

# E-Commerce Cloud Infrastructure

Group 8 (Andy, Syahir, Zaki, Zell)

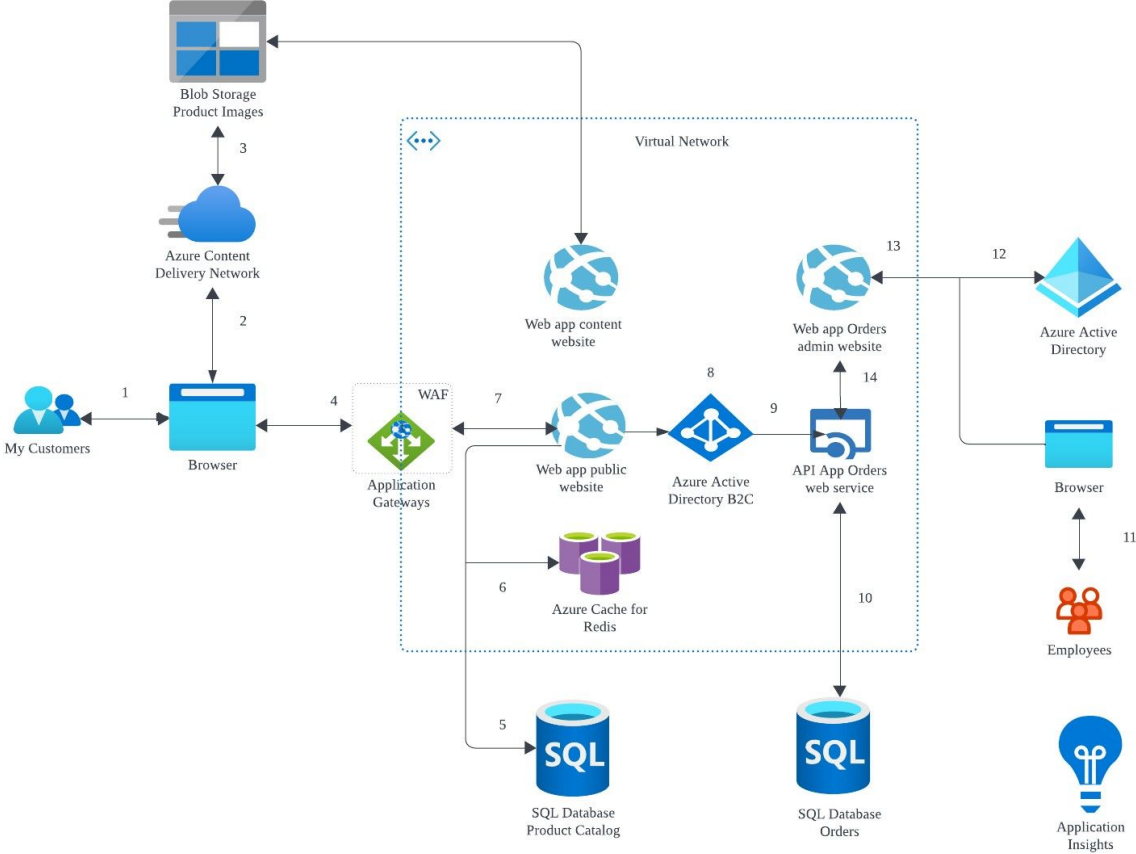
## BACKGROUND

- Medium-sized apparel enterprise based in Singapore, which aims to transition from on-premise to cloud-based infrastructure due to its scalability and suitability.
- Meet current demand and facilitate regional expansion. Struggles with managing high traffic during peak periods.
- Has faced security breaches, including credit card fraud and identity theft.

## PROBLEMS ENCOUNTERED

- Web Traffic Overload: Coping with abrupt surges in web traffic became overwhelming, leading to website crashes and decreased performance.
- Compromised Security: The existence of security vulnerabilities resulted in instances of personal data breaches, undermining customer confidence and trust.
- Financial Strain: The substantial expenses tied to establishing and managing on-premise infrastructure imposed a significant financial burden.
- Feature Constraints: Shortcomings encompassed the absence of advanced functionalities like real-time analytics, automated marketing, and efficient customer support.

