

Guru Daksh Government Polytechnic Hisar
E notes of FIT (First Semester)
By Rajesh Kumar Gautam
Lecturer ECE

Why Cache memory is important?

Cache memory is important in computer systems because it:

Improves performance

Cache memory reduces latency and improves overall performance by providing quick access to frequently used data and instructions.

Reduces workload on the CPU

Cache memory stores frequently accessed data and instructions, which reduces the workload on the CPU.

Speeds up data retrieval

Cache memory is faster than main memory and consumes less access time.

Improves efficiency

Cache memory stores data that the CPU is likely to need next, which improves the efficiency of data retrieval.

There are different levels of cache memory, including:

Level 1 (L1): The fastest and smallest cache, often integrated within the processor. It's split into two parts: the Instruction Cache and the Data Cache.

Level 2 (L2): A larger and slower cache than L1, but still faster than main memory.

Level 3 (L3): The largest and slowest cache, often shared by multiple processor cores.

CPU's word length and speed are both important factors that affect a computer's performance:

Word length

The number of bits a CPU's internal data registers can process at once. The word length determines the address space. Modern desktop computers typically have 64-bit words, while computers in appliances and consumer products usually have 8, 16, or 32-bit words.

Speed

The clock speed of a CPU is a general indicator of its relative performance within a product family. However, the best processor for you will depend on your specific needs, such as whether you need speed, core count, or price.

This word length is the word length of a CPU . This is the number of bits a CPU can process simultaneously. For example a 32-bit processor is faster than a 16 bit processor because it has a wider word length. A typical computer system word length is normally between 32 and 64 bits.

Here are three examples of how the CPU clock speed and word length can vary:

The 8088 processor has a clock speed of 4.77 MHz and has an 8-bit word length.

The 80486 has a clock speed of 50 to 80 MHz and has a word length of 32 bits.

The Pentium 4 as a clock speed of 1.5 gigahertz to 3.2 gigahertz and has a word length of 64 bits.

Google Calendar

Google Calendar is a free service that helps you organize your schedule and coordinate events with others. You can use it to:

Schedule meetings: Layer multiple calendars in a single view to save time

Share your availability: Use appointment schedules to share your availability via a booking page

Automatically add events: Google Calendar automatically adds events like concerts, flights, and reservations to your schedule

Assign tasks: Assign tasks to others

Create multiple calendars: Create multiple calendars for work, personal life, and more

Get reminders: Get reminders about upcoming activities

You can access your calendar from any computer or mobile device as long as you are signed in to your Google account. You can also control your privacy settings in your Google Account.

Google Sheets

Google Sheets is a free, web-based spreadsheet application that allows users to create, edit, and format spreadsheets online:

Collaboration: Multiple users can simultaneously edit and format spreadsheets in real-time. A revision history tracks all changes made to the spreadsheet.

Visualization: Users can visualize spreadsheet data in charts or graphs.

Formulas and functions: Users can apply formulas and functions to data sets.

Sharing: Users can share files and folders with others and choose whether they can view, edit, or comment on them.

Import and export: Users can import spreadsheets into other file formats like Google Docs or Microsoft Word.

Google Sheets is available as a web application, a mobile app for Android, iOS, and as a desktop application on Google's ChromeOS. It's part of Google's G Suite, which also includes Google Docs, Slides, and Forms.

Google Meet

Google Meet is a free video conferencing service that lets you connect with others using audio, video, chat, and screen sharing:

Features

Google Meet offers a variety of features to enhance your meetings, including screen sharing, live captions, and virtual backgrounds.

Cost

Anyone with a Google account can use Google Meet for basic video calls with up to 100 participants for up to 60 minutes.

How to join

You can join a meeting by tapping the meeting link from the invite, entering the meeting code from your host, or calling into the meeting using the dial-in number and PIN in the invite.

How to set up

You can set up a meeting easily whether you're an individual getting together with a couple of friends or a small businessperson conducting a workshop online.

Where to use

You can join a meeting from any modern web browser or download the Google Meet mobile app.

Google Meet is similar to other video conferencing services like Zoom or Skype. However, Google Meet's setup process is simpler and slightly more user-friendly, while Zoom offers more collaboration tools and third-party integrations.

*

.

Google Forms

Google Forms a free, web-based tool that allows users to create and manage online surveys, quizzes, and other forms:

Create forms

Users can create forms from scratch or use templates. They can add a variety of questions, including multiple choice, text fields, and rating scales.

Distribute forms

Users can share forms via a link, embed them on a web page, or email them directly.

Collect responses

Google Forms collects responses in real-time and can automatically save them in Google Sheets. Users can monitor responses, receive notifications of new entries, and analyze the data.

