

ASSIGNMENT No. 1

Q. 1 How does digital light processing (DLP) technology work? Explain in your own words how does a color CRT monitor produce images on the screen?

Digital Light Processing (DLP) is a video technology created by Texas Instruments that is used for front and rear projection units. DLP technology is common for rear projection in TVs and it is also used in front projectors for units designed for businesses and classrooms. Presently, DLP comes in two major forms: 1-chip DLP and 3-chip DLP.

Digital Light Processing makes use of micro mirrors, called a Digital Micro mirror Device, to reflect light and color onto a screen. These micro mirrors are positioned in a semiconductor chip and are very small. Generally, a micro mirror pitch may measure less than $5.4\mu\text{m}$. Each of these mirrors projects one or more pixels in the image. The number of mirrors generally correspond to the resolution of the projected image. The movement of the mirrors allows the DLP device to create colors and gray shades that can form video images. All DLP chips are produced by Texas Instruments.

Stands for "Cathode Ray Tube." CRT is the technology used in traditional computer monitors and televisions. The image on a CRT display is created by firing electrons from the back of the tube to phosphors located towards the front of the display. Once the electrons hit the phosphors, they light up and are projected on the screen. The color you see on the screen is produced by a blend of red, blue, and green light, often referred to as **RGB**.

The stream of electrons is guiding by magnetic charges, which is why you may get interference with unshielded speakers or other magnetic devices that are placed close to a CRT monitor. Flat screen or **LCD** displays don't have this problem, since they don't require a magnetic charge. LCD monitors also don't use a tube, which is what enables them to be much thinner than CRT monitors. While CRT displays are still used by graphics professionals because of their vibrant and accurate color, LCD displays now nearly match the quality of CRT monitors. Therefore, flat screen displays are well on their way to replacing CRT monitors in both the consumer and professional markets.

(ii) What four factors should you consider when evaluating printers?

Here are 5 things to consider when purchasing a printer.

1. Image Quality

Depending on your target market, your image quality requirements may differ. Here are a few points to consider:

Resolution– Printers that can produce a minimum of 1200dpi print resolution would suit fine art reproduction and photography well. Most printers have many resolution modes, so be sure to find one that has a wide range of capabilities in terms of print resolution (an example would be 360dpi-2880dpi, covering various modes in between).

Color Gamut– Some newer printers have improved ink sets which widen the printable gamut you can achieve. Gamut comparisons are sometimes included in printer brochures or information kits, so check the available downloads at the manufacturer’s site. Another quick way to judge achievable gamut with various printers is to download the manufacturer’s included ICC profiles for the printer you are considering. When you Soft-Proof a profile on screen, you can visually see what colors the printer can accurately reproduce without shifting colors (shift will vary depending on your rendering intent).

Density– Ink density translates to rich, deep, vibrant colors. Different ink sets can achieve higher or lower ink densities, so it’s important to compare printed samples. If you have a densitometer, try to get black and white photos and take delta readings of the black ink density. This is usually a good indication of which ink set can yield higher densities.

Ink Droplet Size– Droplet size is typically measured in picoliters, so look for a printer capable of a droplet size of around 4-12pl. A lower number means a smaller droplet, and a smaller droplet translates to a sharper image. Some printers have a larger or smaller droplet size, so a printed sample of a high resolution image will help you determine if the prints will be sharp enough. A general rule is the droplets should not be visible to the naked eye from the intended viewing distance of the print.

Ink Configuration– Printers have a variety of ink configurations generally ranging from 4 colors, 6, 8, and 12 color machines. Generally speaking, the more colors a printer has the wider the color gamut it can achieve. But this is also relative to the quality of the profile that is being used for printing as well. The inclusion of Orange and Green inks on many new printer models contribute to a wider gamut, and more attainable colors. Light versions of existing colors (Ex: Light Cyan, Light Magenta) help in smoothing gradations and improve black and white printing.

ICC Profiles– Are there available ICC profiles for the media you wish to use? If you manage your own color, is the printer easy to profile? Does the printer accurately reproduce color over time or does it need constant re-profiling? Look for product reviews that mention profiling capabilities.

2. Size & Speed

The size of the printer will depend on what image sizes you wish to offer. Do you currently own a 17" wide printer and are not sure whether to invest in a 24" or make the jump to 44"? If you can’t answer this question, let your customers help!

