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Music oriented e-commerce platform

Distributed Systems project

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Author’s declaration of originality

I hereby certify that I am the sole author of this thesis. All the used materials, references to the literature and the work of others have been referred to. This thesis has not been presented for examination anywhere else.

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1 Introduction

At the moment there is no proper music oriented central web application to allow artists to sell physical and digital copies of their music along with all types of band merchandise without a third party label hosting the product catalogue for them. Bandcamp is the closest to it but lacking in design, lacking in features along with censorship issues.

Artists usually get around that by selling their product on their own but if they do decide to do that it usually ends up with their products being listed on facebook, telegram or some very simplistic and visually unpleasant static webpages. These webpages don’t usually support actually paying with a credit card and buying something means filling a form which then just lets the vendor know usually via email with the body of the email being the description what is the buyer is interested in.

Same band members and bands from the same country with the similar genre ending up under different labels also makes band discovery cumbersome.

There are other problems with the existing music oriented web applications but in the confines of this course the author will be limiting the work to laying the groundwork for what is to be a central music oriented platform that is not just an e-commerce application but one that implements and improves on features from other platforms.

To lay the necessary foundation, the author will design an Entity-Relationship Diagram, establish a database, and develop application layers according to the lecturer's specifications.

2 Overview

2.1 MVP features

The features implemented during the course:

- User can create artist page
- Artist can create act page or be added as a member to an act
- Acts can create product listings
- Anyone can add products to shopping cart
- Posting the shopping cart will add pending order to the act

3 Analysis

3.1 Acts and artists

Since any band member can be considered an artist there will have to be an artist page and artists can create or be added to an act. At the moment the act will be considered the central entity in dealing with the orders since the main purpose is to cut out the middle man aka labels. The act and artist pages will also serve as a type of encyclopaedia containing information on which acts an artist belongs to and what band members an act contains.

Acts may also align with one or multiple genres.

Since the application is centered around users there will have to be authentication and authorization based on the user role in certain activities involving acts and their product listings. This part will fundamentally be implemented using the ASP.NET Core Identity library with the act-artist logic built around it.

3.2 E-Commerce platforms

Considering the fact that the application to an extent is an e-commerce application which is definitely not the first instance, there might be frameworks and libraries to implement parts of the application without needing to create everything from scratch.

This chapter involves analysis of some of the most popular e-commerce platforms – NopCommerce, Virto Commerce and SimplCommerce:

3.2.1 nopCommerce

Generally proposed as the middle ground for simplicity and flexibility. However, it is primarily designed for monolithic applications and customizing nopCommerce to fit into a headless API scenario might require significant effort. The api plugin is also available but at a cost of 990 USD. The removal of NopCommerce watermark at the footer also comes at a fee of 250 USD. [1]

3.2.2 Virto Commerce

More appropriate for large-scale enterprises and while powerful and modular, it might introduce unnecessary overhead for the purposes of this project.

The most complex but seemingly the most appropriate for the project regarding other properties. Virto commerce is designed with microservices in mind so it basically stands as a separate container which will be communicated with by the main C# backend module. Virto Commerce however has limitations on its open source license including but not limited to showing their logo and an upper limit on revenue. The exact prices will vary and a quota will be given following a consultation. [2]

3.2.3 SimplCommerce

Lightweight, easier to understand and customize than the others. However it seems to be more orientated towards a monolithic razorpages design. [3]

3.2.4 Conclusion

Each platform comes with a learning curve, overhead, loss of fine grained control, unnecessary complexity, licensing limitations (including watermarks and fees) and a dependency on a 3rd party solution. The platforms will most likely pay off if it is necessary to quickly provide multiple different store platforms for multiple clients at a fast rate but regarding this project the author deems the implementation of any of these platforms suboptimal.

