

A6: Indexes, triggers, user functions and population

This artefact was developed with the purpose of determining what the main queries and updates would be made to the database and, from that information, estimate the impact those operations would have on the system. After that analysis, indexes were created in order to improve their performance. Alongside that study, the team also created a set of triggers whose purpose is to enforce certain multi-table constraints and to make certain updates that couldn't otherwise be done using standard operations. Finally, it was also created a set of default data whose purpose is to give an initial population to the database, which is useful for testing purposes.

1. Database Workload

1.1. Tuple Estimation

Relation reference	Relation Name	Order of magnitude	Estimated growth
R01	Administrator	one	no growth
R02	Country	dozens	no growth
R03	Member	tens of thousands	hundreds per day
R04	RequestedTermination	dozens	units per month
R05	Auction	tens of thousands	dozens per day
R06	Category	dozens	no growth
R07	Publisher	hundreds	dozens per week
R08	Language	dozens	no growth
R09	CategoryAuction	tens of thousands	dozens per day
R10	Wishlist	thousands	dozens per day
R11	Bid	hundreds of thousands	hundreds per day
R12	AuctionModification	hundreds	dozens per month
R13	Notification	hundreds of thousands	hundreds per day
R14	NotificationAuction	hundreds of thousands	hundreds per day
R15	Image	hundreds of thousands	hundreds per day
R16	Message	thousands	dozens per day
R17	Comment	thousands	dozens per day

1.2. Frequent Queries

Query reference	SELECT01
Query description	User profile
Query frequency	hundreds per day

```

SELECT *
FROM member, image, comment
WHERE member.idImage = image.id AND member.id = $userID;

SELECT datePosted, liked, text, idParent, idSender, idReceiver, username
FROM comment, member
WHERE comment.idParent = $profileID AND is_removed = false AND comment.idSender =
member.id;

```

Query reference	SELECT02
Query description	Auction page
Query frequency	thousands per day

```

SELECT auction.*, member.username
FROM auction, member
WHERE auction.id = $auctionID AND idSeller = member.id;

SELECT source
FROM image
WHERE idAuction = $auctionID;

```

Query reference	SELECT03
Query description	Current maximum value of auction
Query frequency	tens of thousands per day

```

SELECT max(bidValue)
FROM bid
WHERE idAuction = $auctionID;

```

Query reference	SELECT04
Query description	Search auction
Query frequency	hundreds per day

```

--Search by category
SELECT auction.*, image.source
FROM auction, categoryAuction, category, image
WHERE categoryAuction.idAuction = auction.idAuction AND categoryAuction.idCategory
= category.id AND category.categoryName = $catName AND image.idAuction =
auction.idAuction;

```

```
--Search by language
SELECT auction.\*, image.source
FROM auction, language, image
WHERE auction.idLanguage = language.id AND language.language = $langName AND
image.idAuction = auction.idAuction;
```

```
--Search by fields
SELECT auction.\*, image.source
FROM auction, image
WHERE isbn = $isbn OR author = $author OR title = $title;
```

Query reference	SELECT05
Query description	Notifications
Query frequency	tens of thousands per day

```
SELECT notifications.*
FROM notifications
WHERE idMember = $userID AND is_seen = false;
```

Query reference	SELECT06
Query description	User's complete wishlist
Query frequency	thousands per day

```
SELECT auction.*
FROM auction, wishlist
WHERE wishlist.idBuyer = $userID AND wishlist.idAuction = auction.id;
```

Query reference	SELECT07
Query description	Auctions the user participated
Query frequency	thousands per day

```
SELECT auction.*
FROM auction, bid
WHERE bid.idAuction = auction.id AND bid.idBuyer = $userID;
```

Query reference	SELECT08
Query description	Auctions the user created
Query frequency	thousands per day

```
SELECT auction.*
FROM auction
WHERE auction.idSeller = $userID;
```

Query reference	SELECT09
Query description	Get an image
Query frequency	tens of thousands per day

```
SELECT source
FROM image
WHERE idAuction = $auctionID;
```