# PROJECT ARCHITECTURE OVERVIEW

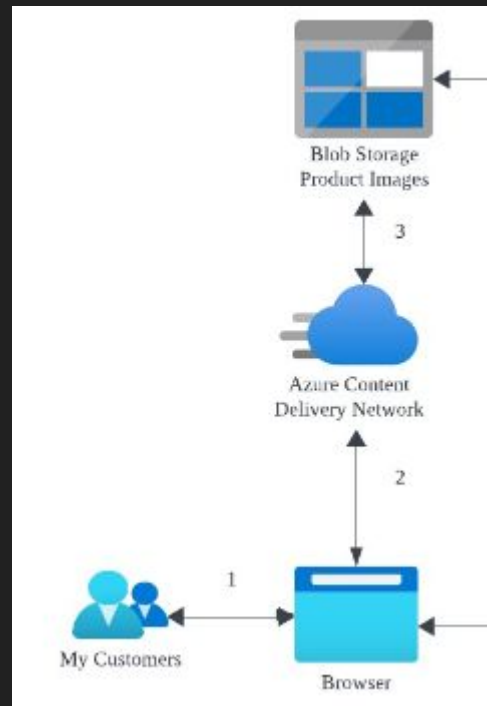


## Azure Content Delivery Network

- Cache product images from blob storage to POP locations closer to customer to improve performance and help reduce latency

## Azure Blob Storage

- Set up a single blob storage account which will be used to store the product images for the e-commerce business
- Offers security features such as encryption and access control



# WHY WE CHOSE THESE SERVICES

## Azure Application Gateway

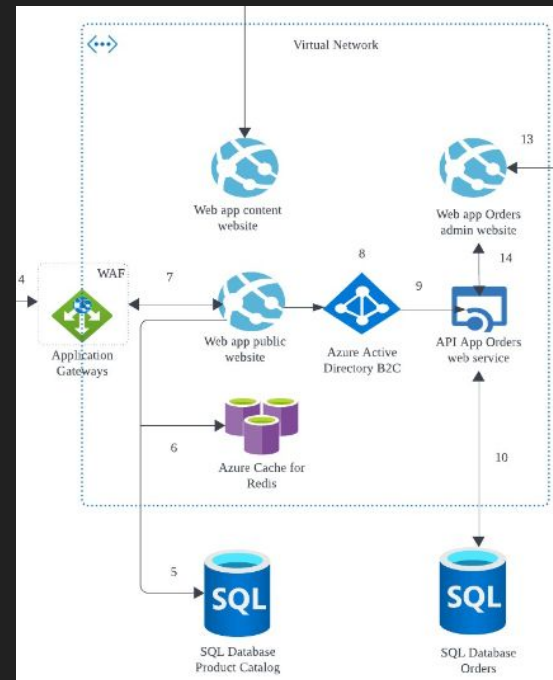
- A load balancer that will manage the traffic to the web applications
- Built-in WAF that helps to protect the web app from common attacks such as SQL injection and cross-site scripting (XSS)

## Azure App Service

- Virtual Network: A isolated environment where each resources can securely communicate with each other while prevent data leakage, unauthorised access and network attacks
- Public website: Enables interactive browsing of products and making payment
- Content website: Manage and presenting of product content that the public will be able see
- Admin website: A back-end system to handle payment, tracking of orders, customer service and administration

## API App (Orders web service)

- Managing, processing and tracking of orders
- Integrate with third-party services such as payment gateways and shipping providers