Customize forms

Users can customize some aspects of their survey's appearance, especially colors and fonts.

Collaborate

Users can collaborate with other users in real-time.

Google Forms is part of the Google Docs Editors suite, which also includes Google Docs, Google Sheets, Google Slides, Google Drawings, Google Sites, and Google Keep.

Google Forms is commonly used for education, market research, event planning, and other situations where a quick and efficient collection of information is needed.

What is digital marketing?

Digital marketing, also called online marketing, is the promotion of brands to connect with potential customers using the internet and other forms of digital communication. This includes not only email, social media, and web-based advertising, but also text and multimedia messages as a marketing channel.

Essentially, if a marketing campaign involves digital communication, it's digital marketing.

Inbound marketing versus digital marketing

Digital marketing and inbound marketing are easily confused, and for good reason. Digital marketing uses many of the same tools as inbound marketing—email and online content, to name a few. Both exist to capture the attention of prospects through the buyer's journey and turn them into customers. But the two approaches take different views of the relationship between the tool and the goal.

Digital marketing considers how individual tools or digital channels can convert prospects. A brand's digital marketing strategy may use multiple platforms or focus all of its efforts on one platform. For example, a company may primarily create content for social media platforms and email marketing campaigns while ignoring other digital marketing avenues.

On the other hand, inbound marketing is a holistic concept. It considers the goal first, then looks at the available tools to determine which will effectively reach target customers, and then at which stage of the sales funnel that should happen. As an example, say you want to increase website traffic to generate more prospects and leads. You can focus on search engine optimization when developing your content marketing strategy, resulting in more optimized content, including blogs, landing pages, and more.

The most important thing to remember about digital marketing and inbound marketing is that as a marketing professional, you don't have to choose between the two. In fact, they work best together. Inbound marketing provides structure and purpose for effective digital marketing to digital marketing efforts, making sure that each digital marketing channel works toward a goal.

Why is digital marketing important?

Any type of marketing can help your business thrive. However, digital marketing has become increasingly important because of how accessible digital channels are. In fact, there were 5.45 billion internet users globally as of July 2024.

From social media to text messages, there are many ways to use digital marketing tactics in order to communicate with your target audience. Additionally, digital marketing has minimal upfront costs, making it a cost-effective marketing technique for small businesses.

B2B versus B2C digital marketing

Digital marketing strategies work for B2B (business to business) as well as B2C (business to consumer) companies, but best practices differ significantly between the two. Here's a closer look at how digital marketing is used in B2B and B2C marketing strategies:

B2B clients tend to have longer decision-making processes, and thus longer sales funnels. Relationship-building strategies work better for these clients, whereas B2C customers tend to respond better to short-term offers and messages.

B2B transactions are usually based on logic and evidence, which is what skilled B2B digital marketers present. B2C content is more likely to be emotionally-based, focusing on making the customer feel good about a purchase.

B2B decisions tend to need more than 1 person's input. The marketing materials that best drive these decisions tend to be shareable and downloadable. B2C customers, on the other hand, favor one-on-one connections with a brand.

Of course, there are exceptions to every rule. A B2C company with a high-ticket product, such as a car or computer, might offer more informative and serious content. As a result, your digital marketing strategy always needs to be geared toward your own customer base, whether you're B2B or B2C.

Take a look at your current audience to create well-informed and targeted online marketing campaigns. Doing so ensures your marketing efforts are effective and you can capture the attention of potential customers.

Types of digital marketing

There are as many specializations within digital marketing as there are ways of interacting using digital media. Here are a few key examples of types of digital marketing tactics.

Search engine optimization

Search engine optimization, or SEO, is technically a marketing tool rather than a form of marketing in itself. It is often called "an art and a science."

The "science" part of SEO is what's most important. SEO is a science because it requires you to research and weigh different contributing factors to achieve the highest possible ranking on a search engine results page (SERP).

Today, the most important elements to consider when optimizing a web page for search engines include:

Quality and uniqueness of content

Optimization of key elements for the targeted keyword (URL, title tag, H1, sub headlines)

Level of user engagement (time on page, bounce rate)

Number and quality of backlinks

Internal linking

In addition to the elements above, you need to prioritize technical SEO, which is all the back-end components of your site. This includes mobile-friendliness and loading times. Improving your technical SEO can help search engines better navigate and crawl your site.

The strategic use of these factors makes search engine optimization a science, but the unpredictability involved makes it an "art" that often requires experienced SEO professionals.