Determine what sizes are most requested and this will be a great starting point. Ask your customers what sizes they would be most interested in if you had larger print capabilities. Look at what print size options are available on the web and you’ll get a good idea of what’s most common.

If you print canvas, determine how much additional canvas you’ll need for stretching when you have larger print capabilities. This can be factored into the total print width that the printer is capable of.

Wider printers usually can handle longer and heavier rolls, which can translate into overall media savings (versus printing sheets or shorter roll lengths).

Speed is an important aspect that should not be overlooked if you need to achieve a particular amount of output each day or week. Keep in mind that faster print speeds typically mean a decrease in image resolution, so find printers that can achieve faster speeds while retaining resolution.

Be aware that in some cases you may have to compromise quality for speed, or vice versa. As stated above, most printers have various settings for resolution, so test a few methods and see what the best results are in terms of speed and quality combined.

3. Media Handling

Make a list of everything you currently print on. Now add the media you would like to start using to that list. Newer printers have expanded capabilities for 3rd party media, so find a printer that can handle everything you wish to throw at it! While some printers might be better suited for photography, others may be geared more towards outdoor signage and short term graphics. Do you know what other printmakers in your target market are using?

Media thickness is also something to consider, so look at a printer's specifications sheet to find out what paper thickness it can handle. If you can see the printer in action, make note of how it handles various media that is loaded.

Does thick media load easily? What about sheet fed media and manual loading trays? You certainly don't want to struggle to use your new printer, so look for these points when demoing a new printer.

4. Ease of Use

Sometimes we get so caught up in features and specifications that we forget the importance of usability. Having a printer that is easy to use means less frustration and troubleshooting. If there will be more than one user, production can be seamless if there is less guess work with the printer and its settings. Ask these questions when trying to determine the ease of use:

- Is it easy to unload and load media?
- Is the printer's control panel easy to navigate through and understand?
- Is the printer driver easy to setup and use?
- How easy is it to implement custom ICC profiles or media settings?
- How much control does the printer give the user?
- Is it easy enough to show others how to use it?
- Can you save customized settings and details to recall for future print jobs?
- Can you hit "Print" and walk away?

5. Support

Usually the most overlooked aspect when buying a printer is product support. Struggling to get a product working properly can be quite a frustrating experience. Before buying a printer, find out what's supported:

- Is phone/email support included?
- Does the technical support staff respond quickly?
- Do you have access to an expert or experienced users?
- Are 3rd party ICC profiles easily attainable?
- Are parts end-user replaceable? Do parts require a service technician to replace?
- Is there access to tutorial videos and instructional documents?
- If there are any known issues, are there working solutions or workarounds?
- If my printer completely goes down, how long before I'm back up and running?

Q. 2 (a) What is the purpose of expansion slots in a PC? Explain in detail.

An expansion slot is a socket on the motherboard that is used to insert an expansion card (or circuit board), which provides additional features to a computer such as video, sound, advanced graphics, Ethernet or memory. The expansion card has an edge connector that fits precisely into the expansion slot as well as a row of contacts that is designed to establish an electrical connection between the motherboard and the electronics on the card, which are mostly integrated circuits. Depending on the form factor of the case and motherboard, a computer system generally can have anywhere from one to seven expansion slots. With a backplane system, up to 19 expansion cards can be installed.

Expansion cards can provide various functions including:

- Sound
- Modems
- Network
- Interface adapters
- TV and radio tuning
- Video processing
- Host adapting such as redundant array of independent disks or small computer system interface
- Solid-state drive
- Power-on self-test
- Advanced multirate codec
- Basic input/output system (BIOS)
- Expansion read-only memory (ROM)
- Security devices
- RAM memory

Older expansion cards also included memory expansion cards, clock/calendar cards, hard disk cards, compatibility cards for hardware emulation, and disk controller cards. The Altair 8800 was the first slot-type expansion card bus added to a microcomputer. It was developed in 1974-1975 by IBM Corp.

The expansion slot opening is generally located on the back of a PC and provides an electrical connection to the motherboard for an expansion card. Screws are then used to attach the card to the slot for added security.

(b) Differentiate between a RISC processor and a CISC processor.

RISC is designed to perform a smaller number of types of computer instruction. Hence, it can operate at a higher speed. The full form of RISC is Reduced Instruction Set Computers. It is a microprocessor that is designed to perform smaller number of computer instruction so that it can operate at a higher speed.

