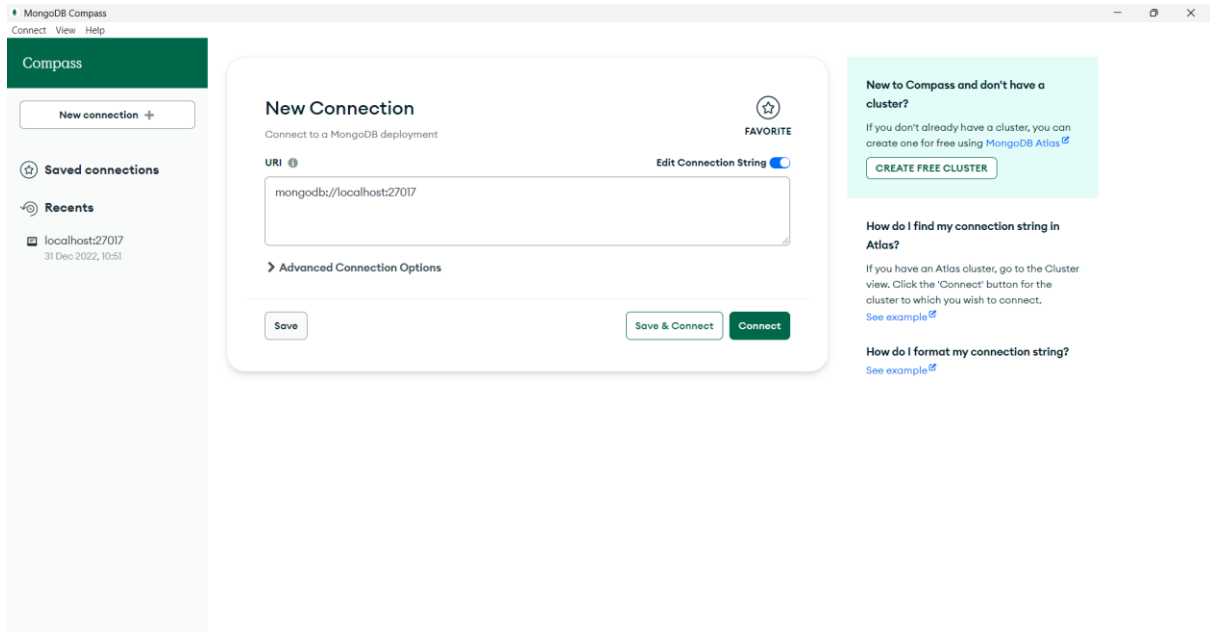
## **5.Demonstrate FOSS software related to database**

### **MongoDB**

MongoDB is a NoSQL database that stores data in a flexible, JSON-like format called BSON.

1. Purpose: MongoDB is used to store large amounts of unstructured and semi-structured data, such as documents, images, and videos.
- Document-Oriented: MongoDB stores data in a document-oriented format, which allows for greater flexibility in how data is stored and retrieved.
  - Scalability: MongoDB is designed for horizontal scalability, meaning that it can easily handle large amounts of data and a high number of concurrent users.
  - High Performance: MongoDB provides fast, real-time access to data through its use of an in-memory storage engine and indexing.
  - NoSQL: MongoDB is a NoSQL database, meaning it does not use traditional SQL-style table structures.
  - Easy to Use: MongoDB is easy to learn and use, with a simple and intuitive query language that is similar to JavaScript.
  - Replication: MongoDB supports automatic, real-time replication of data, providing high availability and reliability.
  - Sharding: MongoDB supports sharding, which allows data to be split across multiple servers to support large data volumes and high traffic loads.





MongoDB Compass - localhost:27017/nutriDB

Connect View Help

localhost:27017

My Queries

Databases

Search

- admin
- config
- exam-portall
  - results
  - students
  - subjects
  - teachers
- local
- nutriDB**
  - nutris
  - otps
  - users
- test

Collections

Create collection View

Sort by Collection Name

| Collection Name | Storage size | Documents | Avg. document size | Indexes | Total index size |
|-----------------|--------------|-----------|--------------------|---------|------------------|
| <b>nutris</b>   | 4.10 kB      | 0         | 0 B                | 1       | 4.10 kB          |
| <b>otps</b>     | 20.48 kB     | 4         | 132.00 B           | 1       | 36.86 kB         |
| <b>users</b>    | 20.48 kB     | 3         | 720.00 B           | 1       | 36.86 kB         |

>\_MONGOSH

MongoDB Compass - localhost:27017/exam-portall.students

Connect View Collection Help

localhost:27017

Documents exam-portall.stu...

