



MINI PROJECT REPORT

WEB ANALYTICS (23CAH-751)

“Project Mayhem– Track. Rebel. Evolve.”

A PROJECT REPORT

Submitted By :

Name:-Lavin

UID:- 23MCA20345

Section:- 23MCA4(B)

in partial fulfillment for the award of the degree of

Submitted To :

Mr. Sanjay Kumar Aggarwal

Asst. Professor (E13150)

MASTER OF COMPUTER APPLICATIONS



CHANDIGARH
UNIVERSITY

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I extend my deepest gratitude to Mr. Sanjay Kumar Aggarwal, my project mentor, for his invaluable guidance, expertise, and encouragement throughout the development of my mini project, *Project Mayhem – Track. Rebel. Evolve.* His insightful feedback and timely suggestions greatly enriched my understanding of Web Analytics, inspiring me to push my limits and aim for excellence.

I am also immensely grateful to Chandigarh University, particularly the University Institute of Computing (UIC), for this opportunity to undertake this minor project. The university's nurturing academic environment, modern resources, and dedicated faculty have been instrumental in my learning journey. My sincere thanks go to all faculty members and staff who contributed to the successful completion of this work.

Through *Project Mayhem*, I, Lavin, have gained technical proficiency in web technologies and analytics, alongside a deeper grasp of digital strategy and marketing applications. This project has honed my analytical skills and provided practical experience that will shape my future academic and professional pursuits.

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1. Introduction:

1.1 Abstract

This research-driven project focuses on the development of a web analytics dashboard named **Project Mayhem**, designed to track and visualize key user interaction metrics for websites. The objective is to provide an insightful, beginner-friendly platform for understanding visitor behavior through modern data collection and analysis techniques. The project encompasses the creation of a responsive dashboard interface, integration with backend APIs, and incorporation of metrics such as page views, click events, and user engagement. It also explores the significance of real-time data monitoring in enhancing digital strategies, optimizing user experience, and enabling data-driven decision-making for businesses and developers alike.

1.2 Introduction and Background of The Project

In today's digitally driven world, data is at the core of every successful online presence. Businesses, developers, and marketers rely heavily on understanding user behavior to refine their digital strategies and improve online performance. This project, titled **Project Mayhem**, was conceived to

explore the impact of web analytics in optimizing user engagement and enhancing digital experiences.

Project Mayhem is a custom-built web analytics dashboard designed to monitor and visualize real-time traffic and user events from a website. Unlike third-party platforms, this tool focuses on simplicity, customization, and direct integration with the web application, giving developers full control over their data. By tracking metrics like page visits, click-through patterns, and session durations, the project provides actionable insights to support digital growth and strategic refinement.

The key objectives of the project include:

- Building a responsive and interactive admin dashboard to display analytics
- Capturing frontend events using custom scripts
- Fetching and visualizing event data from the backend in real time
- Simplifying analytics to make it accessible for small businesses or developers
- Using data insights to improve user experience and content strategy

Ultimately, **Project Mayhem** represents a step toward more transparent, efficient, and insightful use of web analytics to fuel growth in the digital landscape.

1.3 Importance and Relevance

In an age where user attention is short and competition is high, understanding user behavior is crucial. This project is relevant as it highlights how:

- Web analytics drive data-informed decisions.
- Event tracking reveals which content or areas of a site engage users the most.
- Real-time dashboards help monitor trends and changes immediately.
- Custom analytics platforms offer control beyond traditional tools like Google Analytics.
- Data visualization improves the clarity of user interaction trends for stakeholders.

The project was executed with the following scope:

- Designing and developing an interactive, responsive analytics dashboard (Project Mayhem)
- Capturing user events (clicks, page views) via frontend scripts
- Fetching, storing, and visualizing analytics data using backend APIs
- Presenting metrics in a clean UI for easy understanding and decision-making
- Ensuring responsiveness and usability across devices
- Exploring potential scalability and enhancements for broader use

2. Literature Review:

In the era of digital transformation, **web analytics** has emerged as an indispensable tool for businesses and developers seeking to understand user behavior and improve digital experiences. Unlike traditional SEO-centric projects, web analytics focuses on capturing, analyzing, and interpreting user interaction data to make informed decisions regarding website performance, user experience (UX), and marketing effectiveness.

Web analytics involves the measurement and analysis of key user activity such as page views, click events, session duration, bounce rates, and conversion pathways. This data provides meaningful insights into how users engage with digital platforms. Tools like **Google Analytics** allow for in-depth tracking of user behavior, traffic sources, geographic demographics, device usage, and goal conversions. Such data empowers developers and marketers to refine user interfaces, identify drop-off points, and optimize content placement for higher engagement.