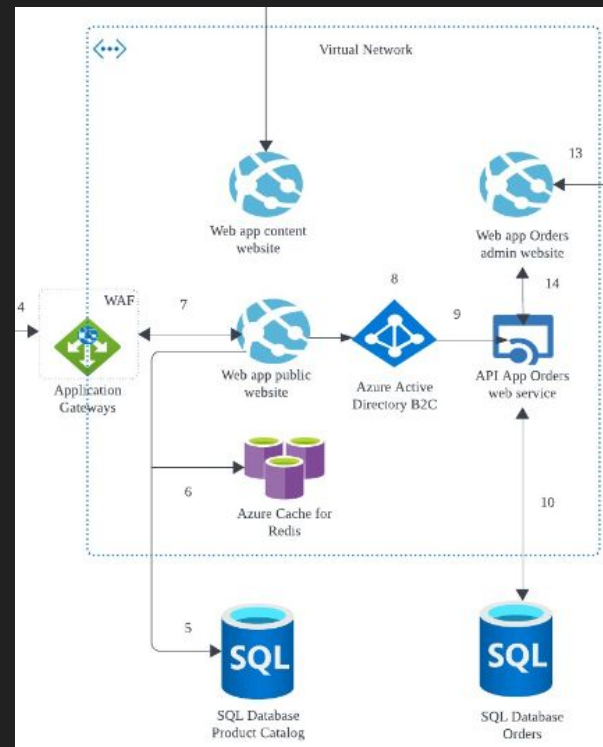
# WHY WE CHOSE THESE SERVICES

## Azure Cache for Redis

- Cache web output allowing users to access and load the web page faster
- Reducing workload on the backend databases or services

## Azure SQL Database

- Product Catalogue database:  
Store product information such as the description, pricing and the stock status
- Orders database:  
Store information such as customers address and credit card information

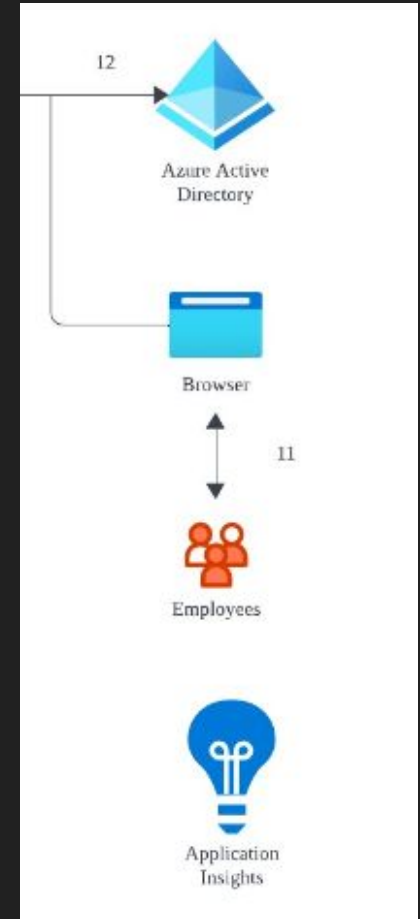


## Azure Active Directory

- Enhance security using multi-factor authentication

## Azure Application Insights

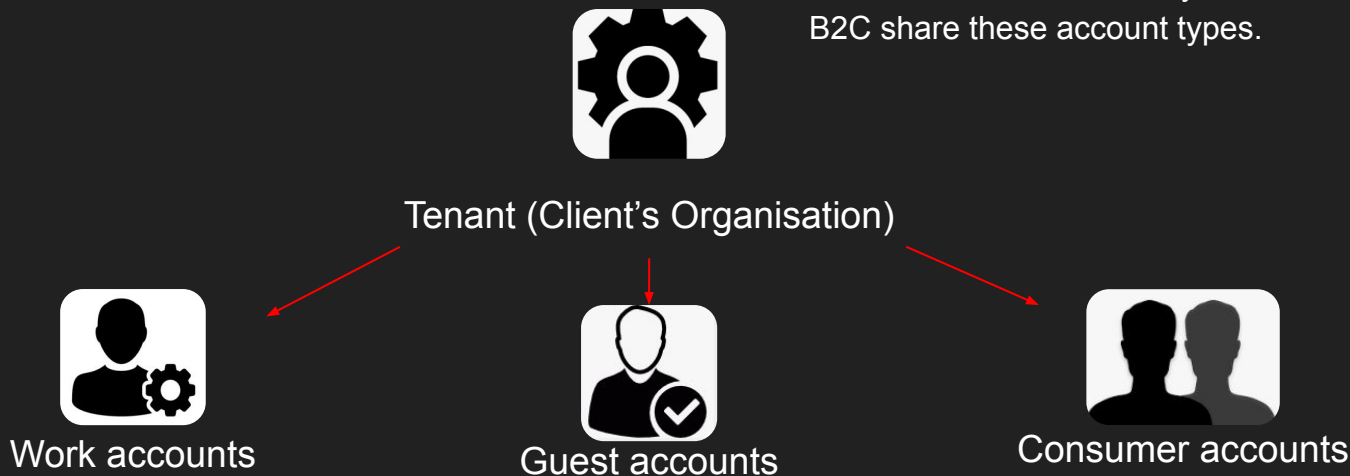
- Monitor and improve using collected data and provide insights on how the application is performing
- Diagnose and troubleshoot issues to prevent performance degradation