exam-portall.students

2 DOCUMENTS 1 INDEXES

Documents Aggregations Schema Explain Plan Indexes Validation

Filter Type a query: { field: 'value' } Reset Find More Options

ADD DATA EXPORT COLLECTION

1 - 2 of 2

```
{ "_id": ObjectId("637fd31ce0f5076fcb45663a"),  
  "username": "qq",  
  "password": "qq",  
  "passingYear": 1,  
  "__v": 0 }  
  
{ "_id": ObjectId("638030c09f0e8e50e514b487"),  
  "username": "qk",  
  "password": "qk",  
  "passingYear": 1,  
  "__v": 0 }
```

>\_MONGOSH

MongoDB Compass - localhost:27017/nutriDB.otp

Connect View Collection Help

localhost:27017 Documents nutriDB.otp

My Queries Databases Search

- admin
- config
- exam-portall
  - results
  - students
  - subjects
  - teachers
- local
- nutriDB
  - nutris
  - otp
  - users
- test

### nutriDB.otp

Documents Aggregations Schema Explain Plan Indexes Validation

Filter Type a query: { field: 'value' } Reset Find More Options

ADD DATA EXPORT COLLECTION

1-4 of 4

```
{ "_id": ObjectId("6321cc5ec81c8674925018fb"), "username": "aaa", "email": "saurabhkhasang2018@gmail.com", "code": "8522", "createdat": 1663159398226, "expirein": 1663159998226, "__v": 0 }
```

```
{ "_id": ObjectId("6321ccddc81c867492501906"), "username": "bbb", "email": "bbbgbbb.com", "code": "7082", "createdat": 1663159517479, "expirein": 1663160117479, "__v": 0 }
```

```
{ "_id": ObjectId("6321d8b3551f391f0243a3d7"), "username": "bbb", "email": "bbbgbbb.com", "code": "1894", "createdat": 1663162547886, "expirein": 1663163147886, "__v": 0 }
```

>\_MONGOSH

MongoDB Compass - localhost:27017/nutriDB.otp

Connect View Collection Help

localhost:27017 Documents nutriDB.otp

My Queries Databases Search

- admin
- config
- exam-portall
  - results
  - students
  - subjects
  - teachers
- local
- nutriDB
  - nutris
  - otp
  - users
- test

### nutriDB.otp

Documents Aggregations Schema Explain Plan Indexes Validation

Filter (email: "saurabhkhasang2018@gmail.com") Reset Find More Options

ADD DATA EXPORT COLLECTION

1-1 of 1

```
{ "_id": ObjectId("6321cc5ec81c8674925018fb"), "username": "aaa", "email": "saurabhkhasang2018@gmail.com", "code": "8522", "createdat": 1663159398226, "expirein": 1663159998226, "__v": 0 }
```

>\_MONGOSH

Atlas

Saurabh's Or...Access ManagerBilling

All ClustersGet HelpSaurabh

Nutrifitv6Data ServicesApp ServicesCharts

DEPLOYMENT

Database

Data LakePREVIEW

SERVICES

Triggers

Data API

Data Federation

SECURITY

Quickstart

Database Access

Network Access

Advanced

New On Atlas1

Goto

SAURABH'S ORG - 2022-07-23 > NUTRIFITV6

Database Deployments

+ Create

Cluster0ConnectView MonitoringBrowse Collections...

FREE

SHARED

Monitoring for Cluster0 is Paused

Monitoring will automatically resume when you connect to your cluster.

Visit the documentation for more info.

| VERSION | REGION                    | CLUSTER TIER         | TYPE                  | BACKUPS  | LINKED APP SERVICES | ATLAS SEARCH |
|---------|---------------------------|----------------------|-----------------------|----------|---------------------|--------------|
| 5.0.14  | AWS / Mumbai (ap-south-1) | M0 Sandbox (General) | Replica Set - 3 nodes | Inactive | None Linked         | Create Index |

System Status: All Good

©2023 MongoDB, Inc. StatusTermsPrivacyAtlas BlogContact Sales

15:05

31-01-2023

## **6. How does the Exam software work?**

FlexiQuiz is a cloud-based exam software that allows users to create, deliver, and manage online assessments. It provides features such as question creation, customizable templates, automatic grading, real-time analytics, and secure data management.

Here's how it works:

1. **Creating the Exam:** Users can create an exam by selecting questions from a question bank or by creating custom questions.
2. **Delivery:** The exam can be delivered to participants through a unique URL. The software provides options for timed exams, self-paced exams, and proctored exams.
3. **Grading and Analysis:** The software automatically grades the exams and provides real-time analytics such as individual and overall performance, question-wise analysis, and more.
4. **Data Management:** The software securely stores the exam data and provides access to it through a dashboard.

Overall, the FlexiQuiz Exam software provides a streamlined solution for delivering and managing online exams, making it easy for educators, trainers, and organizations to assess their students, employees, or members.