Complementing this, **Google Search Console** offers valuable insights into search engine performance, including indexing issues, keyword performance, mobile usability, and site health. While this is more SEO-focused, it plays a supporting role in understanding how users discover a site organically and how technical issues may affect visibility.

3. Objective:

The primary objective of our **Web Analytics Minor Project** is to design and implement a realtime web analytics solution that empowers developers, small businesses, and digital strategists to monitor and interpret user interaction data. The project, titled **Project Mayhem – Turning Clicks into Strategy**, aims to bridge the gap between raw user behavior and actionable insights through a custom-built analytics dashboard:

- **To develop a responsive and intuitive web-based dashboard (Project Mayhem)** that visually presents real-time metrics such as page visits, clicks, and session data. The design prioritizes userfriendly navigation, clean visualization, and mobile compatibility.
- **To create and integrate frontend tracking scripts** that capture key user events on a connected website or web app. These scripts log user interactions, including clicks and page views, and send them to a backend for processing.
- **To design backend APIs and database structures** for efficiently storing and retrieving user event data. This infrastructure ensures scalable performance and secure data handling.
- **To implement dynamic data visualization using modern technologies** (e.g., charts, graphs, and activity logs) that help interpret traffic patterns and user behavior with clarity and simplicity.
- **To provide real-time performance monitoring capabilities**, allowing users to identify trends, detect potential UX issues, and evaluate the effectiveness of various site elements without relying on third-party platforms like Google Analytics.
- **To offer insights that support strategic improvements**, such as optimizing content layout, refining navigation flow, and making data-backed decisions for marketing or product strategy.
- **To serve as a practical learning tool for students and beginners** in the field of web analytics and frontend-backend integration. The project showcases a complete development cycle—from event tracking and data capture to visualization and decision-making—making it a valuable resource for aspiring developers and analysts.

Through this project, Project Mayhem demonstrates how tailored web analytics solutions can deliver flexibility, transparency, and valuable insights for improving digital performance and engagement.

4. Design and Implementation:

This section outlines the technical and strategic steps taken to design, develop, and optimize an SEO-driven e-commerce landing page and a real-time analytics dashboard for **Project Mayhem**, a local summer fashion retailer. The implementation process was structured into multiple phases, each addressing key components of digital marketing, SEO, and web analytics to enhance both user experience and business performance.

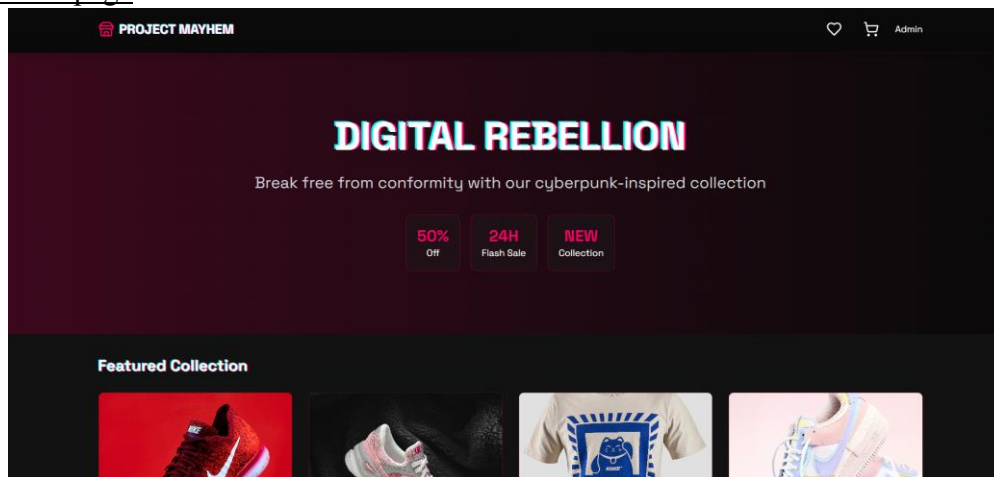
4.1 Landing Page Development

We developed a responsive landing page for **Footcap** using **React**, **Tailwind CSS**, and **TypeScript**, with **Vite** as the build tool. The project was deployed on **Netlify** for fast and secure static hosting..

