### Technical Design Document

#### Project: Band Gear Exchange Forum

#### Course: Database Systems and Web Programming 2024 Summer

#### Overview

The Band Gear Exchange Forum is a web-based service that allows users, referred to as “providers,” to create and accept offers for exchanging band equipment. This document outlines the functionalities, user types, and operations of the service.

#### User Types

1. **Registered Providers**: Users who have created an account and logged in.
2. **Unregistered Providers**: Users who browse the service without logging in.

#### System Functions

The system maintains, searches, suggests, and sorts exchange offers for band equipment. Users interested in a product can send questions to the provider via email.

#### Exchange Process

* **Offer Creation**: Providers can create offers to exchange band equipment.
* **Offer Acceptance**: Providers can accept any exchange offers.
* **Mutual Agreement**: A successful exchange requires mutual acceptance of each other’s offers. Providers can modify their offers to better suit the exchange.

#### Communication

Questions and answers about the band equipment are exchanged via email or phone between the parties involved.

#### Financial Transactions

No money is exchanged through the service. Any financial arrangements are made separately, outside the service, via phone or email.

#### User Operations via Web Browser

Providers can perform the following operations using their web browsers:

1. **Create Offers**: Registered providers can create new exchange offers.
2. **Browse Offers**: Both registered and unregistered providers can browse existing offers.
3. **Accept Offers**: Registered providers can accept offers made by others.
4. **Modify Offers**: Providers can modify their offers to better suit the exchange.
5. **Send Inquiries**: Interested users can send inquiries to providers via email.

This document provides a high-level overview of the Band Gear Exchange Forum’s functionalities and user interactions. For detailed technical specifications and implementation details, refer to the system’s technical documentation.