1.3. Frequent Updates

Query reference	UPDATE01
Query description	Bid on an auction
Query frequency	thousands per day

```
UPDATE bid
SET bidValue = $newValue, bidDate = now()
WHERE idBuyer = $userID AND idAuction = $auctionID;
```

Query reference	UPDATE02
Query description	Mark a notification as read
Query frequency	hundreds per day

```
UPDATE notification
SET is_seen = TRUE, dateSeen = now()
WHERE idMember = $userID;
```

Query reference	UPDATE03
Query description	Set comment as removed
Query frequency	dozens per day

```
UPDATE comment
SET is_removed = TRUE
WHERE id = $commentID;
```

Query reference	UPDATE04
-----------------	----------

Query description	Update an auction
Query frequency	dozens per day

```
UPDATE auction
SET description = $newDescription
WHERE id = $auctionID;
```

```
UPDATE image
SET idAuction = $auctionID, idAuctionModification = NULL
WHERE idAuctionModification = $modificationID;
```

Query reference	INSERT01
Query description	Create a new user
Query frequency	dozens per day

```
INSERT INTO member (address, age, email, name, password, phone, postalCode,
username, idCountry)
VALUES ($address, $age, $email, $name, $password, $phone, $postalCode, $username,
$idCountry);
```

Query reference	INSERT02
Query description	Create a new auction
Query frequency	dozens per day

```
INSERT INTO auction (author, description, duration, ISBN, title, idPublisher,
idLanguage, idSeller)
VALUES ($author, $description, $duration, $ISBN, $title, $idPublisher,
$idLanguage, $userID);
```

Query reference	INSERT03
Query description	Create a new comment
Query frequency	dozens per day

```
INSERT INTO comment (liked, comment_text, idParent, idSender, idReceiver)
VALUES ($liked, $comment_text, $idParent, $userID, $profileID);
```

Query reference	INSERT04
Query description	Create a new notification
Query frequency	hundreds per day

```
INSERT INTO notification (information, idMember)
VALUES ($information, $idMember);
```

```
INSERT INTO notification_auction (idAuction, idNotification)
VALUES ($idAuction, $idNotification);
```

Query reference	INSERT05
Query description	Wishlist an auction
Query frequency	dozens per day

```
INSERT INTO wishlist (idBuyer, idAuction)
VALUES ($userID, $idAuction);
```

Query reference	INSERT06
Query description	Bid on an auction for the first time
Query frequency	dozens per day

```
INSERT INTO bid (idBuyer, idAuction, bidValue)
VALUES ($userID, $idAuction, $bidValue);
```

Query reference	INSERT07
Query description	Create a message for another user
Query frequency	dozens per day

```
INSERT INTO message (message_text, idSender, idReceiver)
VALUES ($text, $userID, $receiverID);
```

Query reference	INSERT08
Query description	Upload an image
Query frequency	hundreds per day

```
--for users
INSERT INTO image (source)
VALUES ($source);
```

```
--for auctions
INSERT INTO image (source, idAuction)
VALUES ($source, $idAuction);
```

```
--for auction modifications
INSERT INTO image (source, idAuctionModification)
VALUES ($source, $idAuctionModification);
```

Query reference	DELETE01
Query description	Delete an auction modification
Query frequency	dozens per month

```
DELETE FROM auction_modification
WHERE idApprovedAuction = $idAuction;
```

Query reference	DELETE02
Query description	Delete a feedback comment
Query frequency	dozens per month

```
DELETE FROM comment
WHERE id = $idComment;
```

2. Proposed Indices

2.1. Performance Indices

The following indexes were created with the purpose of greatly enhancing the performance of the most frequent queries. By creating indexes, however, there is always the risk of introducing an extra overhead on updates and inserts, as these may change the internal structure of the indexed data. In our specific case, given that our updates are done in different attributes than the ones used for indexing, there should be no need to reorganize the index upon an update. Furthermore, given that most hash indexes are built upon a numerical and sequential primary key, new inserts on those indexes rarely imply collisions, which means that there isn't any reorganization to do. Therefore, our indexes have little to no overhead on insertions and updates, all the while greatly improving the speed of many queries.