## Azure Active Directory B2C

- Stores all users' credentials, profile data, password and application registrations
- Control sign-in , Sign-up options, set permission rights and set conditional access if necessary
- AD B2C Key feature - Customers use either local account or their preferred social, enterprise identities to get single sign-on access to the Web App and APIs.
- Federate with identity providers that support OAuth 1.0, OAuth 2.0, OpenID Connect, and SAML (Security Assertion Markup Language) protocols
- Azure AD B2C defines several types of user accounts. Both Azure Active Directory and Azure Active Directory B2C share these account types.



## Back End

The screenshot displays the 'Users - All users' page in the Azure Active Directory portal. The top navigation bar includes a search bar, icons for various actions, and the user's email 'admin@contoso.com'. The left-hand navigation menu lists options such as 'All users', 'Deleted users', 'Password reset', 'User settings', 'Activity', 'Sign-ins', 'Audit logs', 'Bulk operation results (Preview)', 'Troubleshooting + Support', 'Troubleshoot', and 'New support request'. The main content area shows a table of users with the following columns: NAME, USER NAME, USER TYPE, and SOURCE. The table lists ten users, including Colby Marble, Harriett Mosley, Julio Reuter, Katina Knowles, Kelly Shields, Rigoberto Dugas, Roslyn Fry, Warren Boatright, and Young Underwood. Each user entry includes a profile picture, name, email address, user type (Member), and a link to the source of the account.

NAME	USER NAME	USER TYPE	SOURCE
Colby Marble		Member	<a href="#">LinkedIn</a>
Harriett Mosley	hmosley@contoso.com	Member	<a href="#">Azure Active Directory</a>
Julio Reuter	q*****@gmail.com	Member	<a href="#">Google</a>
Katina Knowles	kknowles@contoso.com	Member	<a href="#">Azure Active Directory</a>
Kelly Shields	kshields@fourthcoffee.com	Member	<a href="#">Facebook</a>
Rigoberto Dugas		Member	<a href="#">LinkedIn</a>
Roslyn Fry		Member	<a href="#">Federated Azure Active Directory</a>
Warren Boatright	wboatright@contoso.com	Member	<a href="#">Azure Active Directory</a>
Young Underwood	z*****@outlook.com	Member	<a href="#">Microsoft Account</a>