RISC instruction sets hold less than 100 instructions and use a fixed instruction format. This method uses a few simple addressing modes that use a register-based instruction. In this compiler development mechanism, LOAD/STORE is the only individual instructions for accessing memory.

CISC was developed to make compiler development easier and simpler. The full form of CISC is Complex Instruction Set Computer. They are chips that are easy to program that makes efficient use of memory.

CISC eliminates the need for generating machine instructions to the processor. For example, instead of having to make a compiler, write lengthy machine instructions to calculate a square-root distance, a CISC processor offers a built-in ability to do this.

Many of the early computing machines were programmed in assembly language. Computer memory was slow and expensive. CISC was commonly implemented in such large computers, such as the PDP-11 and the DEC system.

- In CISC, the instruction set is very large that can be used for complex operations while in RISC the instruction set is reduced, and most of these instructions are very primitive.
- CISC computer's execution time is very high whereas RISC computer's execution time is very less.
- In, CISC code expansion is not a problem while in RISC code expansion may create a problem.
- In CISC, decoding of instructions is complex whereas, in RISC, the decoding of instructions is simple.
- CISC requires external memory for calculations, but RISC doesn't require external memory for calculations.
- CISC has only a single register set while RISC has multiple register sets are present.

Difference between CISC and RISC



CISC	RISC
It has a microprogramming unit.	It has a hard-wired unit of programming.
The instruction set has various different instructions that can be used for complex operations.	The instruction set is reduced, and most of these instructions are very primitive.
Performance is optimized with emphasis on hardware.	Performance is optimized which emphasis on software
Only single register set	Multiple register sets are present
They are mostly less or not pipelined	This type of processors are highly pipelined
Execution time is very high	Execution time is very less
Code expansion is not a problem.	Code expansion may create a problem.
Decoding of instructions is complex.	The decoding of instructions is simple.
It requires external memory for calculations	It doesn't require external memory for calculations
Examples of CISC processors are the System/360, VAX, AMD, and Intel x86 CPUs.	Common RISC microprocessors are ARC, Alpha, ARC, ARM, AVR, PA-RISC, and SPARC.
Instructions can take several clock cycles	Single-cycle for each instruction
More efficient use of RAM than RISC	Heavy use of RAM (can cause bottlenecks if RAM is limited)
Simple, standardized instructions	Complex and variable-length instructions
A small number of fixed-length instructions	A large number of instructions
Limited addressing modes	Compound addressing modes
Important applications are Security systems, Home automation.	Important applications are : Smartphones, PDAs.
Varying formats (16-64 bits for each instruction).	fixed (32-bit) format
Unified cache for instructions and data.	Separate data and instruction cache.

Q. 3 (a) Email technologies allow users to exchange messages. Explain how this technology works.

As an invention, email probably ranks close to the development of alphabets. We may IM and tweet to our heart's content but it would be wrong to say that these shortcuts have been sired by the humble email to a certain extent. It has revolutionized communications though it may also have sounded the death knell for the art of letter writing. But that's technology.

Email is serious but it's several simple technologies at work, something we take for granted when we click compose and send. Behind each email is a powerful engine called the email server which pushes the emails through the internet. Many people use them, but how does an email server work?

To drive a car we need not have the ability to tell a carburetor from a tailpipe, but when it breaks down, that little knowledge helps. Email is less likely to [crash](#) but it definitely helps to have a broad picture of how Jim's mail reaches Jane half across the globe in a blink of an eye.

We use an online email service like Gmail, **Yahoo Mail** or AOL to compose an email, add attachments and other data files. Also, we use email client software like Thunderbird, Outlook Express, Outlook or Mac OS X's Mail.

