

# Website Design Synoptic: Task 1

## Glossary of Terms

**Web server:** Web servers are computers that store and deliver website content to users. In the case of our MCAST website, when we view it from our devices, their web servers fetch and show its content to us so that we are able to see it from our device.

**Web hosting:** Web hosts are online services that allow web developers to save their website files online publicly. Websites such as the MCAST one then rent a space on a web server via web hosting services which later allows them to be run online.

**IP address:** Short for 'Internet Protocol address'. IP addresses are strings of numbers used to identify the network address of a device that they are connected to. This enables information to be sent to your device through the internet onto the website you are accessing. If I wanted to access the MCAST website, my device would locate the website's IP address being the server so that it would then send information to my

device via my device network, displaying the website content on my screen.

**Domain name:** Domain names are strings of text similar to IP addresses that identify a website's location on the internet. These names always begin with the string text "<https://>" or "<http://>" if the website is not secure and end with the string text that defines what kind of website it is and what country it is run in, such as ".gov" for government websites or ".mt" for Malta. The MCAST website's domain name in this case would be "<https://mcast.edu.mt>" since it is a Maltese website used for educational purposes.

**DNS:** Short for "Domain Name System", these are systems which translate readable domain names such as <https://mcast.edu.mt> into IP addresses. This is important because computers locate website addresses with their IP addresses rather than their Domain Name addresses.

**HTTP/HTTPS protocol:** Short for "Hypertext transfer protocol". These protocols are used to transfer and load data through the internet for web pages and are

seen in the beginning of website domain names as mentioned above. When accessing the MCAST website, my device sends an HTTP request to its web server to which the server then sends back the website data in the form of plaintext that websites can identify. This data is then used to display that website's content on my web browser for viewing. As mentioned previously, HTTPS is a more secure version of HTTP.

**SSL/TLS certificate:** Short for "Secure Sockets Layer" and "Transport Layer Security" respectively. These protocols use SSL/TLS digital certificates to establish trusted communication between our device's web browser and (in this case) the MCAST website's web server. This is important for secure data communication as it verifies the identity of the website and allows proper data encryption. The certificates themselves contain the website's information such as its domain name and a key used for data encryption.

## Internet Services

One of the internet services the MCAST website uses is the CDN (Content Delivery Network) “Cloudflare JS”. CDNs are internet services that distribute their services across the globe and deliver website content. They help reduce latency from their sides by using geographically closer servers to nearby users, allowing more efficient and faster content delivery as well as faster loading times for websites.

Cloudflare JS uses serverless JavaScript, so it does not require servers to run. It utilizes edge networking which means that it is a distributed data architecture that directs and organizes data through edge devices from a central server to ease the handling of data processing from the central server which helps deal with latency issues similarly to CDNs. This serverless JavaScript can be run on the edge network so that it directs the website data to the nearest edge device for low latency. Cloudflare JS also offers high security against DDos attacks and bots. This reliability is very valuable as not only does it help reduce loading times for users on the website, but it is also constantly protected from malicious entities and attacks.

If I could improve one thing about Cloudflare JS it would be to try and add in more artificial and autonomous workers as Cloudflare uses mostly real workers to run its services, so in the scenario that there might be a low amount of workers available, autonomous workers could offload some of the work from the live workers, efficiently optimizing data handling and other issues related to it.

Another internet service the website uses is Mailgun. Mailgun is an email service provider (ESP) which are internet services that help website owners and businesses send and manage emails to many individuals all at once. This helps a lot with marketing as it gets the message of your website and business across to many users with only a little effort. Mailgun specifically is used to send and connect emails to your website and the users who enter it while allowing website owners to easily customize and manage emails while tracking to whom they are sent to. It also validates the reliability of certain emails and prevents cache overload by identifying which email addresses are real and which aren't. This can be very useful to the builders of the MCAST website as like all website

owners who use ESPs, not only do they not have to manually send emails to every person who checks the website for information, but they can also do so automatically and in large numbers without having to deal with the hassle of verifying real and fake emails themselves and have Mailgun do it instead.

If there was a way to improve the usage of Mailgun it would be to add a feature where cache that includes bounce and unsubscribed account emails would automatically be removed as these types of email responses show that certain users are not interested and it benefits the website to run better with freed up cache. If possible, maybe implement admin logs that the website owners can use to track and analyse email statistics and understand what kinds of users respond to the right emails.

# Reference list

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