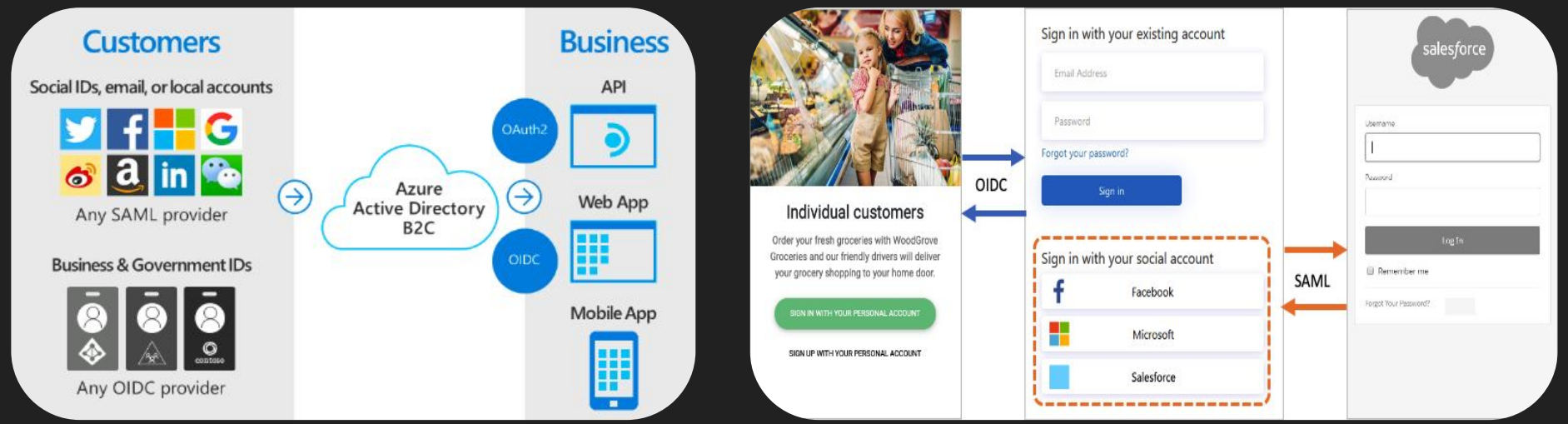
### Users with Work accounts

-Have administrator role, and manage resources in a tenant

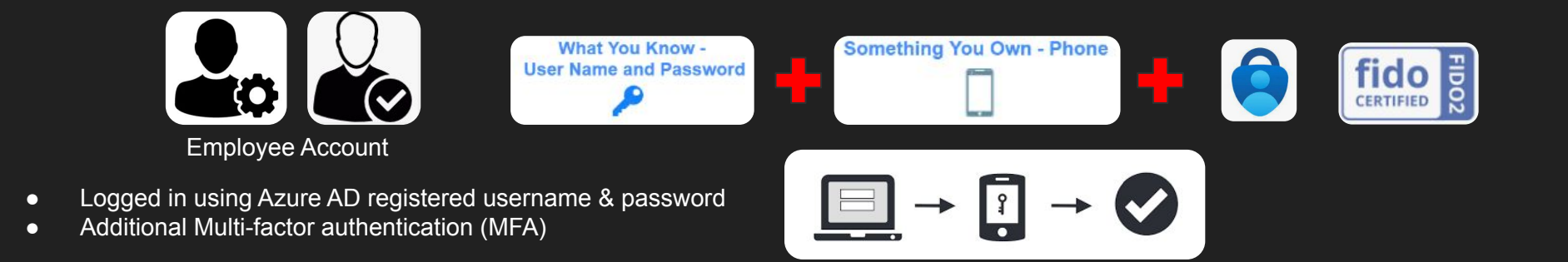
-Can create new consumer accounts, reset passwords, block/unblock accounts

-Set permissions or assign an account to a security group.