Ultimately, the goal is to rank at or near the top of the first page of a search engine's result page or in Google's AI Overviews. This ensures that those searching for a specific query related to your brand can easily find your products or services. While there are many search engines, digital marketers often focus on Google since it's a global leader in the search engine market.

Google and other search engines change their algorithm almost constantly, so SEO is a never-ending progress. And your competitors most likely also invest in SEO. What you can do is closely monitor your page's performance and make adjustments as needed.

Content marketing

As mentioned, the quality of your content is a key component of an optimized page. As a result, SEO is a major factor in content marketing, a strategy based on the distribution of relevant and valuable content to a target audience.

As in any marketing strategy, the goal of content marketing is to attract leads that ultimately convert into customers. But it does so differently than traditional advertising. Instead of enticing prospects with potential value from a product or service, it offers value for free in the form of written material, such as:

Blog posts

E-books

Newsletters

Video or audio transcripts

Whitepapers

Infographics

Content marketing matters, and there are plenty of stats to prove it:

84% of consumers expect companies to produce entertaining and helpful content experiences

62% of companies that have at least 5,000 employees produce content daily

92% of marketers believe that their company values content as an important asset

As effective as content marketing is, it can be tricky. Content marketing writers need to be able to rank highly in search engine results while also engaging people who will read the material, share it, and interact further with the brand. When the content is relevant, it can establish strong relationships throughout the pipeline.

To create effective content that's highly relevant and engaging, it's important to identify your audience. Who are you ultimately trying to reach with your content marketing efforts? Once you have a better grasp of your audience, you can determine the type of content you'll create. You can use many formats of content in your content marketing, including videos, blog posts, printable worksheets, and more.

Regardless of which content you create, it's a good idea to follow content marketing best practices. This means making content that's grammatically correct, free of errors, easy to understand, relevant, and interesting. Your content should also funnel readers to the next stage in the pipeline, whether that's a free consultation with a sales representative or a signup page.

Social media marketing

Social media marketing means driving traffic and brand awareness by engaging people in discussion online. You can use social media marketing to highlight your brand, products, services, culture, and more. With billions of people spending their time engaging on social media platforms, focusing on social media marketing can be worthwhile.

The most popular digital platforms for social media marketing are Facebook, X, and Instagram, with LinkedIn and YouTube not far behind. Ultimately, which social media platforms you use for your business depends on your goals and audience. For example, if you want to find new leads for your FinTech startup, targeting your audience on LinkedIn is a good idea since industry professionals are active on the platform. On the other hand, running social media ads on Instagram may be better for your brand if you run a B2C focused on younger consumers.

Because social media marketing involves active audience participation, it has become a popular way of getting attention. Social media marketing offers built-in engagement metrics, which are extremely useful in helping you to understand how well you're reaching your audience. You get to decide which types of interactions mean the most to you, whether that means the number of shares, comments, or total clicks to your website.

Direct purchase may not even be a goal of your social media marketing strategy. Many brands use social media marketing to start dialogues with audiences rather than encourage them to spend money right away. This is especially common in brands that target older audiences or offer products and services not appropriate for impulse buys. It all depends on your company's social media marketing goals.

To create an effective social media marketing strategy, it's crucial to follow best practices. Here are a few of the most important social media marketing best practices:

- Craft high-quality and engaging content

- Reply to comments and questions in a professional manner

- Create a social media posting schedule

Post at the right time

Hire social media managers to support your marketing efforts

Know your audience and which social media channels they're most active on

To learn more about how Mailchimp can help with your social media strategy, check out the comparison of our free social media management tools versus others.

Pay-per-click marketing

Pay-per-click, or PPC, is a form of digital marketing in which you pay a fee every time someone clicks on your digital ads. So, instead of paying a set amount to constantly run targeted ads on online marketing channels, you only pay for the ads individuals interact with. How and when people see your ad is a bit more complicated.

One of the most common types of PPC is search engine advertising, and because Google is the most popular search engine, many businesses use Google Ads for this purpose. When a spot is available on a search engine results page, also known as a SERP, the engine fills the spot with what is essentially an instant auction. An algorithm prioritizes each available ad based on a number of factors, including:

Ad quality

Keyword relevance

Landing page quality

Bid amount

PPC ads are then placed at the top of search engine result pages based on the factors above whenever a person searches for a specific query.

Each PPC campaign has 1 or more target actions that viewers are meant to complete after clicking an ad. These actions are known as conversions, and they can be transactional or non-transactional. Making a purchase is a conversion, but so is a newsletter signup or a call made to your home office.

Whatever you choose as your target conversions, you can track them via your chosen digital marketing channels to see how your campaign is doing.