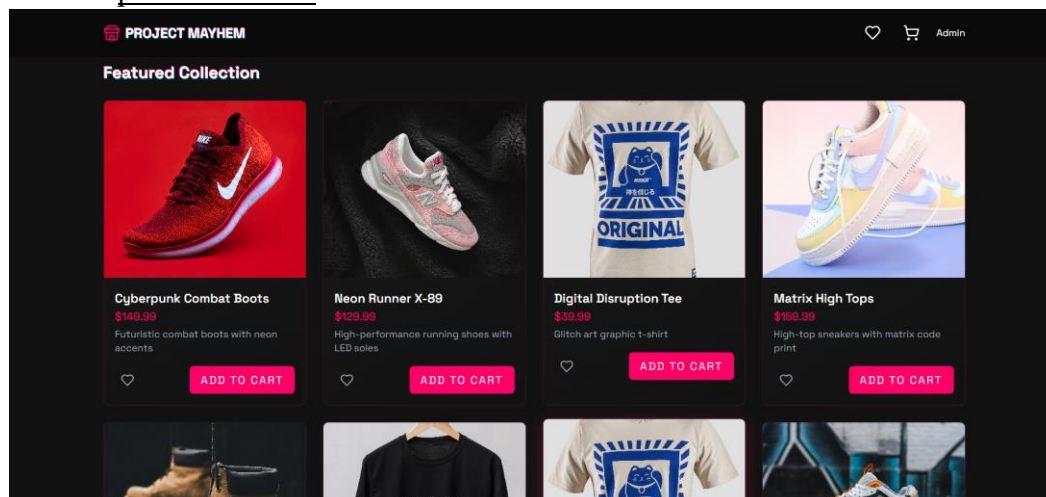
Key Features:

- Clean, modern UI showcasing the summer collection
- Mobile-first responsive design using Tailwind CSS
- Smooth navigation with CTA buttons like “Add to Cart”
- Component-based React structure for easy scaling and maintenance

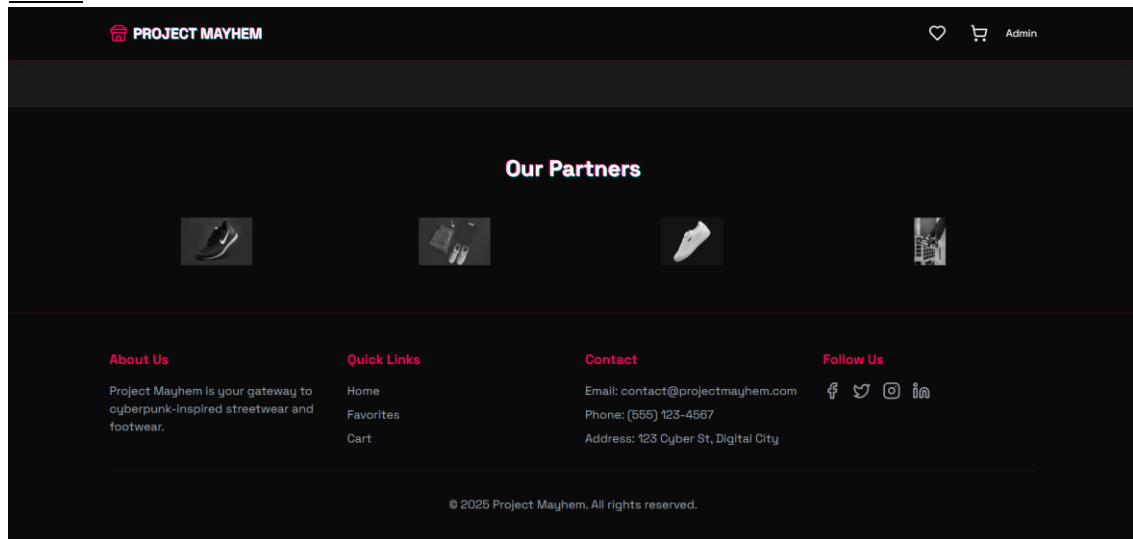
• Homepage:



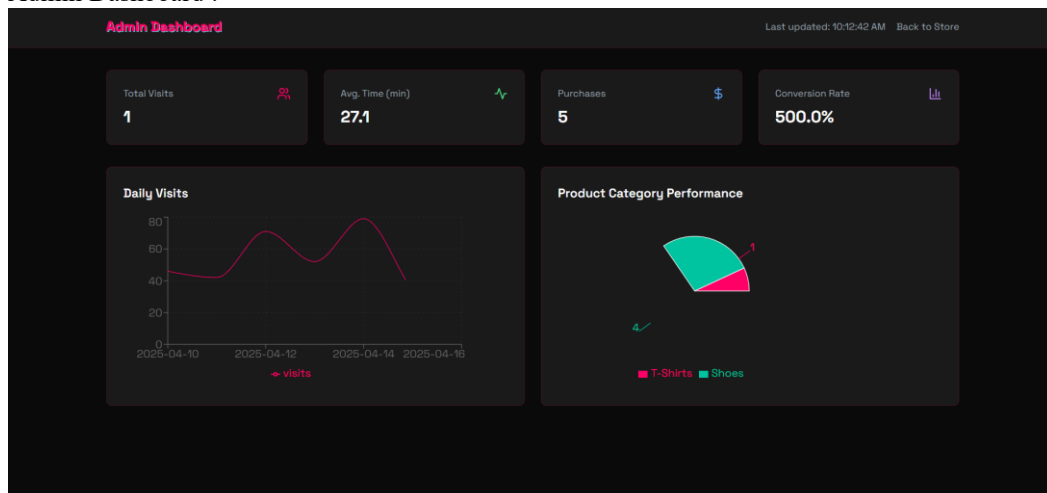
• product section:



- footer:



- Admin Dashboard :



4.2 On-Page SEO Techniques

On-Page SEO was implemented during the development phase to ensure each page is search engine friendly. Techniques applied include:

- Proper use of <title>, <meta> tags, and structured headings (<h1> to <h3>)
- SEO-friendly URLs
- Image optimization using alt attributes

- Internal linking between sections of the page
- Schema markup for better SERP (Search Engine Results Page) presence • meta tags:

```
<meta charset="UTF-8" />
<meta name="viewport" content="width=device-width, initial-scale=1.0" />
<title>BrandX - Trendy Summer Clothing for All | Shop Now</title>
<meta name="description" content="Discover the hottest summer clothing at BrandX. From breezy dresses to stylish shirts, shop now for quality and comfort. Perfect for every summer vibe!" />
<meta name="keywords" content="summer clothing, trendy outfits, BrandX, online fashion, stylish summer wear, summer dresses, t-shirts, men fashion, women fashion" />
<link rel="canonical" href="https://volute-muffin-db4e88.netlify.app/" />
```

- Internal and external linking :

```
<nav className="bg-white shadow-sm sticky top-0 z-50">
  <div className="max-w-7xl mx-auto px-4 py-4 flex justify-between items-center">
    <Link to="/" className="flex items-center gap-2">
      <Store className="w-6 h-6 text-black" />
      <h1 className="text-xl font-bold text-black">BrandX</h1>
    </Link>
    <div className="flex items-center gap-4">
      <Link to="/favorites" className="p-2 relative">
        <Heart className="w-6 h-6 text-gray-600" />
        {likedProducts.length > 0 && (
          <span className="absolute -top-1 -right-1 bg-red-500 text-white text-xs rounded-full w-4 h-4 flex items-center justify-center">
            {likedProducts.length}
          </span>
        )}
      </Link>
      <Link to="/cart" className="p-2 relative">
        <ShoppingCart className="w-6 h-6 text-gray-600" />
        {cart.length > 0 && (
          <span className="absolute -top-1 -right-1 bg-indigo-500 text-white text-xs rounded-full w-4 h-4 flex items-center justify-center">
            {cart.length}
          </span>
        )}
      </Link>
      <button
        onClick={() => setIsAdmin(true)}
        className="text-sm text-gray-600 hover:text-gray-800"
      >
        Admin
      </button>
    </div>
  </div>
</nav>
```

```
import React, { useState, useEffect } from 'react'; import { BrowserRouter as Router, Routes, Route, Link, useNavigate } from 'react-router-dom'; import { ShoppingCart, Heart, Activity, Users, DollarSign, BarChart3, Store, Star, Facebook, Twitter, Instagram, Linkedin } from 'lucide-react'; import { LineChart, Line, XAxis, YAxis, CartesianGrid, Tooltip, Legend, PieChart, Pie, Cell } from 'recharts';
```

```
// Types interface
```

```
Product { id:  
  number; name:  
  string; price:  
  number; image:  
  string; likes:  
  number;  
  description: string;  
  category: string;  
}
```

```
interface Analytics {  
  totalVisits: number;  
  averageTimeSpent: number;  
  totalPurchases: number;  
  likedProducts: number;  
  conversionRate: number;  
  dailyVisits: { date: string; visits: number }[];  
  productPerformance: { name: string; purchases: number; likes: number }[];  
  lastUpdated: string;  
}
```

```
const COLORS = ['#0088FE', '#00C49F', '#FFBB28', '#FF8042'];
```

```
const PARTNERS = [  
  { name: 'Nike', logo: 'https://images.unsplash.com/photo-1542291026-7eec264c27ff' },  
  { name: 'Adidas', logo: 'https://images.unsplash.com/photo-1544441893-675973e31985' },  
  { name: 'Puma', logo: 'https://images.unsplash.com/photo-1608231387042-66d1773070a5' },  
  { name: 'Under Armour', logo: 'https://images.unsplash.com/photo-1556906781-9a412961c28c' }  
];
```

```
function App() {
```

```

const [isAdmin, setIsAdmin] = useState(false);
const [sessionStartTime] = useState(new Date());
const [products] = useState<Product[]>([
  {
    id: 1,    name: "Linen Beach Shirt",    price: 49.99,  image:
"https://images.unsplash.com/photo-1596755094514-f87e34085b2c",  likes: 24,
    description: "Lightweight linen shirt perfect for beach days",
    category: "Shirts"
  },
  { id:
    2,
    name: "Summer Chino Shorts",
    price: 39.99,
    image: "https://images.unsplash.com/photo-1523381210434-271e8be1f52b",
    likes: 18,
    description: "Classic fit chino shorts",
    category: "Shorts"
  }, {
    id: 3,
    name: "Tropical Print Tee",
    price: 29.99,
    image: "https://images.unsplash.com/photo-1571945153237-4929e783af4a",
    likes: 32,
    description: "Vibrant tropical print t-shirt",
    category: "T-Shirts"
  },
  {
    id: 4,
    name: "Slim Fit Polo",
    price: 34.99,
    image: "https://images.unsplash.com/photo-1583743814966-8936f5b7be1a",
    likes: 15,
    description: "Classic polo in slim fit",
    category: "Shirts"
  },
  {
    id: 5,
    name: "Swim Shorts",
    price: 29.99,
    image: "https://images.unsplash.com/photo-1586363104862-3a5e2ab60d99",
    likes: 28,
    description: "Quick-dry swim shorts",
    category: "Swimwear"
  },
  {