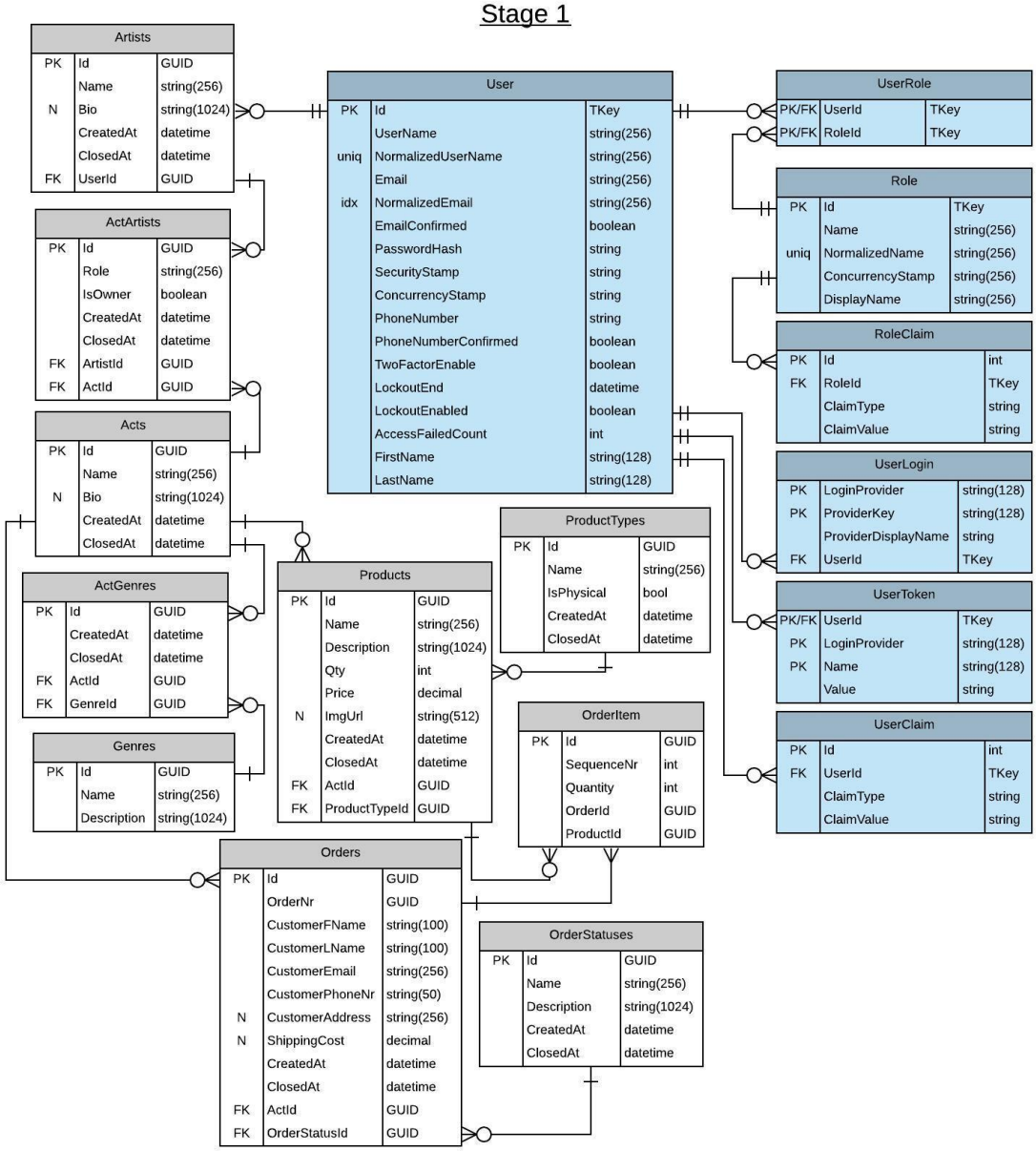
3.3 General flow

User creates an artist profile. Artist profiles can be added to acts – solo artist will create an act with name as the artist name. The band members can manage product listings, at this stage with no permission fine tuning. Everyone can see the product listings and add them to the shopping cart which will be kept in Session- or BrowserStorage. When the shopping cart is posted a pending order appears on the act admin panel – not to be seen by customers. Order status can be changed.

4 ERD

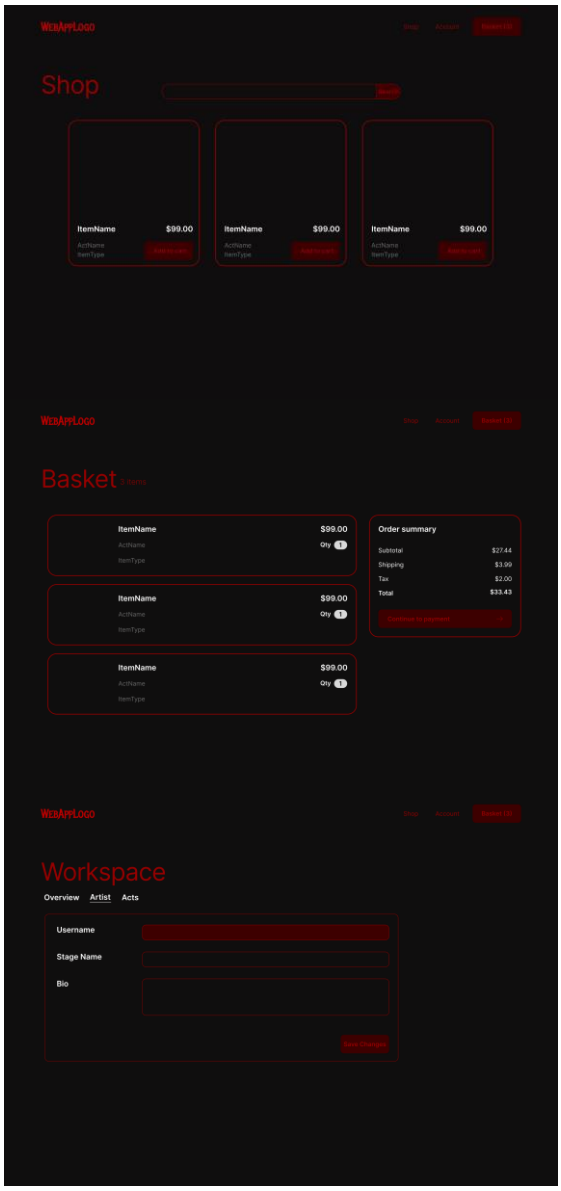
The entities and properties will be named as what entity framework would name them by default.