- - When we send an email, our computer connects to our email service's mail server. A server is a centralized computer which manages a specific type of service. An email server for instance, handles emails. The email server responsible for sending emails is called the **SMTP** (Simple Mail Transfer Protocol) server. One SMTP server can pass on the mail to another SMTP server and relay it to the destination through several hops.
 - Every email has the sender's address (e.g. sender@sendermail.com) and the recipient's in the To field (e.g. recipient@recipientmail.com). When an email is sent, the email client connects to the SMTP server of the sender's email service (e.g. mailserver.sendermail.com). The client transmits the address of the sender, the address of the recipient and the content of the message.
- The SMTP server goes to work at locating the whereabouts of the recipient. Using the recipient's mail ID (i.e. recipient@recipientmail.com) it locates the domain name - e.g.recipientmail.com.
- Note: If the recipient's mail ID had the same domain name as the sender, then the process would be simpler. The SMTP server would have transferred the mail to its local outgoing mail server (POP3 or IMAP).
- Each domain name represents a unique Web address, called an **Internet protocol (IP)** address. Think of it as postal addresses of the internet. The link between domain names to their IP addresses is stored in the **Domain Name Registry**. The SMTP server then contacts the server where the registry is kept (**The DNS Server**). The DNS server sends back the address to the SMTP server.
- The SMTP server then proceeds to hand over the email to the SMTP server of the recipient's email service (let's call it mailserver.recipientmail.com). This SMTP server checks and confirms that the mail

addressed to recipient@recipientmail.com belongs to it and hands it over to its counterpart - the POP3 server (or the IMAP server).

- **Post Office Protocol (POP3)** servers are the servers that do the job of receiving mails. The number "3" is the version number of the protocol in use. POP3 servers have mail accounts (our email IDs). Each mail account is mapped to a username-password combination. Once the message is handed over to the POP3 server, it is kept and stored in the mail account till the recipient logs in and checks the mail.
- An email client connects to the POP3 server and tells it to allow download of the email. Once downloaded to the local machine, POP3 mailboxes do not retain a copy of the email. Thus, you cannot check your emails from another PC as it has already been downloaded. To nail this difficulty, IMAP was introduced. **IMAP4** (Internet Message Access Protocol version 4) simply retains a copy of the emails on the server. This allows you to access your e-mail from any location with an internet connection.

(b) How Internet Relay Chat (IRC) is differ from Instant Messaging? Explain.

First, IRC is a standard. A few of them, actually. See RFCs 1459 and 2812 for some information.

It is an old standard, but it is still in use by probably hundreds of thousands of users every day. Millions probably touch an IRC server somewhere on the Internet each year. Twitch's chat is based on a modified IRC that uses the standard protocol, for example.

As far as how does it differ? Let's start with its design. It uses older - some might say better - methods. It doesn't have the complexity of XML - the basis for XMPP or Jabber, which is what Hangouts / Google Chat and many others are based upon. It also doesn't have the extensible aspect, but the client protocol has some flexibility that can lead to some interesting uses for ircd.

It is very well established. This means you can find it in a larger number of places than you might expect. A number of MMOs use a modified IRC protocol for their chat systems. A handful of business collaboration systems are using an IRC server to provide chat channels on web services. In other cases, you might be seeing XMPP, but setting up a Jabber server isn't for the faint of heart. It's getting better, but IRC is far better documented at the moment - if you can find the documentation, that is.

A notable difference, I think, is in culture. It is important to note that it was not always as fragmented as it is today. At one time, there was only one network of IRC servers. That culture root is still there, but it has diversified quite a bit. Before AOL or Prodigy were Internet providers and just "online service providers", things were very different and those early IRC networks built an interesting social network. It self-policed and the darker corners of the Internet didn't exist in the same way.

Internet culture grew around the old chat culture; before there were Facebooks and Twitters, there were channels and later, networks. IRC has been around longer than HTTP - RFC 2068 came about 4 years after the original IRC RFC. It is important to note that when instant-messaging came along, it was largely ignored other

than a few notable exceptions. The social network has since adopted it and expanded it to the point of true meaning. That is, instant messages are pretty close to instant now - across the globe.

I posit that there may not be a real difference in the people who use them; they share the same basic social network whether people realize it or not. Instead I see only that many folks have moved on to a faster way of communicating with their node of the network. I'll keep sitting in my few remaining IRC channels for now. I like to chat at a slower pace.

Q. 4 (a) Define the term Network. What are the uses of Network?

A network consists of two or more computers that are linked in order to share resources (such as printers and CDs), exchange files, or allow electronic communications. The computers on a network may be linked through cables, telephone lines, radio waves, satellites, or infrared light beams. A Local Area Network (LAN) is a network that is confined to a relatively small area. It is generally limited to a geographic area such as a writing lab, school, or building.

Computers connected to a network are broadly categorized as servers or workstations. Servers are generally not used by humans directly, but rather run continuously to provide "services" to the other computers (and their human users) on the network. Services provided can include printing and faxing, software hosting, file storage and sharing, messaging, data storage and retrieval, complete access control (security) for the network's resources, and many others.

