University of British Columbia, Vancouver
Department of Computer Science

CPSC 304 Project Cover Page

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Group Number: 30

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

Project:

Influxity - A Personal Data Monetization Platform

“Empower Your Data; Unlock Its Value”

Project Description:

A web application that allows users to monetize their personal data, providing transparency and financial compensation when companies utilize the provided user data; the users remain anonymous throughout the entire process. Companies can use the platform to find users with relevant personal data and offer monetary compensation for access to this data. Users can browse through a list of companies looking for specific data, view how much each company is offering per person, and consider the quality of their data as a factor. If users have relevant data to provide, they can click or tap on the listing to begin the process of uploading the required data. Once the user has sent the relevant data, the company has the opportunity to partially review the anonymized data for quality control and, if deemed sufficient, can accept it and pay the anonymized user. The system includes an AI-based component (or a basic version, if AI is not feasible) to provide company recommendations for users based on their listed preferences and, if available, user history. Additionally, the component aids in optimizing data pricing and provides insights for both users and companies. All users receive a transparency report after each successful data transaction, where they can see the information of the company that accepted their data, how much they were paid, what the company plans to do with the data, notes/feedback, etc.

Domain: *(Data Flow / Privacy / **AI **/** FinTech)*

The domain of the application is an intersection between data privacy, data monetization, and financial technology for businesses and users to use. In its essence, this platform empowers users to monetize their personal data with complete anonymity, transforming their data into a valuable asset. Simultaneously, it provides companies with a rich source of user data they seek. The application revolutionizes data transactions by ensuring transparency and fair compensation, bridging the gap between data providers and seekers in an equitable and secure manner.

The database for this project models various aspects of its domain, including:

- **User Management:** Storing anonymized user profiles, preferences, and consent history.
- **Company Management:** Storing company profiles and their data requests.
- **Data Requests and Transactions:** Managing data requests from companies, user consents, and the details of data transactions.
- **Compensation:** Tracking user compensation for data usage and managing payment records.
- **AI Matching and Insights:** Storing AI-generated matches between data requests and user data, optimizing data pricing, and providing insights.

- **Transparency Reports:** Generating and storing reports on how user data has been utilized, the compensation received, and the intended use by companies.

Some examples of real-life situations:

Marketing Research: A marketing company wants to understand consumer behavior in a specific demographic. They use the platform to request data from users in that demographic, offering compensation for access to their anonymized browsing and purchase history.

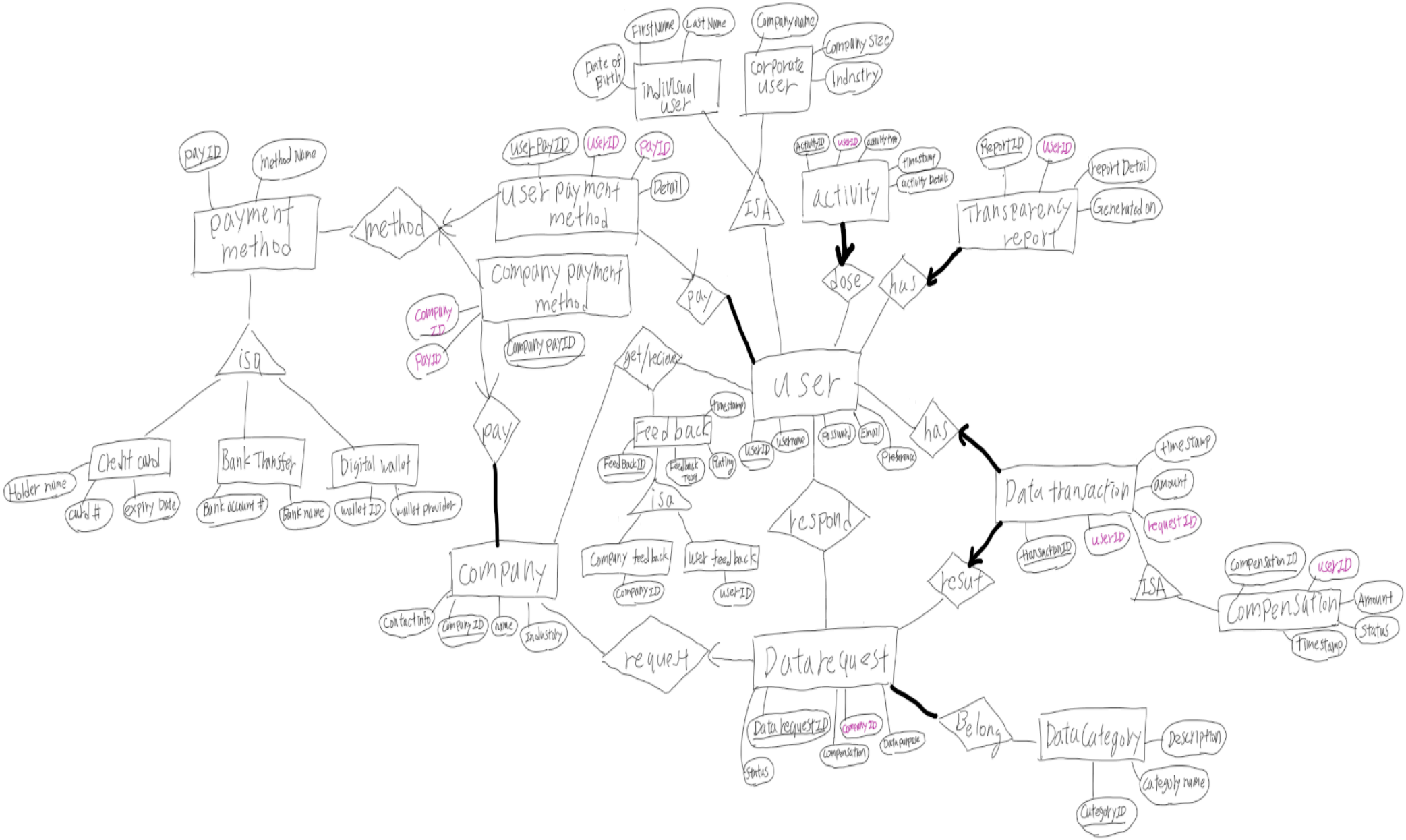
Product Development: A tech company is developing a new smart device and needs user data to improve its design and functionality. They request data related to user interaction with similar devices, offering monetary compensation for the insights provided by the anonymized data.