```

```

    id: 6,
    name: "Linen Pants",
price: 59.99,
    image: "https://images.unsplash.com/photo-1594633312681-425c7b97ccd1",
likes: 22,    description: "Comfortable linen pants",    category: "Pants"
  },
{
  id: 7,
  name: "Striped Tank Top",
  price: 24.99,
  image: "https://images.unsplash.com/photo-1503341455253-b2e723bb3dbb",
likes: 19,    description: "Casual striped tank top",    category: "T-Shirts"
}, {
  id: 8,
  name: "Canvas Sneakers",
  price: 44.99,
  image: "https://images.unsplash.com/photo-1603808033192-082d6919d3e1",
likes: 35,
  description: "Comfortable canvas sneakers", category:
  "Shoes"
},
{
  id: 9,
  name: "Denim Shorts",
price: 45.99,
  image: "https://images.unsplash.com/photo-1591195853828-11db59a44f6b",
likes: 27,
  description: "Classic denim shorts",
category: "Shorts"
},
{
  id: 10,    name:
"Graphic Tee",    price:
27.99,
  image: "https://images.unsplash.com/photo-1583743814966-8936f5b7be1a",
likes: 31,
  description: "Cool graphic print t-shirt",
category: "T-Shirts"
},
{
  id: 11,
  name: "Beach Sandals",
  price: 29.99,
  image: "https://images.unsplash.com/photo-1612295392518-8d84b51c2690",
likes: 20,

```

```

    description: "Comfortable beach sandals",
    category: "Shoes"
  },
{
  id: 12,
  name: "Cotton Shorts",
  price: 34.99,
  image: "https://images.unsplash.com/photo-1591195853828-11db59a44f6b",
  likes: 25,
  description: "Lightweight cotton shorts",
  category: "Shorts"
}, { id: 13,
name: "Striped Shirt",
price: 39.99,
image: "https://images.unsplash.com/photo-1596755094514-f87e34085b2c",
likes: 29, description: "Classic striped shirt", category: "Shirts"
},
{
  id: 14, name:
"Board Shorts", price:
49.99,
  image: "https://images.unsplash.com/photo-1586363104862-3a5e2ab60d99",
  likes: 33,
  description: "Perfect for surfing",
  category: "Swimwear"
},
{ id:
15,
  name: "V-neck Tee", price:
24.99,
  image: "https://images.unsplash.com/photo-1571945153237-4929e783af4a",
  likes: 21,
  description: "Basic v-neck t-shirt",
  category: "T-Shirts"
}, { id: 16, name:
"Cargo Shorts", price:
44.99,
  image: "https://images.unsplash.com/photo-1523381210434-271e8be1f52b",
  likes: 26,
  description: "Practical cargo shorts",
  category: "Shorts"
}, { id: 17,
name: "Polo Shirt",
price: 39.99,