Workstations are called such because they typically do have a human user which interacts with the network through them. Workstations were traditionally considered a desktop, consisting of a computer, keyboard, display, and mouse, or a laptop, with with integrated keyboard, display, and touchpad. With the advent of the tablet computer, and the touch screen devices such as iPad and iPhone, our definition of workstation is quickly evolving to include those devices, because of their ability to interact with the network and utilize network services.

Servers tend to be more powerful than workstations, although configurations are guided by needs. For example, a group of servers might be located in a secure area, away from humans, and only accessed through the network. In such cases, it would be common for the servers to operate without a dedicated display or keyboard. However, the size and speed of the server's processor(s), hard drive, and main memory might add dramatically to the cost of the system. On the other hand, a workstation might not need as much storage or working memory, but might require an expensive display to accommodate the needs of its user. Every computer on a network should be appropriately configured for its use.

On a single LAN, computers and servers may be connected by cables or wirelessly. Wireless access to a wired network is made possible by wireless access points (WAPs). These WAP devices provide a bridge between computers and networks. A typical WAP might have the theoretical capacity to connect hundreds or even thousands of wireless users to a network, although practical capacity might be far less.

Nearly always servers will be connected by cables to the network, because the cable connections remain the fastest. Workstations which are stationary (desktops) are also usually connected by a cable to the network, although the cost of wireless adapters has dropped to the point that, when installing workstations in an existing facility with inadequate wiring, it can be easier and less expensive to use wireless for a desktop.

Wide Area Networks (WANs) connect networks in larger geographic areas, such as Florida, the United States, or the world. Dedicated transoceanic cabling or satellite uplinks may be used to connect this type of global network.

Using a WAN, schools in Florida can communicate with places like Tokyo in a matter of seconds, without paying enormous phone bills. Two users a half-world apart with workstations equipped with microphones and a webcams might teleconference in real time. A WAN is complicated. It uses multiplexers, bridges, and routers to connect local and metropolitan networks to global communications networks like the Internet. To users, however, a WAN will not appear to be much different than a LAN.

Advantages of Installing a School Network

User access control.

Modern networks almost always have one or more servers which allows centralized management for users and for network resources to which they have access. User credentials on a privately-owned and operated network may be as simple as a user name and password, but with ever-increasing attention to computing security issues, these servers are critical to ensuring that sensitive information is only available to authorized users.

Information storing and sharing.

Computers allow users to create and manipulate information. Information takes on a life of its own on a network. The network provides both a place to store the information and mechanisms to share that information with other network users.

Connections.

Administrators, instructors, and even students and guests can be connected using the campus network.

Services.

The school can provide services, such as registration, school directories, course schedules, access to research, and email accounts, and many others. (Remember, network services are generally provided by servers).

Internet.

The school can provide network users with access to the internet, via an internet gateway.

Computing resources.

The school can provide access to special purpose computing devices which individual users would not normally own. For example, a school network might have high-speed high quality printers strategically located around a campus for instructor or student use.

Flexible Access.

School networks allow students to access their information from connected devices throughout the school. Students can begin an assignment in their classroom, save part of it on a public access area of the network, then go to the media center after school to finish their work. Students can also work cooperatively through the network.

Workgroup Computing.

Collaborative software allows many users to work on a document or project concurrently. For example, educators located at various schools within a county could simultaneously contribute their ideas about new curriculum standards to the same document, spreadsheets, or website.

Disadvantages of Installing a School Network

Expensive to Install.

Large campus networks can carry hefty price tags. Cabling, network cards, routers, bridges, firewalls, wireless access points, and software can get expensive, and the installation would certainly require the services of technicians. But, with the ease of setup of home networks, a simple network with internet access can be setup for a small campus in an afternoon.

Requires Administrative Time.

Proper maintenance of a network requires considerable time and expertise. Many schools have installed a network, only to find that they did not budget for the necessary administrative support.

Servers Fail.

Although a network server is no more susceptible to failure than any other computer, when the files server "goes down" the entire network may come to a halt. Good network design practices say that critical network services (provided by servers) should be redundant on the network whenever possible.

Cables May Break.

The Topology chapter presents information about the various configurations of cables. Some of the configurations are designed to minimize the inconvenience of a broken cable; with other configurations, one broken cable can stop the entire network.