Database Specifications:

Functionality:

- **Users**: Register, create profiles, manage personal data, and set preferences for data sharing.
- **Companies**: Enable companies to register, create profiles, and submit data requests.
- **Data Requests**: Allow companies to post requests for user data, specifying the data required, purpose, and offered compensation.
- **Data Transactions**: Log all data transactions, including user consent and compensation details; this ensures transparency in how user data is shared and handled.
- **Compensation History Management**: Track user earnings from data sharing and manage compensation records.
- **AI Matching/Insights (*Not finalized*)**: Use AI to provide users with recommendations for companies looking for similar data to what was provided by the user in the past. It may also showcase potential earnings depending on matches.

ER Diagram:


payID
Method Name
payment method
method
User PayID
UserID
PayID
User payment method
Detail
Company payment method
Company ID
PayID
Company payID
isa
Credit card
Holder name
card #
expiry Date
Bank Transfer
Bank account #
Bank name
Digital wallet
wallet ID
wallet provider
pay
First Name
Last Name
Date of Birth
individual user
Company name
Company size
Industry
corporate user
ISA
pay
get/recieve
Feedback
timestamp
FeedBackID
Feedback Text
Rating
isa
Company feedback
CompanyID
User feedback
UserID
Company
Contact info
CompanyID
name
Industry
request
ActivityID
UserID
activity type
timestamp
activity Details
activity
close
has
ReportID
UserID
report Detail
Generated on
Transparency report
User
UserID
Username
Password
Email
Preference
has
respond
result
Data transaction
timestamp
amount
requestID
TransactionID
UserID
ISA
Compensation
CompensationID
UserID
Amount
Status
Timestamp
Data request
Data requestID
Company ID
Compensation
Data purpose
Status
Belong
Data Category
Description
Category name
CategoryID

Entities: ***(A verbal understanding of the ERD)***

(Anything that has a ~~*strikethrough*~~ is not guaranteed. The current ERD provided above reflects on this by not including them)