# SECURITY FEATURES

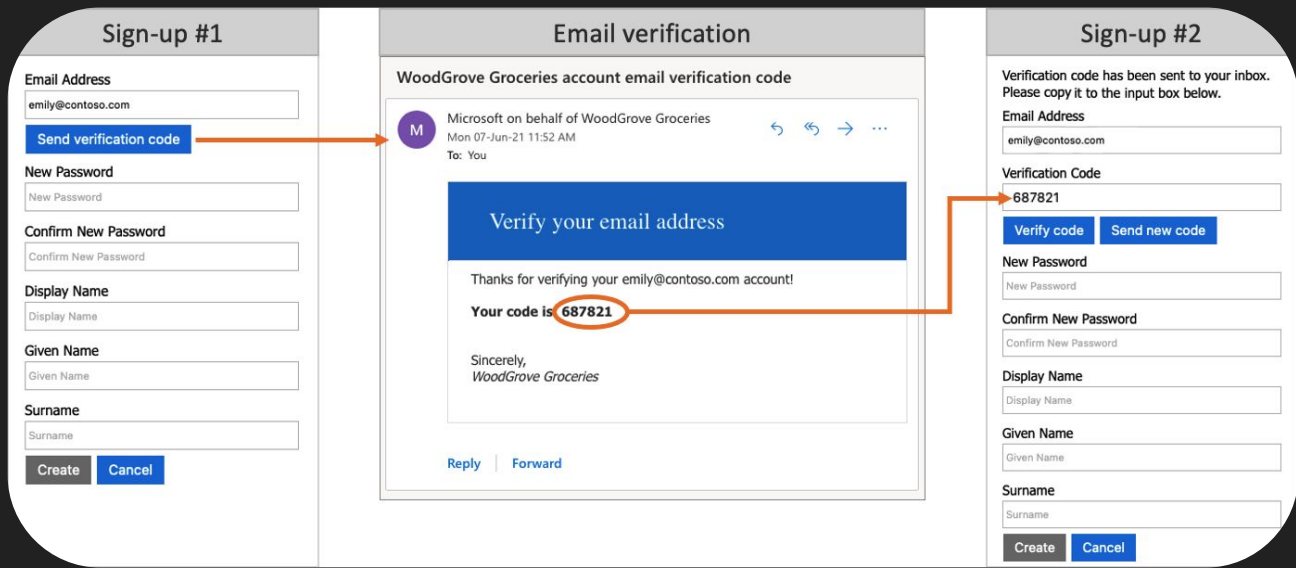


- Azure AD B2C provides various ways in which you can authenticate a user
- Allow users to sign in to the web application with local account or using credentials from social and enterprise identity providers



- Logged in using Azure AD registered username & password
- Additional Multi-factor authentication (MFA)

Sign up option - Email & OTP Verification



Azure AD B2C ensures valid email addresses by requiring customers to verify them during the sign-up, and password reset.

Prevents malicious actors from using automated processes to generate fraudulent accounts in the applications.



# PROOF OF CONCEPT

- Login Page
  - Customers: Azure AD B2C
  - Employees: Azure AD with MFA enabled
- Web App
  - Public/Content Website
  - Admin Website
- Database
  - Integrated with Web App

THE GAME

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Login

Don't have an account? [Sign up here](#)

You can also sign in with these:

Facebook

Twitter

Google

User Name:

johndoe

Password:

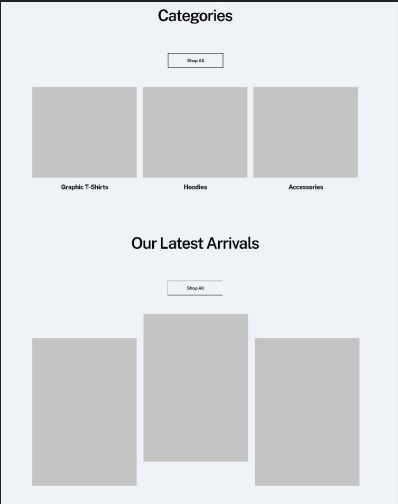
Forgot password?

.....

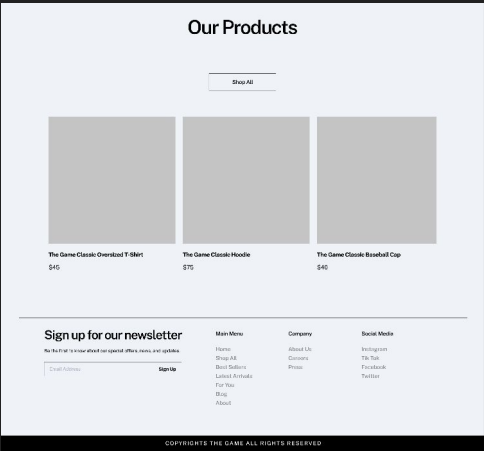
Sign In



Header



Body



Footer

S&D

FREE SHIPPING ON ALL ORDERS ABOVE \$100

Support

Home

Shop All

For You

About

Q Search

3

Login

Your cart

Not ready to checkout? [Continue Shopping](#)

The Game Classic Oversized T-Shirt

Size: L

Quantity: 1

\$45

by Vendor Name

[Remove](#)

The Game Classic Hoodie

Size: S

Quantity: 1

\$75

by Vendor Name

[Remove](#)

Order Summary

Enter coupon code here

Subtotal

\$120

Shipping

Calculated at the next step

Total

\$120

Continue to checkout

Order Information

Return Policy

This is our example return policy which is everything you need to know about our returns.