Security and compliance.

Network security is expensive. It is also very important. A school network would possibly be subject to more stringent security requirements than a similarly-sized corporate network, because of its likelihood of storing personal and confidential information of network users, the danger of which can be compounded if any network users are minors. A great deal of attention must be paid to network services to ensure all network content is appropriate for the network community it serves.

(b) What is the difference between Local Area Network (LAN) and Wide Area Network (WAN)?

Local Area Network

A Local Area Network (LAN) is a network that is confined to a relatively small area. It is generally limited to a geographic area such as a writing lab, school, or building.

Computers connected to a network are broadly categorized as servers or workstations. Servers are generally not used by humans directly, but rather run continuously to provide "services" to the other computers (and their human users) on the network. Services provided can include printing and faxing, software hosting, file storage and sharing, messaging, data storage and retrieval, complete access control (security) for the network's resources, and many others.

Workstations are called such because they typically do have a human user which interacts with the network through them. Workstations were traditionally considered a desktop, consisting of a computer, keyboard, display, and mouse, or a laptop, with integrated keyboard, display, and touchpad. With the advent of the tablet computer, and the touch screen devices such as iPad and iPhone, our definition of workstation is quickly evolving to include those devices, because of their ability to interact with the network and utilize network services.

Servers tend to be more powerful than workstations, although configurations are guided by needs. For example, a group of servers might be located in a secure area, away from humans, and only accessed through the network. In such cases, it would be common for the servers to operate without a dedicated display or keyboard. However, the size and speed of the server's processor(s), hard drive, and main memory might add dramatically to the cost of the system. On the other hand, a workstation might not need as much storage or working memory, but might require an expensive display to accommodate the needs of its user. Every computer on a network should be appropriately configured for its use.

On a single LAN, computers and servers may be connected by cables or wirelessly. Wireless access to a wired network is made possible by wireless access points (WAPs). These WAP devices provide a bridge between computers and networks. A typical WAP might have the theoretical capacity to connect hundreds or even thousands of wireless users to a network, although practical capacity might be far less.

Nearly always servers will be connected by cables to the network, because the cable connections remain the fastest. Workstations which are stationary (desktops) are also usually connected by a cable to the network, although the cost of wireless adapters has dropped to the point that, when installing workstations in an existing facility with inadequate wiring, it can be easier and less expensive to use wireless for a desktop.

Wide Area Network

Wide Area Networks (WANs) connect networks in larger geographic areas, such as Florida, the United States, or the world. Dedicated transoceanic cabling or satellite uplinks may be used to connect this type of global network.

Using a WAN, schools in Florida can communicate with places like Tokyo in a matter of seconds, without paying enormous phone bills. Two users a half-world apart with workstations equipped with microphones and a

webcams might teleconference in real time. A WAN is complicated. It uses multiplexers, bridges, and routers to connect local and metropolitan networks to global communications networks like the Internet. To users, however, a WAN will not appear to be much different than a LAN.

Q. 5 What is an EDM system? What's the difference between MySQL and SQL Server?

EDM (Electronic Document Management) is the management of different kinds of documents in an enterprise using computer programs and storage. An EDM system allows an enterprise and its users to create a document or capture a hard copy in electronic form, store, edit, print, process, and otherwise manage documents in [image](#), video, and [audio](#), as well as in [text](#) form. An EDM system usually provides a single view of multiple databases and may include scanners for document capture, printers for creating hard copy, storage devices such as redundant array of independent disks systems, and computer [server](#) and server programs for managing the databases that contains the documents.

EDM may be needed in enterprises that capture and store a large number of documents such as invoices, sales orders, photographs, phone interviews, or video newsclips. EDM may be combined with or integrated into other applications. It may be combined with a [workflow](#) management approach. Capture may include document [imaging](#) and optical character recognition ([OCR](#)).

Similarities Between MySQL and SQL Server

As both MSSQL and MySQL are relational databases, there are several similarities. Most developers, however, specialize in either one or the other. Although MSSQL and MySQL seem similar, their underlying architecture differs. Here are the key similarities you should know.

Tables

Both platforms use the standard relational database table model for storing data in columns and rows.

High Performance

Your database is the backbone of your applications, responsible for storing and returning data as quickly as possible. Both MySQL and MSSQL offer high-performance speed.

Keys

Both platforms use primary and foreign keys to establish the relationships between tables.