##### Tarjoajan rekisteröityminen:

##### Tarjoaja kirjaa vaihtotarjouksensa tarjousryhmän

##### tarjouslistoille, esim:

##### - soittimet

##### - vahvistimet

##### - mikit

##### - Studiokamat

##### jne.

##### Tarjoaja syöttää tarjoamansa vaihdantatuotetiedot

##### vaihtotarjouksiin seuraavasti:

##### - määrittää vaihtotarjouksen alkamis- ja päättymisajankohdan

##### sekä asettaa kompensaatio- ja toimitus- yms. toiveet.

##### - ylläpitää vaihtotarjoustaan, mm. tilatietoja ja

##### sovittaa sisältöä kaupantekijäisiksi

##### - poistaa lopuksi toteutuneeseen laitevaihtoon liittyvän

##### tarjouksensa.

##### Järjestelmä ylläpitää, etsii ja ehdottaa sekä

##### lajittelee tuotteiden vaihtotarjouksia.

##### - bändilaitelistojen luonti ja ylläpito

##### - ylläpitää ja tulostaa avoimet tarjoukset-listaa,

##### - Tilatietoa ylläpidetään listalla

##### - listaukset tarjoajittain tilan, tarjousryhmän ja

##### päivämäärien sekä tarjoussisällön perusteella

##### Järjestelmä muuttaa vaihtokauppaan johtaneidenen tarjouksien tilan

##### toteutuneeksi, mutta ei poista tarjouksia.

##### Tietokannan tietokohteet:

##### Tarjoajan tiedot

##### - Henkilön tunnus

##### - Nimi

##### - Nimimerkki

##### - Salasana

##### - Email

##### - Puhelinnumero (näkyy vain rekisteröityneille)

##### Muu tarjouksiin liittyvä asiakastieto

##### Tarjousryhmä taulu:

##### - Tarjousryhmäkoodi

##### - Tarjousryhmän nimi

##### Tarjouksen sisältö, taulu:

##### - Tarjouksen tunnus

##### - Tarjouksen tila

##### - laiterivien määrä

##### - Laiterivin tiedot:

##### - Laitteen tarjottu määrä

##### - Laitteen tarjoushinta

##### - Kommentit ja muut lisätiedot

##### Vaihtotarjous ("Ostotarjous"), taulu

##### - Tarjouksen tunnus

##### - Tarjouksen tilatieto

##### - Tarjoajan tunnus

##### - Tarjoajan yhteystiedot

##### - Tarjoajan toiveet ja referenssit

##### - Tarjouksen alkamis- ja päättymispäivä

##### - Tarjoustuotteiden rivien lkm

##### - Tarjottujen laitteiden tunnukset

##### - Laitteiden toimitustapa

##### - Vaihtotoiveet: toivotut tuotteet

##### - Muut tarjoukseen liittyvät tiedot

##### Laiteryhmä, taulu

##### - Laiterymäkoodi ja ryhmän nimi

##### - Laiteryhmän nimi

##### Laite, taulu

##### - Laitteen koodi

##### - Laitteen nimi ja tyyppitiedot, esim. vuosimalli

##### - Tarkennettu kuvaus, kunnon, värin, soundin yms.

##### - Vintage-tuotteen elämäntarina (optio)

##### - Tarjottu määrä

##### - Tuotteen alkuperäinen hinta

##### - Kommentit ja muut lisätiedot

##### Historiatilastot, näkymät:

##### Vaihdannan vuosi ja kk-tilasto tuoteryhmittäin

##### - Tarjoajatilasto ja Käyttäjälista

### Technical Design Document

#### Project: Band Gear Exchange Forum

#### Course: Database Systems and Web Programming 2024 Summer

#### Overview

The Band Gear Exchange Forum is a web-based service that allows users, referred to as “providers,” to create and accept offers for exchanging band equipment. This document outlines the functionalities, user types, and operations of the service.

#### User Registration

Providers can register and list their exchange offers in various categories, such as:

* Instruments
* Amplifiers
* Microphones
* Studio Equipment
* Etc.

#### Offer Details

Providers input the details of their exchange offers as follows:

* Define the start and end dates of the exchange offer.
* Set compensation and delivery preferences.
* Maintain the status of their exchange offers and adjust the content as needed.
* Remove offers once the exchange is completed.

#### System Functions

The system maintains, searches, suggests, and sorts exchange offers for band equipment. It includes:

* Creation and maintenance of band equipment lists.
* Maintenance and printing of open offers lists.
* Status tracking of offers.

#### Listing and Status Management

* Lists offers by provider, status, category, date, and content.
* Changes the status of offers that lead to exchanges to “completed” but does not delete them.

#### Database Entities

##### Provider Information

* **User ID**: Unique identifier for the provider.
* **Name**: Provider’s name.
* **Nickname**: Provider’s nickname.
* **Password**: Provider’s password.
* **Email**: Provider’s email address.
* **Phone Number**: Visible only to registered users.

##### Offer-Related Customer Information

###### Offer Group Table

* **Offer Group Code**: Unique code for the offer group.
* **Offer Group Name**: Name of the offer group.

###### Offer Content Table

* **Offer ID**: Unique identifier for the offer.
* **Offer Status**: Status of the offer.
* **Number of Equipment Rows**: Number of equipment rows in the offer.
* **Equipment Row Details**:
* **Quantity Offered**: Quantity of the equipment offered.
* **Offer Price**: Price of the equipment offered.
* **Comments and Additional Information**: Any additional details about the offer.

###### Exchange Offer Table (“Purchase Offer”)

* **Offer ID**: Unique identifier for the offer.
* **Offer Status**: Status of the offer.
* **Provider ID**: Unique identifier for the provider.
* **Provider Contact Information**: Contact details of the provider.
* **Provider Preferences and References**: Preferences and references of the provider.
* **Start and End Dates**: Start and end dates of the offer.
* **Number of Product Rows**: Number of product rows in the offer.
* **Offered Equipment IDs**: IDs of the offered equipment.
* **Delivery Method**: Method of delivery for the equipment.
* **Exchange Preferences**: Desired products for exchange.
* **Additional Offer Information**: Any other relevant details about the offer.

###### Equipment Group Table

* **Equipment Group Code**: Unique code for the equipment group.
* **Equipment Group Name**: Name of the equipment group.

###### Equipment Table

* **Equipment Code**: Unique code for the equipment.
* **Equipment Name and Type Details**: Name and type details of the equipment, such as model year.
* **Detailed Description**: Detailed description of the equipment, including condition, color, sound, etc.

This document provides a high-level overview of the Band Gear Exchange Forum’s functionalities and user interactions. For detailed technical specifications and implementation details, refer to the system’s technical documentation.

