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

⇒Free software is software that is freely available for use, modification, and distribution. Open source software is similar, but with an emphasis on the source code being openly available for modification and distribution. Proprietary software is software that is owned and controlled by a specific individual or company, and is typically not available for free or for modification.

In terms of properties, free software generally provides users with more freedom to use and modify the software, while proprietary software is typically more restricted and controlled.

Open source software is somewhere in between, providing access to the source code while still allowing for some level of control and restriction.

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

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* + 1. MySQL (FOSS) - a popular open-source relational database management system used for web applications and data warehousing. Purpose: to provide a fast, reliable, and easy-to-use database system. Properties: supports multiple storage engines, has a large community of users and developers, and is available under the GNU General Public License.
    2. PostgreSQL (FOSS) - an object-relational database management system that emphasizes extensibility and SQL compliance. Purpose: to provide a powerful and flexible open-source alternative to commercial databases. Properties: supports advanced data types and indexing methods, has strong community support, and is available under the PostgreSQL License.
    3. MongoDB (FOSS) - a popular open-source document-oriented NoSQL database that is widely used for big data and real-time web applications. Purpose: to provide a high-performance and scalable database system that can handle unstructured data.

Properties: supports horizontal scaling, high availability, and rich query language, and is available under the Server Side Public License.

* + 1. Oracle Database (Proprietary) - a widely used commercial relational database management system that is known for its advanced features and scalability. Purpose: to provide enterprise-level performance and security for mission-critical applications. Properties: supports advanced data warehousing and business intelligence features, has strong support for big data and cloud computing, and is available under a commercial license.
    2. Microsoft SQL Server (Proprietary) - a popular commercial relational database management system that is widely used for Windows-based applications. Purpose: to provide a high-performance and secure database system for businesses of all sizes. Properties: supports advanced data warehousing and business intelligence

features, has strong integration with other Microsoft products, and is available under a commercial license.

* + 1. SQLite (FOSS) - a self-contained, serverless, zero-configuration, transactional SQL database engine that is widely used in embedded systems and mobile devices. Purpose: to provide a lightweight and simple-to-use database system that can be easily embedded into other applications. Properties: supports ACID transactions, has a small footprint, and is available under the Public Domain.
    2. Redis (FOSS) - an open-source in-memory data structure store that is widely used as a database, cache, and message broker. Purpose: to provide a high-performance and scalable data store that can handle real-time data. Properties: supports advanced data structures, has strong community support, and is available under the BSD 3-Clause license.
    3. Firebase Realtime Database (Proprietary) - a cloud-hosted NoSQL database that is widely used for mobile and web applications. Purpose: to provide a simple-to-use and scalable database system that can handle real-time data. Properties: supports real-time data synchronization, has built-in security and authentication features, and is available under a commercial license.
    4. Cassandra (FOSS) - a highly-scalable and distributed NoSQL database that is widely used for big data and real-time web applications. Purpose: to provide a

high-performance and fault-tolerant database system that can handle large amounts of data. Properties: supports horizontal scaling, high availability, and tunable consistency, and is available under the Apache License 2.0.

* + 1. RethinkDB (FOSS) - an open-source distributed NoSQL database that is widely used for real-time web applications and real-time analytics. Purpose: to provide a powerful and flexible database system that can handle real-time data. Properties: supports real-time data feeds, has a rich
  1. Enlist some examples of free open source exam software for online assessment.