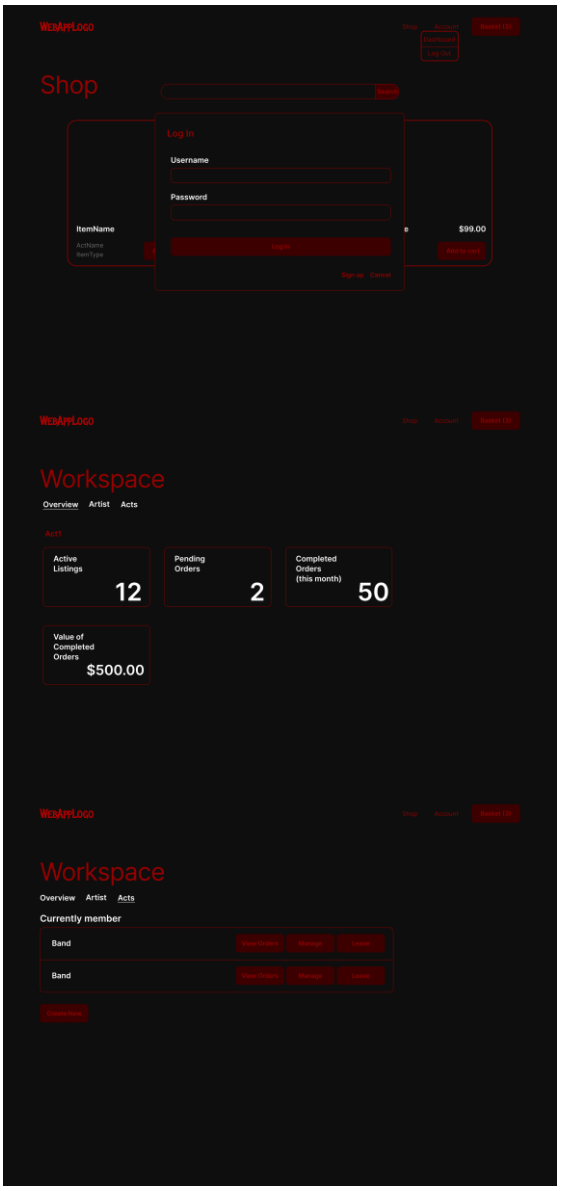
Stage 1



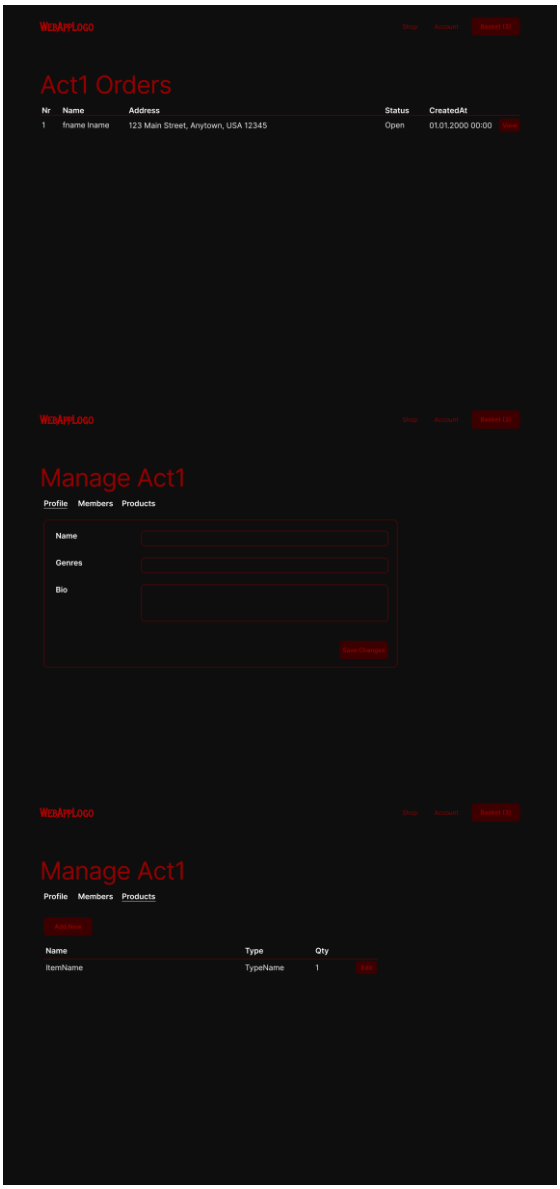
5 UI prototype

Since the initial version will be orientated towards the underground scene the color scheme will reflect that.