- **User** (UserID: PK, Username, Password, Email, Preferences)
- **Company** (CompanyID: PK, Name, Industry, ContactInfo)
- **DataRequest** (RequestID: PK, CompanyID: FK, DataPurpose, Compensation, Status)
- **DataTransaction** (TransactionID: PK, UserID: FK, RequestID: FK, Amount, Timestamp)
- **Compensation** (CompensationID: PK, UserID: FK, Amount, Status, Timestamp)
- **TransparencyReport** (ReportID: PK, UserID: FK, ReportDetails, GeneratedOn)
- ~~***AIMatch*** *(MatchID: PK, RequestID: FK, UserID: FK, MatchScore, Timestamp)*~~
- ~~***AIInsight*** *(InsightID: PK, UserID: FK, InsightDetails, GeneratedOn)*~~
- **UserActivity** (ActivityID: PK, UserID: FK, ActivityType, ActivityDetails, Timestamp)
- **DataCategory** (CategoryID: PK, CategoryName, Description)
- **UserFeedback** (FeedbackID: PK, UserID: FK, CompanyID: FK, FeedbackText, Rating, Timestamp)
- **UserPaymentMethod** (UserPaymentMethodID: PK, UserID: FK, PaymentMethodID: FK, AccountDetails)
- **CompanyPayment** (CompanyPaymentID: PK, CompanyID: FK, PaymentMethodID: FK, PaymentDetails)
- **PaymentMethod** (PaymentMethodID: PK, MethodName)

ISA Relationship for PaymentMethod:

- **PaymentMethod** can be specialized into **CreditCard**, **BankTransfer**, and **DigitalWallet**.
    - **CreditCard** (PaymentMethodID: PK, CardNumber, ExpiryDate, CardHolderName)
    - **BankTransfer** (PaymentMethodID: PK, BankAccountNumber, BankName)
    - **DigitalWallet** (PaymentMethodID: PK, WalletID, WalletProvider)

ISA Relationship for Users:

- **User** can be specialized into **IndividualUser** and **CorporateUser**.
    - **IndividualUser** (UserID: PK, FirstName, LastName, DateOfBirth)
    - **CorporateUser** (UserID: PK, CompanyName, Industry, CompanySize)

ISA Relationship for Feedback:

- **Feedback** can be specialized into **CompanyFeedback** and **UserFeedback**.
    - **CompanyFeedback** (FeedbackID: PK, CompanyID: FK)
    - **UserFeedback** (FeedbackID: PK, UserID: FK)

Total Relationships:

- **User - DataRequest**: Many-to-Many (User can choose multiple data requests, and data requests can be fulfilled by multiple users)
- **Company - DataRequest**: One-to-Many (Company can create multiple data requests)
- **User - DataTransaction**: One-to-Many (User can have multiple data transactions)
- **DataRequest - DataTransaction**: One-to-Many (Data request can result in multiple data transactions)
- **User - Compensation**: One-to-Many (User can have multiple compensations)
- **User - TransparencyReport**: One-to-Many (User can have multiple reports)
- **DataRequest - AIMatch**: One-to-Many (Data request can have multiple AI matches)
- ~~***User - AIMatch**: One-to-Many (User can be matched with multiple data requests)*~~
- ~~***User - AIInsight**: One-to-Many (User can receive multiple AI insights)*~~
- **User - UserActivity**: One-to-Many (User can have multiple activities)
- **DataRequest - DataCategory**: Many-to-Many (Data requests can belong to multiple categories, and categories can have multiple data requests)
- **User - UserFeedback**: One-to-Many (User can provide feedback to multiple companies)
- **Company - UserFeedback**: One-to-Many (Company can receive feedback from multiple users)
- **User - UserPaymentMethod**: One-to-Many (User can have multiple payment methods)
- **Company - CompanyPayment**: One-to-Many (Company can have multiple payment methods)
- **PaymentMethod - UserPaymentMethod**: One-to-Many (A payment method can be linked to multiple user payment methods)
- **PaymentMethod - CompanyPayment**: One-to-Many (A payment method can be linked to multiple company payments)

Application Platform:

- **Backend**: PHP, department-provided Oracle (SQL*Plus), and *Python* ***(only if needed)***.
- **Frontend**: HTML and CSS.
- **AI Integration**: ***If implemented***, we can make use of an API or use Tensor-Flow/scikit-learn
- **Version Control**: Git (use repositories provided by the course)

Additional Features (Only if time permits):

- **Interactive User Dashboard**: Users can see all the recommended companies to provide data for, granted data history, compensation history, and AI-generated insights.
- **Company Dashboard**: Companies can submit data requests, view granted user data (without revealing the user), and manage compensations/payments.
- **Security**: Implement robust encryption to ensure data integrity and security.

- **Notification System**: Notify users of new data requests and updates on existing requests.
- **Analytics**: Provide analytics for users on data usage trends and potential earnings.
- **Referral Program**:Implement a referral program where users can invite others to join the platform and earn rewards for successful sign-ups and data transactions.