

Student Name: Muhammad Ayaan Khan

Student ID: 35662218

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Introduction

A well-designed e-commerce landing page, the TechGear Online Store was made to showcase and advertise a variety of tech devices and accessories. The goal of this project is to develop an intuitive and visual reaction website stored on the Linux Apache server using the Amazon EC2 body. The implementation of this project has provided a complete experience in complete web development, cloud deployment, configuration of the server and basic network security activities. It is also suitable for learning goals by showing the capacity in creating websites, scripts, documents and modern implementation strategies (Park et al., 2018). A contact form, business details, and prominent items are shown on the static landing page. Future improvements, such as dynamic backend connectivity for user accounts, shopping carts, and payment systems, are made possible by this fundamental design. HTML, CSS, and JavaScript were used to develop the website, which was then launched using Infrastructure as a Service (IaaS) using AWS EC2, which gives total control over server configuration and performance.

Website Structure and Design

The home page for the TechGear Online Store is made with a simple, intuitive style that prioritizes visual appeal, practicality, and ease of use. The website, which was created using HTML5 and CSS3, is completely adaptable and adjusts to various screen sizes with ease, guaranteeing a seamless experience for users on desktops, tablets, and smartphones. Each of the five major components that make up the structure has a distinct function (Sona, 2012).

Home Page: This part, which is at the top, has a call-to-action button, a short phrase, and a prominent title. It establishes the tone for the user's browsing experience and presents the TechGear brand.

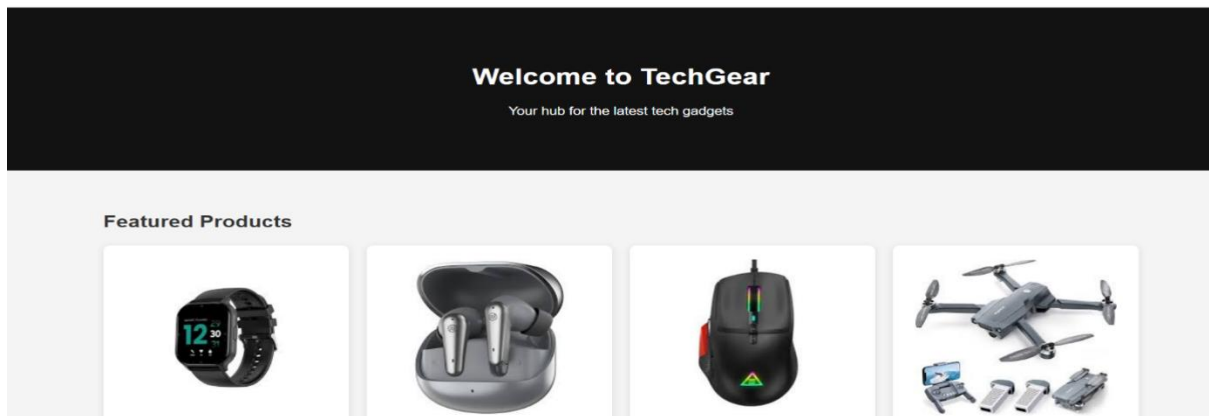


Figure 1: Home page of Website

Featured Products: A variety of electronic devices are displayed in this section in a responsive grid structure. An image, title, price, and a brief description are displayed for each product. In order to guarantee uniformity and alignment across all viewports, this layout was accomplished using CSS Grid.