WebAppLogo
Shop
Account
Basket (3)
Workspace
Overview
Artist
Acts
Currently member
Band
Band
Create New
Create Act
Name
Genres
Bio
Create
Cancel


WebAppLogo
Shop
Account
Basket (3)
Act1 Orders
Nr
Name
Address
Status
CreatedAt
1
fname lname
123 Main Street, Anytown, USA 12345
Open
01.01.2000 00:00
View

WebAppLogo
Shop
Account
Basket (3)
Act1 O
Nr
Name
1
fname lname
00:00
View
Order nr 1
Order Nr
Customer Name
Customer Email
Customer Phone Nr
Destination Address
CreatedAt
Nr
Product
Qty
Price
1
ItemName
1
$99.00
2
ItemName
2
$198.00
Shipping
$20.00
Total
$297.00
Close

WebAppLogo
Shop
Account
Basket (3)
Manage Act1
Profile
Members
Products
Name
Genres
Bio
Save Changes

WebAppLogo
Shop
Account
Basket (3)
Manage Act1
Profile
Members
Products
Current Members
Username
Kick
Username
Kick
Add New

WebAppLogo
Shop
Account
Basket (3)
Manage Act1
Profile
Members
Products
Add New
Name
Type
Qty
ItemName
TypeName
1
Edit

WebAppLogo
Shop
Account
Basket (3)
Manage Act1
Profile
Add New
Name
ItemName
Edit Item
Name
Type
Qty
Price
Remove
Save Changes

6 Future developments

6.1 Additonal considerations

Taking bandcamp into consideration one issue that can be outlined is censorship. This is a problem that mainly plagues the underground scenes but there are acts with over a million view singles on youtube that are not allowed to deal with bandcamp or spotify because of far right political undertones of the lyrics. There are also examples of artists deemed too extreme being banned from these platforms.

The problem with labels is that they take their cut and artists that are not huge do not wish to do that and getting a deal with a good label might be impossible. However there is use in labels that is in addition to handling the commerce side of things - they might also handle merchandise, cassette and vinyl pressing. Since they have their role in the music industry that artists find use in, integration of labels into the platform can be considered.

The main purpose of this project in its entirety simply put is to centralize features of different music oriented web applications into a single platform and improve on those features.

These features being mainly:

- providing the ability to sell both physical and digital products having no label inbetween
- easing the discovery of acts by integrating a type of database to allow finding of projects according to their country, members or genre
- have act pages that provide information about the upcoming events, tours or releases
- provide a way to communicate with the artists in this central environment
- provide a way to seek out labels in case the bands themselves don’t want to handle the pressing of vinyls, cassettes, etc.

6.2 Short-Term developments

Future developments are most likely going to be done in different stages but at the moment the future developments can be listed as follows:

- Actual integration with a payment platform to process the payments and reflecting the status on the application – this would also include handling different countries and VATs
- Optional comment section on product listings
- Add additional users to act that are not actually a part of the act lineup – backstage crew, product handlers etc
- Ability for artists to design artist page and act page more precisely
- Saved shopping carts and payment information for customers' users including but not limited to possibilities of handling different destination addresses
- Upcoming events/announcements for act – possibly artist
- Optionally allow customers to listen to demos – audio streaming

6.3 Long-term possibilities

At the moment this is not planned to be a social media or label platform but the possibility exists and will therefore be listed:

- Act general posts
- General forum
- Labels subsection – to list acts under labels, contacting for presses and printing and in case the artists don't want to handle the merchandise handling themselves – underground labels also have web applications with subpar design which might be solved
- Copy instance of similar but different design for non underground projects with socially acceptable censoring

- Message anyone with the possibility of blocking
- Contact list

7 References

[1] “Free and open-source eCommerce platform. ASP.NET Core based shopping cart. - nopCommerce,” [Online]. Available: https://www.nopcommerce.com/en.

[2] “Virto Commerce - B2B Innovation Platform for Enterprises,” [Online]. Available: https://virtocommerce.com/.

[3] “Home - SimplCommerce - A simple, cross platform, modularized ecommerce system built on .NET Core,” [Online]. Available: https://www.simplcommerce.com/.