Web-Based Popularity

With the exception of Oracle, MySQL and MSSQL are the most common databases for use with web applications. When you sign up for hosting, you're usually given the choice between MSSQL and MySQL.

Scalability

Both platforms can scale with your company as it grows. They're suitable for small and large projects and can support millions of transactions every day.

Syntax

The syntax of these two database platforms is similar, although you should expect some small differences across varying CRUD (create, read, update, delete) statements.

Drivers

Fortunately, you can find connection drivers for almost any popular language just by searching the web. This allows you to easily connect to both MySQL and MSSQL without the need for complicated coding.

MSSQL Server was introduced in 1989, while MySQL was introduced in 1995 as an open-source project. This makes MSSQL several years older than MySQL. As both solutions have been in production for more than two decades, they both have a strong foothold in the market. MySQL can run on either Linux or Windows, usually as part of a LAMP environment. MSSQL runs on Windows and is usually part of a Windows environment.

Both MySQL and MSSQL can handle small and large software projects, so users should anticipate similar performance levels. No matter which of these servers you choose, performance will primarily rely on your DBA's ability to optimize queries and code.

Differences Between MSSQL and MySQL Server

Although these platforms are similar, especially in relation to interface and basic relational database standards, they operate very differently. Most of these differences are accounted for by the underlying architecture and happen in the background, which means they often go unnoticed by the average user. It's important, however, for DBAs to understand these differences because they play a significant role in your decision-making process.

Native Compatibility

SQL Server was originally developed exclusively for the Windows operating system by Microsoft. Microsoft has recently made RDBMS available on both Mac OS X and Linux. This gives enterprises the option of running the database system on three separate platforms. Unfortunately, users still lack the option to use certain capabilities while running SQL Server on Mac OS X or Linux. MySQL, on the other hand, can run smoothly on multiple popular operating systems, including Linux, Mac OS X, and Windows.

Support

Both MySQL and MSSQL support multiple programming languages, including Java, C++, PHP, Ruby, Python, Delphi, Visual Basic, Go, and R. MySQL supports additional languages like Tcl, Scheme, Perl, Eiffel, and Haskell. Because MySQL is so versatile in its support for programming languages, it's popular among many developer communities. While you can use both database types for Windows and Linux projects, MySQL works natively with PHP, and MSSQL is mainly used with .NET. Integration is simpler if you use MySQL for PHP and MSSQL for Windows projects.

MyISAM and InnoDB

These engines are configurations for MySQL, which allow the developer to perform an array of design and programming activities. MSSQL doesn't allow you to specify different engines when you create a database.

Cost-Efficiency

MySQL is free and open-source, although you'll have to pay for support if you require it. MSSQL is more expensive to run, because you'll need licenses for the server running the software.

LINQ

MSSQL allows you to set up your entity framework classes in .NET, meaning you can get started with LINQ queries. With MySQL, you'd need to download third-party tools if you wanted to use .NET.

IDE Tools

Both MySQL and MSSQL have IDE tools, but you'll need to match the right tool with the appropriate server. MySQL has Enterprise Manager and MSSQL uses Management Studio. These tools allow you to connect with the server and manage configurations for architecture, security, and table design.

Binary Collections

MSSQL and MySQL are designed as binary collections. MySQL allows developers to use binaries to manipulate database files even while running. Database files can also be accessed and manipulated by alternative processes at runtime. Conversely, MSSQL doesn't allow any process to manipulate or access binaries or database files. If you wanted to achieve this, you would need to run an instance. This eliminates the opportunity for hackers to access or directly manipulate data. As such, MSSQL is more secure than MySQL.

Backup

If you're using MySQL, you'll need to back up data by extracting it as SQL statements. The RDBMS provides a tool to block the database while data is being backed up. This feature minimizes the chance of data corruption occurring while switching between MySQL versions or editions. The downside is this makes data restoration a time-consuming process, because it requires executing multiple SQL statements. MSSQL doesn't block the database while backing up data, enabling users to backup and restore mass amounts of data with minimal effort.

Option to Stop Query Execution

MySQL doesn't let users kill or cancel a query once it starts running. To stop the SQL query execution, users have to kill the complete process. MSSQL users can truncate a database query while it's running without killing the complete process. Moreover, MSSQL uses a transactional engine to maintain a consistent state. This gives MSSQL a notable advantage over MySQL.