Affiliate marketing

Affiliate marketing is a digital marketing tactic that lets someone make money by promoting another person's business. You could be either the promoter or the business who works with the promoter, but the process is the same in either case.

It works using a revenue sharing model. If you're the affiliate, you get a commission every time someone purchases the item that you promote. If you're the merchant, you pay the affiliate for every sale they help you make.

Some affiliate marketers choose to review the products of just 1 company, perhaps on a blog or other third-party site. Others have relationships with multiple merchants.

Whether you want to be an affiliate or find one, the first step is to make a connection with the other party. You can use digital channels designed to connect affiliates with retailers, or you can start or join a single-retailer program.

If you're a retailer and you choose to work directly with affiliates, there are many things you can do to make your program appealing to potential promoters. You'll need to provide those affiliates with the tools that they need to succeed. That includes incentives for great results as well as marketing tools and pre-made materials.

Native advertising

Native advertising is digital marketing in disguise. Its goal is to blend in with its surrounding content so that it's less blatantly obvious as advertising.

Native advertising was created in reaction to the cynicism of today's consumers toward ads. Knowing that the creator of an ad pays to run it, many consumers will conclude that the ad is biased and consequently ignore it.

A native ad gets around this bias by offering information or entertainment before it gets to anything promotional, downplaying the "ad" aspect.

It's important to always label your native ads clearly. Use words like "promoted" or "sponsored." If those indicators are concealed, readers might end up spending significant time engaging with the content before they realize that it's advertising.

When your consumers know exactly what they're getting, they'll feel better about your content and your brand. Native ads are meant to be less obtrusive than traditional ads, but they're not meant to be deceptive.

Influencer marketing

Like affiliate marketing, influencer marketing relies on working with an influencer—an individual with a large following, such as a celebrity, industry expert, or content creator—

in exchange for exposure. In many cases, these influencers will endorse your products or services to their followers on several social media channels.

Influencer marketing works well for B2B and B2C companies who want to reach new audiences. However, it's important to partner with reputable influencers since they're essentially representing your brand. The wrong influencer can tarnish the trust consumers have with your business.

Marketing automation

Marketing automation uses software to power digital marketing campaigns, improving the efficiency and relevance of advertising. As a result, you can focus on creating the strategy behind your digital marketing efforts instead of cumbersome and time-consuming processes.

While marketing automation may seem like a luxury tool your business can do without, it can significantly improve the engagement between you and your audience.

According to statistics:

90% of US consumers find personalization either “very” or “somewhat” appealing

81% of consumers would like the brands they engage with to understand them better

Marketing automation lets companies keep up with the expectation of personalization. It allows brands to:

Collect and analyze consumer information

Design targeted marketing campaigns

Send and post digital marketing messages at the right times to the right audiences

Many marketing automation tools use prospect engagement (or lack thereof) with a particular message to determine when and how to reach out next. This level of real-time customization means that you can effectively create an individualized marketing strategy for each customer without any additional time investment.

Mailchimp's marketing automation tools ensure you can interact with your audience via behavior-based automations, transactional emails, date-based automations, and more.

Email marketing

The concept of email marketing is simple—you send a promotional message and hope that your prospect clicks on it. However, the execution is much more complex. First of all, you

have to make sure that your emails are wanted. This means having an email marketing provider that offers the following is crucial:

Individualizes the content, both in the body and in the subject line

An email signature that offers a clear unsubscribe option

Both, transactional and promotional emails

You want your prospects to see your campaign as a valued service, not just as a promotional tool.

Email marketing is a proven, effective technique all on its own, but it can be even better if you incorporate other digital marketing techniques such as marketing automation, which lets you segment and schedule your emails so that they meet your customer's needs more effectively.

If you're considering email marketing, here are a few tips that can help you craft great email marketing campaigns:

Segment your audience to send relevant campaigns to the right people

Ensure emails look good on mobile devices

Create a campaign schedule

Run A/B tests

Mobile marketing

Mobile marketing is a digital marketing strategy that allows you to engage with your target audience on their mobile devices, such as smartphones and tablets. This can be via SMS and MMS messages, social media notifications, mobile app alerts, and more.

It's crucial to ensure that all content is optimized for mobile devices. According to the Pew Research Center, Nine-in-ten Americans own a smartphone, so your marketing efforts can go a long way when you create content for computer and mobile screens.

The benefits of digital marketing

Digital marketing has become prominent largely because it reaches such a wide audience of people. However, it also offers a number of other advantages that can boost your marketing efforts. These are a few of the benefits of digital marketing.