Index reference	IDX01
Related queries	SELECT01
Index relation	member
Index attribute	id
Index type	Hash
Cardinality	High
Clustering	No

Query SELECT01 fetches the user profile and is executed many times. Since the user's id is

Justification unique, the cardinality is very high, and thus not a good candidate for clustering. It does not need range query support.

```
CREATE INDEX user_id ON member USING hash (id);
```

Index reference	IDX02
Related queries	SELECT02, SELECT03, SELECT06, SELECT07, SELECT08
Index relation	auction
Index attribute	id
Index type	Hash
Cardinality	Very High
Clustering	No
Justification	Access to auctions happen in many queries, all of which are executed many times. Thus, this access needs to be extremely fast. Since the auction's id is unique, and there are many tuples in the relation, the cardinality is very high, and thus not a good candidate for clustering. It does not need range query support.

```
CREATE INDEX auction_id ON auction USING hash (id);
```

Index reference	IDX03
Related queries	SELECT05
Index relation	notifications
Index attribute	id
Index type	B-tree
Cardinality	Very High
Clustering	No
Justification	There are many tuples in the relation, but we are only interested in fetching a very small subset of those (the ones that are marked as not yet seen). Since the cardinality is very high, clustering shouldn't be used.

```
CREATE INDEX notification_id ON notification USING hash (id) WHERE is_seen = false;
```

Index reference	IDX04
Related queries	SELECT03
Index relation	bid
Index attribute	idBuyer, idAuction
Index type	B-tree
Cardinality	Very High
Clustering	No
Justification	There are many tuples in the relation, but we are only interested in fetching the maximum of them, so we use a B-tree to facilitate the comparisons. Since there is a very high cardinality and a very rapid growth, we should not cluster it.

```
CREATE INDEX bid_index ON bid USING btree (idBuyer, idAuction);
```

Index reference	IDX05
Related queries	SELECT09
Index relation	image
Index attribute	id
Index type	Hash
Cardinality	High
Clustering	No
Justification	There are many tuples in the relation, and we need to access them many times. Therefore, it should be as fast as possible. Due to the high cardinality, clustering is not advised.

```
CREATE INDEX image_index ON image USING hash (id);
```

Index reference	IDX6
Related queries	SELECT04
Index relation	auction
Index attribute	ISBN
Index type	B-tree
Cardinality	Very High
Clustering	No
Justification	We want to search auctions by ISBN, and thus it is useful to have them ordered somehow. Due to the high cardinality, clustering is not advised.

```
CREATE INDEX isbn_index ON auction USING hash (ISBN);
```

2.2. Full-text Search Indices

Index reference	IDX07
Related queries	SELECT04
Index relation	auction
Index attribute	title
Index type	GIST
Cardinality	Very High
Clustering	No
Justification	We want to search auctions by title, and thus to improve performance we can use GIST indexes, which are better for full text searches and dynamic data

```
CREATE INDEX title_index ON auction USING GIST (to_tsvector('english', title));
```

Index reference	IDX08
-----------------	-------

Related queries	SELECT04
Index relation	auction
Index attribute	author
Index type	GIST
Cardinality	Very High
Clustering	No
Justification	We want to search auctions by author, and thus to improve performance we can use GIST indexes, which are better for full text searches and dynamic data

```
CREATE INDEX author_index ON auction USING GIST (to_tsvector('english', author));
```

3. Triggers

Trigger reference	TRIGGER01
Trigger description	There can be only one administrator

```
CREATE FUNCTION check_number_of_row_admin() RETURNS TRIGGER AS
$BODY$
BEGIN
    IF ((SELECT count(*) FROM administrator) > 0)
    THEN
        RAISE EXCEPTION 'There can be only one administrator';
    END IF;
    RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;

CREATE TRIGGER tr_check_number_of_row_admin
BEFORE INSERT ON administrator
FOR EACH ROW
EXECUTE PROCEDURE check_number_of_row_admin();
```