### Database and Conceptual Model Documentation

##### Introduction

#### The following sections provide detailed descriptions of each table and their relations.

##### Database Schema

###### 1. Bidder Table

The Bidder table stores information about users who participate in the bidding system.

* **id**: A unique identifier for each bidder (Primary Key).
* **bidderName**: The name of the bidder (must be unique).
* **password**: The password for the bidder’s account (optional).
* **admin**: A boolean flag indicating if the bidder has administrative privileges (default is FALSE).

CREATE TABLE Bidder

(

id SERIAL NOT NULL PRIMARY KEY,

bidderName VARCHAR(30) NOT NULL UNIQUE,

password VARCHAR(20) DEFAULT NULL,

admin BOOLEAN DEFAULT FALSE

);

##### 2. BidGenre Table

The BidGenre table categorizes the types of bids.

* **id**: A unique identifier for each bid genre (Primary Key).
* **bidGenre**: An integer representing the genre.
* **bidder**: A foreign key referencing the Bidder table.
* **bidGenreHeader**: A unique header for the bid genre.

CREATE TABLE BidGenre

(

id SERIAL NOT NULL PRIMARY KEY,

bidGenre INT,

bidder INT,

bidGenreHeader VARCHAR(100) NOT NULL UNIQUE,

FOREIGN KEY(bidder) REFERENCES Bidder(id)

);

##### 3. BidHeader Table

The BidHeader table contains information about individual bids.

* **id**: A unique identifier for each bid header (Primary Key).
* **initialBidder**: A foreign key referencing the Bidder table.
* **bidGnre**: A foreign key referencing the BidGenre table.
* **bidHder**: A unique header for the bid.
* **numberOfBids**: The number of bids made.
* **startedTime**: The timestamp when the bid started.

CREATE TABLE BidHeader

(

id SERIAL NOT NULL PRIMARY KEY,

initialBidder INT,

bidGnre INT,

bidHder VARCHAR(100) NOT NULL UNIQUE,

numberOfBids INT NOT NULL,

startedTime TIMESTAMP NOT NULL,

FOREIGN KEY(initialBidder) REFERENCES Bidder(id),

FOREIGN KEY(bidGnre) REFERENCES BidGenre(id)

);

##### 4. BidContent Table

The BidContent table stores the content of individual bids.

* **id**: A unique identifier for each bid content (Primary Key).
* **bidderID**: A foreign key referencing the Bidder table.
* **bidHead**: A foreign key referencing the BidHeader table.
* **bidderName**: The name of the bidder.
* **bidContent**: The content of the bid.
* **editedTime**: The timestamp when the bid was last edited.

CREATE TABLE BidContent

(

id SERIAL NOT NULL PRIMARY KEY,

bidderID INT,

bidHead INT,

bidderName VARCHAR(30) NOT NULL,

bidContent VARCHAR(500) NOT NULL,

editedTime TIMESTAMP NOT NULL,

FOREIGN KEY(bidHead) REFERENCES BidHeader(id)

);

##### 5. BidExchange Table

The BidExchange table manages the exchanges between bidders.

* **id**: A unique identifier for each bid exchange (Primary Key).
* **salesBidder**: A foreign key referencing the Bidder table (initial bidder).
* **purchaseBidder**: A foreign key referencing the Bidder table (purchasing bidder).
* **equipmentOffer**: A description of the equipment offered.
* **equipmentRequested**: A description of the equipment requested.
* **agreedDeal**: A boolean flag indicating if the deal is mutually agreed upon (default is FALSE).
* **dealTimestamp**: The timestamp when the deal was made.

CREATE TABLE BidExchange

(

id SERIAL NOT NULL PRIMARY KEY,

salesBidder INT NOT NULL,

purchaseBidder INT NOT NULL,

equipmentOffer VARCHAR(100) NOT NULL,

equipmentRequested VARCHAR(100) NOT NULL,

agreedDeal BOOLEAN DEFAULT FALSE,

dealTimestamp TIMESTAMP NOT NULL,

FOREIGN KEY(salesBidder) REFERENCES Bidder(id),

FOREIGN KEY(purchaseBidder) REFERENCES Bidder(id)

);

The relationships between the tables are as follows:

* **Bidder**: Represents users in the system. Each bidder can create multiple bid genres and bid headers.
* **BidGenre**: Categorizes bids and is linked to a specific bidder.
* **BidHeader**: Contains the main information about a bid, including the initial bidder and the genre of the bid.
* **BidContent**: Stores the detailed content of each bid and is linked to both the bidder and the bid header.
* **BidExchange**: Manages the exchanges between bidders, including the details of the equipment offered and requested.