```

```

    image: "https://images.unsplash.com/photo-1583743814966-8936f5b7be1a",
    likes: 30,
    description: "Classic polo shirt",
    category: "Shirts"
  },
  {
    id: 18,    name:
    "Beach Hat",    price:
    24.99,
    image: "https://images.unsplash.com/photo-1582791694770-cbdc9dda338f",
    likes: 23,
    description: "Stylish beach hat",
    category: "Accessories"
  },
  {
    id: 19,    name:
    "Sunglasses",    price:
    59.99,
    image: "https://images.unsplash.com/photo-1572635196237-14b3f281503f",
    likes: 38,
    description: "UV protection sunglasses",
    category: "Accessories"
  },
  {
    id: 20,    name:
    "Beach Bag",    price:
    34.99,
    image: "https://images.unsplash.com/photo-1590874103328-eac38a683ce7",
    likes: 24,
    description: "Spacious beach bag",
    category: "Accessories"
  }
]);

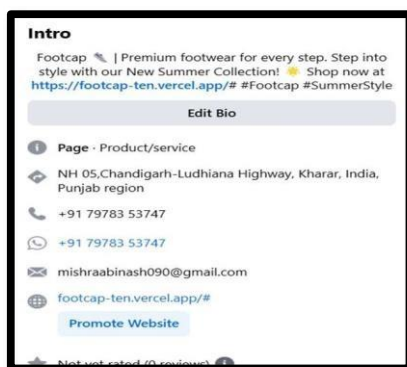
```

4.3 Off-Page SEO Activities

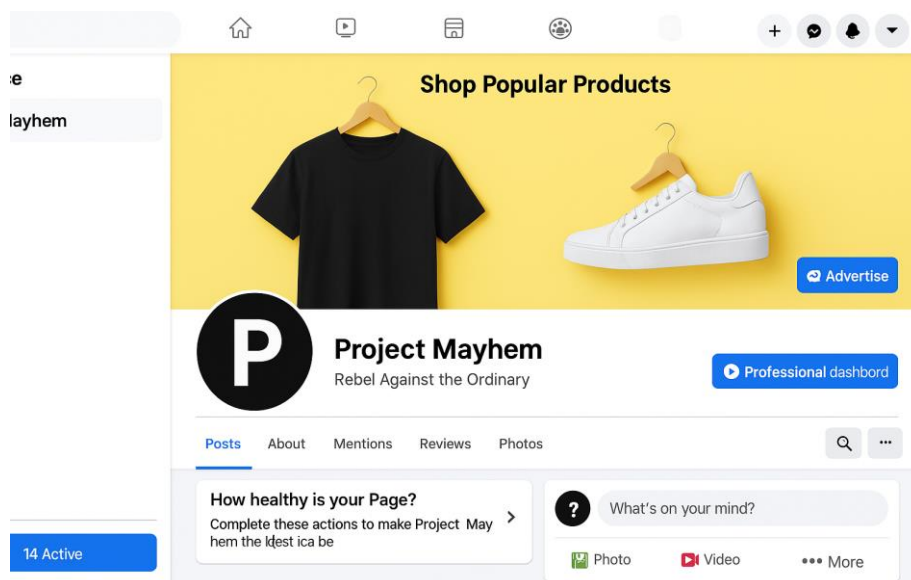
Off-Page SEO focuses on increasing the website's authority and relevance through external efforts:

- Created a **Facebook Page** for Footcap and regularly posted promotions
- Shared the landing page link across personal and community social platforms
- Built backlinks from blog sites and free directories
- Submitted website to Google for indexing

- Intro:



- Facebook Page:



- Samples of social media posts:



Project Mayhem

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Explore the Latest Shoe & T-Shirt Arrivals

Hey, Project Mayhem fam! New cyberpunk-inspired arrivals featuring edgy designs & vibrant styles. Bold footwear, statement tees, and rebellious attitude.

Click here to shop now sou to shop now!