Trigger reference	TRIGGER02
Trigger description	Updates the date values on member, depending on the member_status

```

CREATE FUNCTION change_member_status() RETURNS TRIGGER AS
$BODY$
BEGIN
    IF EXISTS (SELECT * FROM member WHERE NEW.id = member.id) THEN
        IF NEW.member_status='banned' THEN
            NEW.dateBanned := now();
        ELSIF NEW.member_status='suspended' THEN
            NEW.dateSuspended:= now();
        ELSIF NEW.member_status='terminated' THEN
            NEW.dateTerminated:= now();
        END IF;
    END IF;
    RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;

CREATE TRIGGER tr_change_member_status
BEFORE UPDATE ON member
FOR EACH ROW
EXECUTE PROCEDURE change_member_status();

```

Trigger reference TRIGGER03

Trigger description Updates the dates on auction, depending on the auction_status

```

CREATE FUNCTION change_auction_status() RETURNS TRIGGER AS
$BODY$
BEGIN
    IF EXISTS (SELECT * FROM auction WHERE NEW.id = auction.id) THEN
        IF NEW.auction_status='approved' THEN
            NEW.dateApproved := now();
        ELSIF NEW.auction_status='removed' THEN
            NEW.dateRemoved:= now();
        END IF;
    END IF;
    RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;

CREATE TRIGGER tr_change_auction_status
BEFORE UPDATE ON auction
FOR EACH ROW
EXECUTE PROCEDURE change_auction_status();

```

TRIGGER04

Trigger reference

Trigger description A member can't wishlist is own auctions

```
CREATE FUNCTION check_buyer() RETURNS TRIGGER AS
$BODY$
BEGIN
    IF EXISTS (SELECT * FROM auction WHERE NEW.idAuction = auction.id AND
NEW.idBuyer = auction.idSeller) THEN
        RAISE EXCEPTION 'A User cant interact with is own auctions.';
    END IF;
    RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;

CREATE TRIGGER tr_whishlist_check_buyer
BEFORE INSERT OR UPDATE ON wishlist
FOR EACH ROW
EXECUTE PROCEDURE check_buyer();
```

Trigger reference TRIGGER05

Trigger description A member can't bid on its own auctions

```
CREATE TRIGGER tr_bid_check_buyer
BEFORE INSERT OR UPDATE ON bid
FOR EACH ROW
EXECUTE PROCEDURE check_buyer();
```

Trigger reference TRIGGER06

Trigger description An auction needs to be approved to be possible to make a modification to it

```
CREATE FUNCTION check_approved_auction() RETURNS TRIGGER AS
$BODY$
BEGIN
    IF EXISTS (SELECT * FROM auction WHERE NEW.idApprovedAuction = auction.id
AND auction.auction_status != 'approved') THEN
        RAISE EXCEPTION 'A User cant request an auction modification if its not
approved.';
    END IF;
    RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;
```

```
CREATE TRIGGER tr_check_approved_auction
BEFORE INSERT OR UPDATE ON auction_modification
FOR EACH ROW
EXECUTE PROCEDURE check_approved_auction();
```

Trigger reference TRIGGER07

Trigger description Updates the date_approved on auction_modification depending on the result of it

```
CREATE FUNCTION change_auction_modification_is_approved() RETURNS TRIGGER AS
$BODY$
BEGIN
    IF EXISTS (SELECT * FROM auction WHERE NEW.id = auction.id) THEN
        IF NEW.is_approved=TRUE THEN
            NEW.dateApproved := now();
        END IF;
    END IF;
    RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;

CREATE TRIGGER tr_change_auction_modification_is_approved
BEFORE UPDATE ON auction_modification
FOR EACH ROW
EXECUTE PROCEDURE
change_auction_modification_is_approved();
```

Trigger reference TRIGGER08

Trigger description Checks if an image doesn't belong to a member and an auction at the same time

```
CREATE FUNCTION image_auction_or_member() RETURNS TRIGGER AS
$BODY$
BEGIN
    IF (NEW.idMember!=NULL) AND (NEW.idAuction!=NULL OR
NEW.idAuctionModification!= NULL) THEN
        RAISE EXCEPTION 'An image cant belong to an auction and an user';
    END IF;
    RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;

CREATE TRIGGER tr_image_auction_or_member
```

```
BEFORE INSERT OR UPDATE ON image
FOR EACH ROW
    EXECUTE PROCEDURE image_auction_or_member();
```