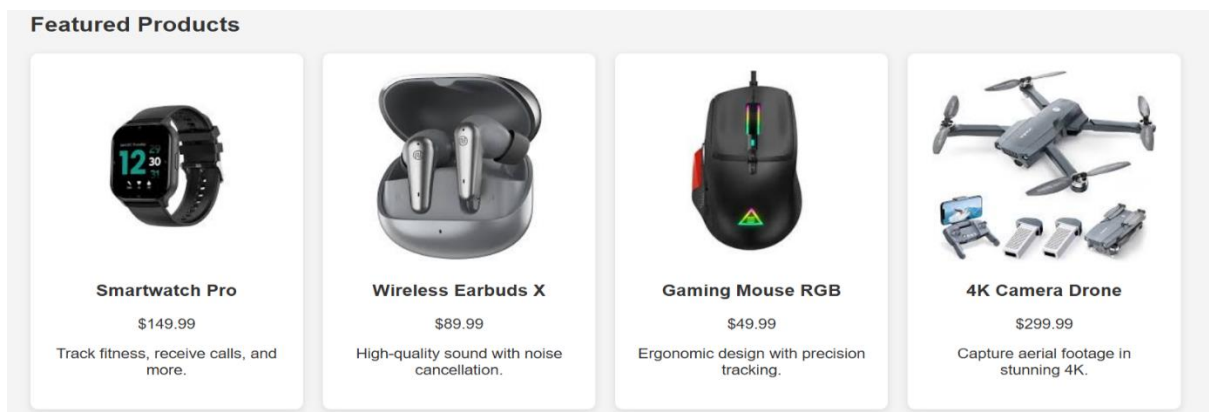


Figure 2 Website Feature products

About Section: A concise paragraph highlights TechGear's dedication to providing high-quality tech items and ensuring customer happiness while outlining the company's goal and principles. This part gives new visitors context and fosters confidence.

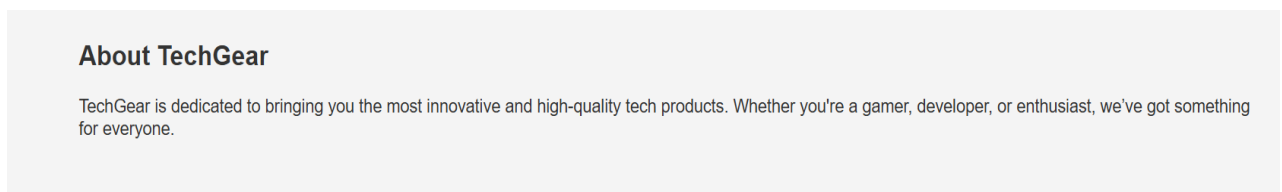


Figure 3: website About info

Contact Section: It includes business contact details and a request form. The form of collecting users' inputs such as names, emails and messages, ready for future auxiliary integration. Delete labeling and interactive interaction distance

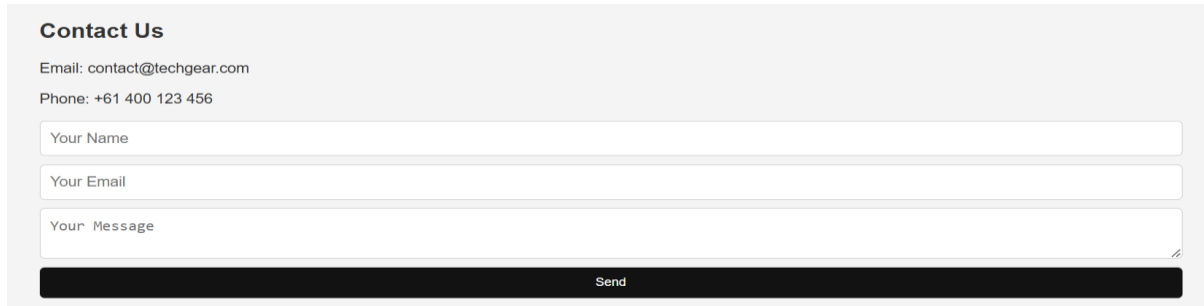
A contact form titled "Contact Us" with a light gray background. It includes contact information: "Email: contact@techgear.com" and "Phone: +61 400 123 456". Below this are three input fields: "Your Name", "Your Email", and "Your Message". A black "Send" button is at the bottom right.

Figure 4 website contact us template

Footer: A link to the project's GitHub repository and copyright details are included in the footer.