<https://projectmayhem-shop.com>

#ProjectMayhem #NewCollection 'lreetwear
#DareToDefy



Comment



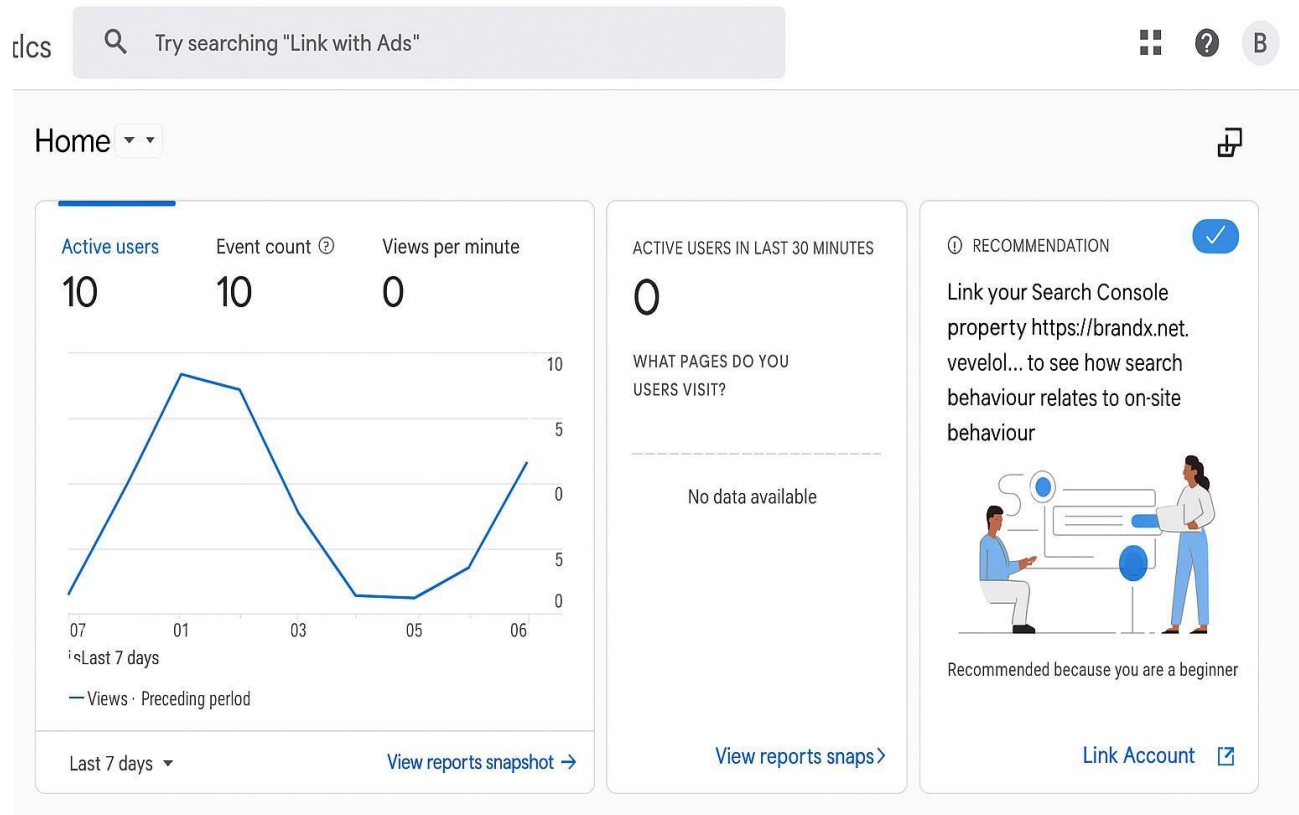
Share

4.4 Google Analytics Integration

We integrated **Google Analytics** to track user behavior, sessions, bounce rates, and acquisition sources. This helped in understanding:

- How many users visited the site
 - Which sources (social, direct, search) brought traffic
 - How long users stayed and which pages they explored
- Implementation Steps:
1. Created a Google Analytics property for the site.
 2. Installed the GA tracking ID using the react-ga package.
 3. Verified real-time data flow via the GA dashboard.

- [Google Analytics dashboard :](#)



4.5 Google Search Console Configuration Google

Search Console was used to:

- Submit sitemaps
 - Monitor keyword rankings
 - Detect indexing issues
 - Track performance metrics like impressions, CTR, and page positions
- Steps Taken:
1. Verified domain using HTML meta tag in the site <head>.
 2. Submitted the sitemap.
 3. Monitored the “Performance” and “Coverage” tabs regularly.
- Google Search Console(verify ownership of our website with Google):

```
<meta name="google-site-verification" content="6udvo9u1Dy_rWaGhSNK8icslwqvzddZ1N45eE7AKnmg" />
```