4. Complete SQL Code

Ficheiro *lbaw1726_create.sql* (requer acesso ao repositório GitHub do projeto)

```
-----
--Tables
-----
--1

CREATE TABLE administrator (
    id SERIAL PRIMARY KEY,
    username text NOT NULL UNIQUE,
    password text NOT NULL
);

--2

CREATE TABLE country (
    id SERIAL PRIMARY KEY,
    countryName text NOT NULL UNIQUE
);

--3

CREATE TABLE member (
    id SERIAL PRIMARY KEY,
    address text,
    age SMALLINT NOT NULL,
    email text NOT NULL UNIQUE,
    name text NOT NULL,
    password text NOT NULL,
    paypalEmail text,
    phone text NOT NULL,
    postalCode text NOT NULL,
    username text NOT NULL UNIQUE,
    dateCreated TIMESTAMP WITH TIME zone DEFAULT now() NOT NULL,
    member_status text NOT NULL DEFAULT 'normal'::text,
    dateBanned TIMESTAMP WITH TIME zone DEFAULT NULL,
    dateSuspended TIMESTAMP WITH TIME zone DEFAULT NULL,
    dateTerminated TIMESTAMP WITH TIME zone DEFAULT NULL,
    idCountry INTEGER NOT NULL REFERENCES country(id),
    CONSTRAINT status_ck CHECK ((member_status = ANY (ARRAY['moderator'::text,
'suspended'::text, 'banned'::text, 'normal'::text, 'terminated'::text]])),
    CONSTRAINT age_ck CHECK (age>=18)
);
```

```

--4
CREATE TABLE requested_termination (
    id SERIAL PRIMARY KEY,
    dateRequested TIMESTAMP WITH TIME zone DEFAULT now() NOT NULL,
    idMember INTEGER NOT NULL REFERENCES member(id)
);

--6
CREATE TABLE category (
    id SERIAL PRIMARY KEY,
    categoryName text NOT NULL UNIQUE
);

--7
CREATE TABLE publisher (
    id SERIAL PRIMARY KEY,
    publisherName text NOT NULL UNIQUE
);

--8

CREATE TABLE language (
    id SERIAL PRIMARY KEY,
    languageName text NOT NULL UNIQUE
);

--5

CREATE TABLE auction (
    id SERIAL PRIMARY KEY,
    author text NOT NULL,
    description text NOT NULL,
    duration interval NOT NULL,
    ISBN text NOT NULL,
    title text NOT NULL,
    dateCreated TIMESTAMP WITH TIME zone DEFAULT now() NOT NULL,
    auction_status text NOT NULL DEFAULT 'waitingApproval'::text,
    dateApproved TIMESTAMP WITH TIME zone DEFAULT NULL,
    dateRemoved TIMESTAMP WITH TIME zone DEFAULT NULL,
    idPublisher INTEGER REFERENCES publisher(id),
    idLanguage INTEGER NOT NULL REFERENCES language(id),
    idSeller INTEGER NOT NULL REFERENCES member(id),
    CONSTRAINT auction_status_ck CHECK ((auction_status = ANY
(ARRAY['approved'::text, 'removed'::text, 'waitingApproval'::text])),
    CONSTRAINT duration_ck CHECK (duration >= '00:05:00'::interval)
);

--9

CREATE TABLE category_auction (