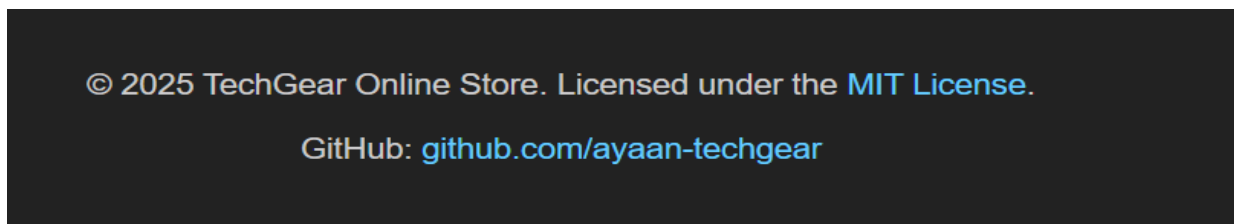


Figure 5: Footer part includes GitHub link

Throughout the website, combined style, distance and color theme are applied to maintain professional aspects. HTML semantic elements improve access and reference capabilities, while internal CSS provides fast -updates. JavaScript is reserved for future improvements such as truthfulness of forms or product filters. Meanwhile, the structure reflects the best practices in modern web design, focusing on the clarity, performance and participation of users.

Technologies Used

Techgear online store has been developed by using access to modern web technology stacks, response and easy to deploy.

- HTML5 has been used to create the semantic structure of the website, ensuring a clear content organization and improved to optimize search engines (SEO).Parts such as

titles, feet and items follow the best HTML practices for better reading and better access.

- JavaScript has been prepared for future improvements such as dynamic products, form confirmation and interactive features. Although the current minimum, the smooth integration configuration of the instructions.
- CSS3 manages visual style, including terms of terms, reaction design and overview effects. A combination of CSS and Flexbox allows clean and adaptable arrangement in different sizes and peripheral devices.
- Amazon EC2 (IAAS) has been used to deploy the website, providing all control over cloud storage environment. It allows configuration and expansion of personalized servers (IMRE et al., 2013).
- Apache2 web server is stored on Ubuntu 22.04 LTS providing auxiliary infrastructure. Apache has been chosen because of its easy reliability, performance and configuration.
- Certbot with Let Encrypt has been deployed to install free SSL certificates, ensuring safe https access.

DNS, SSL/TLS Functionality, and Accessibility

To ensure global access and safety communication, Techgear online store includes DNS configuration, SSL / TLS encryption and the best access ability.

DNS (domain name system) has been configured to map a personalized domain name at the public IP address of the Amazon EC2 server. This provides users to access a website with a web address that can be read instead of digital IP. Record A of the region has been updated through DNS registration house to point to the EC2 body, ensuring coherent routing (Oppliger et al., 2008).

SSL / TLS function (Safe class security / layer) has been implemented by Certbot and Let's Encrypt. This configuration automatically creates and installs SSL certificates for free,

allowing HTTPS for the school. The Apache server has been configured to redirect all HTTP traffic to HTTPS, ensuring that the data transmission is encrypted and improves the confidence to visitors. The certificate will automatically renew to avoid expiry problems

Accessibility is a major goal in the development of the site. Semantic html card improve the compatibility of screen players. ALT properties have been included for all highly contrasting images and colors that have been applied to improve reading capabilities. Reaction design techniques ensure that users with different devices and support technology can navigate and interact effectively with the website (Maimon et al., 2019).

Script Usefulness and Documentation

Deployment command ((deploy.sh)) has been created to automate the configuration of the Apache web server, the configuration of the firewall and install the SSL certificate on the EC2 based on Ubuntu. This scenario ends the entire implementation process, reduces manual efforts and minimizes configuration errors. It ensures coherent server configuration whenever the site is deployed or moved to a new performance, especially useful for the ability to expand and recover after request. Management scenario of tasks such as Apache2 settings, activating UFW with appropriate rules, the configuration of the virtual server is personalized and the configuration of HTTPS with Certbot. It also includes ideas to guide users through step by step, facilitating understanding and personalization (Rathnam, 2005). It explained the structure of the website, technology used, instructions for deployment and troubleshooting advice. This document ensures that developers, evaluation or other employees can copy, maintain or expand the project easily and clearly

Script Verifiable Output and Purpose

The `deploy.sh` script's main objective is to use Apache to automate the TechGear Online Store's deployment on an Ubuntu EC2 machine (Pillai & Kim, 2017). The script's clear, sequential terminal output confirms that the installation and setup were successful when it is run.