A broad geographic reach

When you post an ad online, people can see it no matter where they are (provided you haven't limited your ad geographically). This makes it easy to grow your business's market reach and connect with a larger audience across different digital channels.

Cost efficiency

Digital marketing not only reaches a broader audience than traditional marketing but also carries a lower cost. Overhead costs for newspaper ads, television spots, and other traditional marketing opportunities can be high. They also give you less control over whether your target audiences will see those messages in the first place.

With digital marketing, you can create just one content piece that draws visitors to your blog as long as it's active. You can create an email marketing campaign that delivers messages to targeted customer lists on a schedule, and it's easy to change that schedule or the content if you need to do so.

When you add it all up, digital marketing gives you much more flexibility and customer contact for your ad spend.

Quantifiable results

To know whether your marketing strategy works, you have to find out how many customers it attracts and how much revenue it ultimately drives. But how do you do that with a non-digital marketing strategy?

There's always the traditional option of asking each customer, "How did you find us?"

Unfortunately, that doesn't work in all industries. Many companies don't get to have one-on-one conversations with their customers, and surveys don't always get complete results.

With digital marketing, results monitoring is simple. Digital marketing software and platforms automatically track the number of desired conversions that you get, whether that means email open rates, visits to your home page, or direct purchases.

Easier personalization

Digital marketing allows you to gather customer data in a way that offline marketing can't. Data collected digitally tends to be much more precise and specific.

Imagine you offer financial services and want to send out special offers to internet users people who have looked at your products. You know you'll get better results if you target

the offer to the person's interest, so you decide to prepare 2 campaigns. One is for young families who have looked at your life insurance products, and the other is for millennial entrepreneurs who have considered your retirement plans.

How do you gather all of that data without automated tracking? How many phone records would you have to go through? How many customer profiles? And how do you know who has or hasn't read the brochure you sent out?

With digital marketing, all of this information is already at your fingertips.

More connection with customers

Digital marketing lets you communicate with your customers in real-time. More importantly, it lets them communicate with you.

Think about your social media strategy. It's great when your target audience sees your latest post, but it's even better when they comment on it or share it. It means more buzz surrounding your product or service, as well as increased visibility every time someone joins the conversation.

Interactivity benefits your customers as well. Their level of engagement increases as they become active participants in your brand's story. That sense of ownership can create a strong sense of brand loyalty.

Easy and convenient conversions

Digital marketing lets your customers take action immediately after viewing your ad or content. With traditional advertisements, the most immediate result you can hope for is a phone call shortly after someone views your ad. But how often does someone have the time to reach out to a company while they're doing the dishes, driving down the highway, or updating records at work?

With digital marketing, they can click a link or save a blog post and move along the sales funnel right away. They might not make a purchase immediately, but they'll stay connected with you and give you a chance to interact with them further.

How to create a digital marketing strategy

For many small businesses and beginner digital marketers, getting started with digital marketing can be difficult. However, you can create an effective digital marketing strategy

to increase brand awareness, engagement, and sales by using the following steps as your starting point.

Set SMART goals

Setting specific, measurable, achievable, relevant, and timely (SMART) goals is crucial for any marketing strategy. While there are many goals you may want to achieve, try to focus on the ones that will propel your strategy forward instead of causing it to remain stagnant.

Identify your audience

Before starting any marketing campaign, it's best to identify your target audience. Your target audience is the group of people you want your campaign to reach based on similar attributes, such as age, gender, demographic, or purchasing behavior. Having a good understanding of your target audience can help you determine which digital marketing channels to use and the information to include in your campaigns.

Create a budget

A budget ensures you're spending your money effectively towards your goals instead of overspending on digital marketing channels that may not provide the desired results. Consider your SMART goals and the digital channel you're planning to use to create a budget.

Select your digital marketing channels

From content marketing to PPC campaigns and more, there are many digital marketing channels you can use to your advantage. Which digital marketing channels you use often depends on your goals, audience, and budget.

Refine your marketing efforts

Make sure to analyze your campaign's data to identify what was done well and areas for improvement once the campaign is over. This allows you to create even better campaigns in the future. With the help of digital technologies and software, you can obtain this data in an easy-to-view dashboard. Mailchimp's digital marketing analytics reports will help you keep track of all your marketing campaigns in one centralized location.

Digital marketing creates growth

Digital marketing should be one of the primary focuses of almost any business's overall marketing strategy. Never before has there been a way to stay in such consistent contact with your customers, and nothing else offers the level of personalization that digital data

can provide. The more you embrace the possibilities of digital marketing, the more you'll be able to realize your company's growth potential.

Rajesh Kumar Gautam

Lecturer ECE

G D Govt Polytechnic Hisar