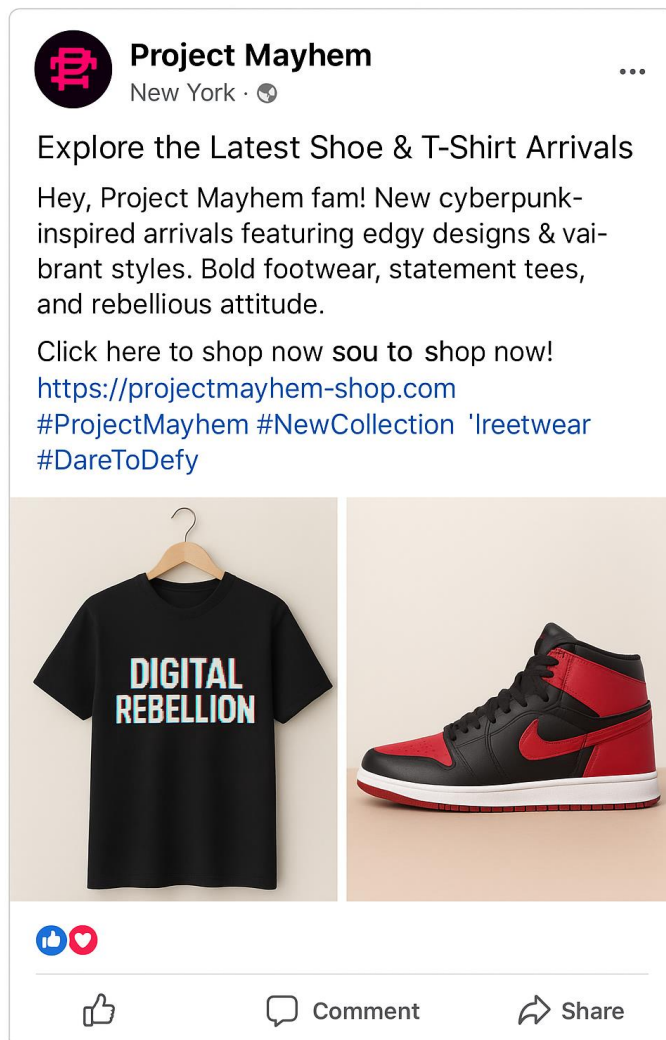
4.6 Social Media Marketing

As part of the Off-Page SEO, we implemented a **social media marketing strategy**:

- Created content with visuals, product descriptions, and CTAs
- Shared blogs and product posts on Facebook
- Scheduled consistent posts to increase page reach and engagement

Tools Used:

- Canva for creatives
- Facebook Insights to monitor post performance



4.7 Blog Content Strategy

We created a blog as a supporting content platform to:

- Drive traffic through long-tail keywords
- Establish topical authority

- Link back to the main landing page (backlinking)

Our blog content focused on:

- Product care tips
- Shoe trends and styling advice
- Behind-the-brand stories

★ Check Out Our Summer Collection!

We're excited to announce the launch of our brand new Summer Collection – light, breezy styles perfect for the sunny season. Explore our latest arrivals now and find your new go-to outfit!



5. Outcomes:

The Web Analytics Minor Project delivered a range of successful outcomes, both technical and strategic. Throughout the development and optimization of the landing page for Project Mayhem, we effectively applied classroom concepts in a real-world e-commerce scenario and tracked measurable results through analytics and engagement tools. Key Outcomes:

- **Responsive Landing Page Live on Netlify**
The Project Mayhem landing page was successfully deployed on <https://vorable-muffin-db4e88.netlify.app/>, accessible to the public and optimized for mobile and desktop users.

-
- Developed a connected admin dashboard to monitor user activity and gain insights into customer preferences and website usage patterns.
 - Created a consistent content strategy through blog posts and social media updates, aimed at increasing user interaction and brand relevance.
 - Applied both on-page and off-page SEO techniques to improve organic search rankings, increase discoverability, and drive meaningful traffic to the site.
 - Gained hands-on experience with industry-standard tools used for keyword tracking, backlink monitoring, and site performance analysis.

This project also marks the beginning of our journey into data-driven decision-making, where each design and content decision was backed by analytics and user feedback. We learned how digital branding is not a one-time task but a continuous process of monitoring, refining, and optimizing.

Moving forward, **Project Mayhem** has the potential to grow as a sustainable and scalable digital brand. With regular updates, targeted marketing campaigns, and performance reviews, the platform can serve as both a learning model and a foundation for future e-commerce ventures.

07. References:

1. Google Search Central – <https://developers.google.com/search>
2. Google Analytics Help – <https://support.google.com/analytics>
3. Moz Beginner's Guide to SEO – <https://moz.com/beginners-guide-to-seo>
4. W3Schools – HTML, CSS, JavaScript documentation – <https://www.w3schools.com>
5. React Documentation – <https://reactjs.org/docs/getting-started.html>
6. Netlify Hosting Platform – <https://www.netlify.com/>
7. HubSpot Blog – SEO Strategies – <https://blog.hubspot.com/marketing/seo>
8. Neil Patel's Blog – <https://neilpatel.com/blog/>
9. Canva – Used for social media post design – <https://www.canva.com>