CREATE TABLE Bidder

(

  id SERIAL NOT NULL PRIMARY KEY,

  bidderName VARCHAR(30) NOT NULL UNIQUE,

  password VARCHAR(20) DEFAULT NULL,

  admin BOOLEAN DEFAULT FALSE

 );

CREATE TABLE BidGenre

(

  id SERIAL NOT NULL PRIMARY KEY,

  bidGenre INT,

  bidder INT,

  bidGenreHeader VARCHAR(100) NOT NULL UNIQUE,

  FOREIGN KEY(bidder) REFERENCES Bidder(id)

 );

CREATE TABLE BidHeader

(

  id SERIAL NOT NULL PRIMARY KEY,

  initialBidder INT,

  bidGnre INT,

  bidHder VARCHAR(100) NOT NULL UNIQUE,

  numberOfBids INT NOT NULL,

  startedTime TIMESTAMP NOT NULL,

  FOREIGN KEY(initialBidder) REFERENCES Bidder(id),

  FOREIGN KEY(bidGnre) REFERENCES BidGenre(id)

 );

CREATE TABLE BidContent

(

  id SERIAL NOT NULL PRIMARY KEY,

  bidderID INT,

  bidHead INT,

  bidderName VARCHAR(30) NOT NULL,

  bidContent VARCHAR(500) NOT NULL,

  editedTime TIMESTAMP NOT NULL,

  FOREIGN KEY(bidHead) REFERENCES BidHeader(id)

 );

CREATE TABLE BidExchange

(

  id SERIAL NOT NULL PRIMARY KEY,

  salesBidder INT NOT NULL, -- ID of the initial bidder (sales-bidder)

  purchaseBidder INT NOT NULL, -- ID of the bidder making the purchase offer

  equipmentOffer VARCHAR(100) NOT NULL, -- Description of the equipment offered

  equipmentRequested VARCHAR(100) NOT NULL, -- Description of the equipment requested

  agreedDeal BOOLEAN DEFAULT FALSE, -- Indicates if the deal is mutually agreed upon

  dealTimestamp TIMESTAMP NOT NULL, -- Timestamp when the deal was made

  FOREIGN KEY(salesBidder) REFERENCES Bidder(id),

  FOREIGN KEY(purchaseBidder) REFERENCES Bidder(id)

);

--Explanation for table BidExchange:

--salesBidder and purchaseBidder columns store the IDs of the bidders involved in the exchange.

--equipmentOffer describes the equipment offered by the sales bidder.

--equipmentRequested describes the equipment requested by the purchaser.

--agreedDeal indicates whether both parties have agreed on the deal (initially set to FALSE).

--dealTimestamp records the time when the deal was made.

--Remember to adjust the column definitions according to your specific requirements.

--This table will allow bidders to exchange equipment based on their bids.

CREATE VIEW BidGenreList AS

SELECT bg.id, bg.bidGenreHeader, COUNT(bc.id) as count, MAX(bc.editedTime) AS latest

FROM BidGenre bg

LEFT JOIN BidHeader bhr ON (bg.id = bhr.bidGnre)

LEFT JOIN BidContent bc ON (bhr.id = bc.bidHead)

GROUP by bg.id, bg.bidGenreHeader;

CREATE VIEW BidList AS

SELECT bh.id, bh.initialBidder, bh.bidGnre, bh.bidHder,

COUNT(\*) AS count, MIN(bc.editedTime) AS edited,

MAX(bc.editedTime) AS latest

FROM BidHeader bh

LEFT JOIN BidContent bc ON (bh.id = bc.bidHead)

GROUP BY bh.id, bh.bidHder, bh.initialBidder, bh.bidGnre

ORDER BY MAX(bc.editedTime) DESC;