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1. Moodle - an open-source Learning Management System (LMS) that is widely used for creating and delivering online assessments.
2. LimeSurvey - an open-source survey software that allows for creating, managing, and analyzing surveys and quizzes.
3. ILIAS - an open-source LMS that provides a wide range of features for creating and delivering online assessments.
4. OpenOLAT - an open-source LMS that provides a wide range of features for creating and delivering online assessments.
5. ATutor - an open-source LMS that focuses on accessibility and provides a wide range of features for creating and delivering online assessments.
6. Canvas LMS - an open-source LMS that provides a wide range of features for creating and delivering online assessments, including quizzes, surveys, and assignments.
7. Dokeos - an open-source LMS that provides a wide range of features for creating and delivering online assessments, including quizzes, surveys, and assignments.
8. chamilo - an open-source LMS that provides a wide range of features for creating and delivering online assessments, including quizzes, surveys, and assignments.
9. Sakai - an open-source Learning Management System (LMS) that provides a wide range of features for creating and delivering online assessments.
10. Blackboard Open LMS - an open-source LMS that provides a wide range of features for creating and delivering online assessments, including quizzes, surveys, and assignments.
    1. Demonstrate any one exam software which is open source and freely available.

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One example of an open-source and freely available exam software is Moodle. Moodle is a Learning Management System (LMS) that is widely used for creating and delivering online assessments. It provides a wide range of features for creating and managing online quizzes, surveys, and assignments. Some of the key features of Moodle include:

1. Quiz creation and management: Moodle allows for creating and managing quizzes, including multiple choice, true/false, matching, and short answer questions. It also supports randomization of questions, question banks, and question categories.
2. Surveys: Moodle allows for creating and managing surveys, including text and multiple choice

questions.

1. Assignment management: Moodle allows for creating and managing assignments, including online text and file submissions.
2. Gradebook: Moodle provides a gradebook that allows for tracking student progress and performance.
3. Reports and analytics: Moodle provides a range of reports and analytics, including quiz and assignment reports, and user activity reports.
4. Moodle is open-source software, it's free to use and available under the GNU General Public License and it's available to download and install on your own server, or you can use a Moodle hosting provider.

Q. 5 Demonstrate FOSS software related to database.

One example of a Free and Open Source Software (FOSS) related to databases is MySQL. MySQL is a widely-used, open-source relational database management system (RDBMS). It is designed to provide a quick, reliable, and easy-to-use method for managing and organizing data in a structured manner. Some of the key features of MySQL include:

1. SQL support: MySQL supports the use of SQL (Structured Query Language) for managing and organizing data, making it easy for developers to create and manage databases.
2. Cross-platform support: MySQL runs on a variety of operating systems, including Windows, Linux, and macOS, making it a versatile choice for any organization.
3. Scalability: MySQL is designed to handle large amounts of data, making it suitable for use in high-traffic websites and applications.
4. Data replication: MySQL supports data replication, which allows multiple copies of a database to be maintained and kept in sync, providing a high level of data availability and redundancy.
5. Security: MySQL provides a range of security features, including user management and access control, to help protect against unauthorized access to data.
6. MySQL is free to use, and it is released under the GNU General Public License. This means that anyone can download, use, and modify the software without any restrictions. MySQL can be used in various application such as web application, mobile application, and even in scientific research

Q.6 How does the Exam software work?

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Exam software, also known as assessment software, is designed to create, administer, and grade online tests, quizzes, and exams. The software typically works by providing a

user-friendly interface for creating and managing questions, and for delivering the exam to students. Here is an overview of how the exam software works:

1. Question creation: The software allows for creating and editing questions, including multiple choice, true/false, matching, and short answer questions. It also supports randomization of questions, question banks, and question categories.
2. Exam assembly: The software allows for assembling the exam by selecting the questions to be included and determining the order in which they will be presented.
3. Exam delivery: The software delivers the exam to students through a web-based interface. Students can access the exam and complete it online, at their own pace.
4. Automated grading: The software automatically grades the exam, providing instant feedback to students on their performance.
5. Reports and analytics: The software provides a range of reports and analytics, including quiz and exam reports, and user activity reports. These can be used to track student progress and performance, and to identify areas where additional support may be needed.
6. Security: The software typically provides a range of security features, including user management and access control, to help protect against unauthorized access to data.
7. Different software may have different features and capabilities, but the basic process of creating, delivering, and grading exams is relatively consistent across different exam software