Shipping Options

Shipping Options

Sign up for our newsletter

Be the first to know about our special offers, news, and updates.

Email Address

Sign Up

Main Menu

Home

Shop All

Latest Arrivals

Best Sellers

For You

Blog

About

Company

About Us

Careers

Press

Social Media

Instagram

Tik Tok

Facebook

Twitter

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# LOGIN PAGE FOR EMPLOYEES

THE GAME

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## Login

User Name:

Password:

[Forgot password?](#)

**Sign In**

Log in using Azure AD account

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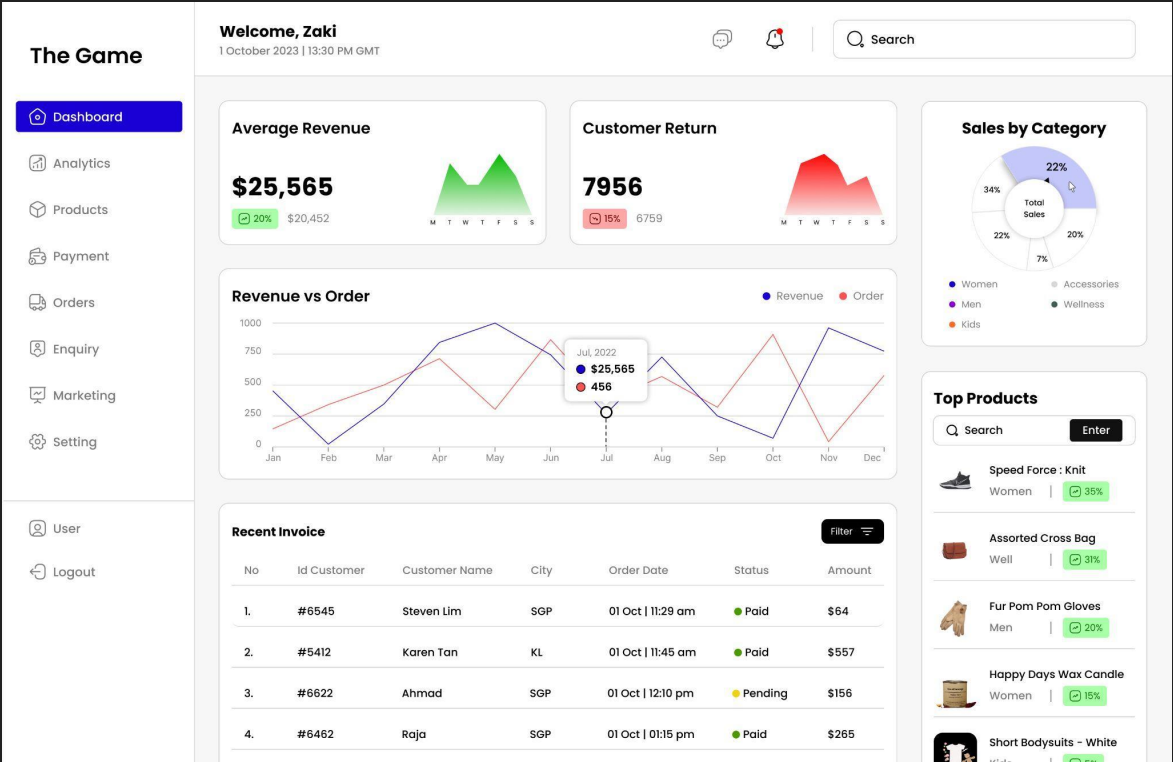
## Verify your Identity

Enter the 6 digit code in your authenticator app:

[Use FIDO2 security key instead?](#)

**Continue**

Complete the MFA process



THANK YOU

Q&A