Important results include:

- UFW updates the firewall rules to permit web traffic.
- Verification of SSL certificate creation from Certbot, including domain name and expiration information.
- APT confirmation notice for installed packages (Apache2, Certbot).verify the status for Apache (Active (running)).
- Echo messages from the terminal that show how each script part is progressing.

These outputs as a control point to verify that this site is directly, safe for HTTPS and can be accessed through the configuration domain, by neutralizing successful implementation.

Deployment Strategy and Cloud Hosting

Techgear online deployment strategy emphasizes flexibility, expansion and control by using infrastructure for service (IAAS) through Amazon EC2. This approach allows completely personalize the server environment, ideal to study cloud accommodation and system administration (Kurikaparambil Revi, 2024). Apache2 has been installed to serve HTML, CSS and JavaScript files, providing reliable and fast performance (Biswas & Verma, 2020). The bash deployment command is personalized to be personalized the server configuration, including Apache settings, the configuration of the UFW firewall and the creation of SSL certificates of evidence with encryption.

The elastic IPS ensures continuous public access to the body, while the DNS map through a domain name registerer connects the domain name to the body of EC2. This allows users to access the site through a personalized web address. The use of Amazon EC2 provides greater

control than SAAS solutions like Wix or Shopify. It allows good performance adjustment, firewall rules and SSL / TLS parameters and supporting support in the future with PHP and MySQL. This cloud -based strategy reflects the industry's activities and is consistent with the academic results of ICT171 by promoting skills in deploying servers, accommodation and safe web distribution -Preparation of real-world IT infrastructure management (Biswas & Verma, 2020).

Configure Apache

Techgear.com's virtual server is configured using Apache to deliver content over HTTP (port 80). He began by identifying the primary domain (techgear.com) and alias (www.techgear.com), as well as the email address of the server administrator. The location where the website files will be served is / Var / www / Techgear, which is where the document root is located. Indexing, symbolic links, and the usage of hatches files through Allor override are all permitted in the bloc. All users have complete access.

```
# Configure Apache to serve the site
sudo bash -c 'cat > /etc/apache2/sites-available/techgear.conf <<EOF
<VirtualHost *:80>
    ServerAdmin admin@techgear.com
    ServerName techgear.com
    ServerAlias www.techgear.com
    DocumentRoot /var/www/techgear

    <Directory /var/www/techgear>
        Options Indexes FollowSymLinks
        AllowOverride All
        Require all granted
    </Directory>

    ErrorLog \${APACHE_LOG_DIR}/techgear_error.log
    CustomLog \${APACHE_LOG_DIR}/techgear_access.log combined
</VirtualHost>|
```

Figure 6: Configure Apache Server Commands

In addition, the configuration includes diary of errors and access, with newspapers recorded in files called techgear_error.log and techgear_access.log in Apache's folder. This configuration allows Apache to properly manage the web requirements for Techgear.com domain names, apply rules for folders and hold newspapers to monitor and fix incidents (Aleksiyants et al., 2015).

Conclusion

The Techgear online store shows the success of building a static e-commerce page, wearing, safe and deployed by open source and cloud infrastructure. By taking advantage of the flexibility of IAAS (Amazon EC2) and the effectiveness of the Apache web server, the control project is controlled, safe and effective. With a solid basis, this site is ready to develop e-commerce in the future, including dynamic auxiliary, user interaction and full purchase capacity. In general, the task of meeting all the requirements of the part and providing a practical learning experience and reality in accordance with the goals.

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