Spair Bowling ALley REport

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# Business Description

Spair Alley is a new bowling alley founded in the Newcastle area. The business offers arcade games, bowling, food and drinks, and is for all ages and families. After being open for a month, the business is struggling with keeping track of all the customers and sessions. The aim of the database for Spair Alley is to manage a booking system that both staff and customers can use to book a bowling session. The database will need to hold customers information and allow staff to view all sessions that customers have created and to create sessions for individuals over the phone. The database is designed to support all these needs, and a console application is used to interact with the database securely. It also should allow users to login and create an account to book a session. The staff or admin should also be able to delete users from the database, all users’ sessions should also delete with it.

# Planning and Development

The structure of a database is an important part of designing and creating databases, the key factors are understanding what transactions are needed and what data needs to be stored. Spair Alley’s database is made up of two tables, Users and Sessions, Users stores all the customers information including: first name, last name, age, email, phone number, a hashed password, and a secret code for the two factor. Sessions is the bookings that are made, it includes: date and time, group amount, customer, and three nullable fields: first name, last name, phone number. The nullable fields are included for the reason of an admin entering a session for a user, it allows over the phone bookings to still be made without needing to create an account. For users logged in they don’t get the option to enter data into the nullable fields, allowing for those columns to be nullable. In sessions, the column customer is a foreign key that links to the users table, it ensures that the staff know what user booked the session and all the information they need to contact them.

# Security Measures

Security is a important part of a database especially when handling Personal Identifiable Information, for this reason, security measures are outlined to ensure legal implications are followed and all data is secure from unauthorised individuals. Spair Alley has multiple security measures put in place to ensure no data is accessible to unauthorised individuals. Hashing is an important strategy to help with security, in Spair Alley the user’s password is hashed and can never be unhashed, this allows for an extra layer of security ensuring that if the database was breached, the password would still be secure. N-Teir Layering is a technique very commonly used in industry, it separates the application into multiple layers, in Spair Alley the database is separate to the console application, this helps stop attackers from gaining access to everything if they attack a server. With N-Teir architecture included, if the console application was to be compromised by attackers, they still wouldn’t have access to the database server. Two Factor authentication is a commonly used technique when logging into or creating accounts. It adds an extra layer of security, ensuring that the person connecting is who they say they are. It works by giving the customer a QR Code to scan when there creating an account and they use an authentication app like Google Authentication which will give them an OTP (One time passcode) which they enter into the console. This makes it more difficult for unauthorized individuals because they would need to compromise the customers phone to access their account.

To access a database a connection string is needed, it includes the password, username, IP and database name to connect to it. Storing this into your source code is a huge vulnerability because if anyone gained access to that code, they could effortlessly access the database. Spair Alley uses aws secrets manager to overcome this issue, when the connection string is needed it receives the aws credentials, that are store in the computers environment and requests the secrets which are then injected into the connection string, this way all credentials are removed from the source code. Using a secrets manager instead of just environmental variables allows the request to be monitored and analysed to ensure unauthorized individuals aren’t requesting the secrets. Input validation is incredibly important in industry, it checks the user’s inputs and if it’s a valid response. Parametrised queries is also an important security measure which ensures that queries can’t be SQL injected which could allow unauthorised individuals to access your database. Ensuring that all PII is securely stored and handled is important for both ethical and legal reasons, if PII wasn’t secured properly it could lead to people not trusting the business or the business being fined or even shutdown.

# Technological Analysis

## Context

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## Vulnerabilities

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## Technology Used

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## Industry Standards

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