```



```

        idCategory INTEGER NOT NULL REFERENCES category(id),
        idAuction INTEGER NOT NULL REFERENCES auction(id),
        CONSTRAINT category_auction_pk PRIMARY KEY (idCategory, idAuction)
    );

--10
CREATE TABLE wishlist (
    idBuyer INTEGER NOT NULL REFERENCES member(id),
    idAuction INTEGER NOT NULL REFERENCES auction(id),
    CONSTRAINT wish_list_pk PRIMARY KEY (idBuyer, idAuction)
);

--11
CREATE TABLE bid (
    idBuyer INTEGER NOT NULL REFERENCES member(id),
    idAuction INTEGER NOT NULL REFERENCES auction(id),
    bidDate TIMESTAMP WITH TIME zone DEFAULT now() NOT NULL,
    bidValue REAL,
    CONSTRAINT bid_value_ck CHECK (bidValue > 0.0),
    CONSTRAINT bid_pk PRIMARY KEY (idBuyer, idAuction)
);

--12
CREATE TABLE auction_modification (
    id SERIAL PRIMARY KEY,
    dateRequested TIMESTAMP WITH TIME zone DEFAULT now() NOT NULL,
    newDescription text,
    is_approved boolean,
    dateApproved TIMESTAMP WITH TIME zone,
    idApprovedAuction INTEGER NOT NULL REFERENCES auction(id)
);

--13
CREATE TABLE notification (
    id SERIAL PRIMARY KEY,
    dateSent TIMESTAMP WITH TIME zone DEFAULT now() NOT NULL,
    information text,
    is_seen boolean DEFAULT FALSE,
    dateSeen TIMESTAMP WITH TIME zone,
    idMember INTEGER NOT NULL REFERENCES member(id)
);

--14
CREATE TABLE notification_auction (
    idAuction INTEGER NOT NULL REFERENCES auction(id),
    idNotification INTEGER NOT NULL REFERENCES notification(id),
    CONSTRAINT notification_auction_pk PRIMARY KEY (idAuction, idNotification)
);

```

```

--15
CREATE TABLE image (
    id SERIAL PRIMARY KEY,
    source text NOT NULL UNIQUE,
    idAuction INTEGER REFERENCES auction(id),
    idAuctionModification INTEGER REFERENCES auction_modification(id),
    idMember INTEGER REFERENCES member(id)
);

--16
CREATE TABLE message (
    id SERIAL PRIMARY KEY,
    dateSent TIMESTAMP WITH TIME zone DEFAULT now() NOT NULL,
    message_text text NOT NULL,
    idSender INTEGER NOT NULL REFERENCES member(id),
    idReceiver INTEGER NOT NULL REFERENCES member(id),
    CONSTRAINT check_sender_receiver CHECK (idSender != idReceiver)
);

--17
CREATE TABLE comment (
    id SERIAL PRIMARY KEY,
    datePosted TIMESTAMP WITH TIME zone DEFAULT now() NOT NULL,
    liked boolean,
    comment_text text NOT NULL,
    is_removed boolean DEFAULT FALSE,
    idParent INTEGER REFERENCES comment(id),
    idSender INTEGER NOT NULL REFERENCES member(id),
    idReceiver INTEGER NOT NULL REFERENCES member(id),
    CONSTRAINT check_comment_parent CHECK (id != idParent)
);

-----
--INDEXES
-----

CREATE INDEX user_id ON member USING hash (id);

CREATE INDEX auction_id ON auction USING hash (id);

CREATE INDEX notification_id ON notification USING hash (id) WHERE is_seen =
false;

CREATE INDEX bid_index ON bid USING btree (idBuyer, idAuction);

CREATE INDEX image_index ON image USING hash (id);

CREATE INDEX isbn_index ON auction USING hash (ISBN);

CREATE INDEX title_index ON auction USING GIST (to_tsvector('english',
title));

```

```
CREATE INDEX author_index ON auction USING GIST (to_tsvector('english',
author));
```

```
-----  
--TRIGGERS AND UDFs  
-----
```

```
CREATE FUNCTION check_number_of_row_admin() RETURNS TRIGGER AS  
$BODY$  
BEGIN  
    IF ((SELECT count(*) FROM administrator) > 0)  
        THEN  
            RAISE EXCEPTION 'There can be only one administrator';  
        END IF;  
    RETURN NEW;  
END  
$BODY$  
LANGUAGE plpgsql;
```

```
CREATE TRIGGER tr_check_number_of_row_admin  
    BEFORE INSERT ON administrator  
    FOR EACH ROW  
        EXECUTE PROCEDURE check_number_of_row_admin();
```

```
CREATE FUNCTION change_member_status() RETURNS TRIGGER AS  
$BODY$  
BEGIN  
    IF EXISTS (SELECT * FROM member WHERE NEW.id = member.id) THEN  
        IF NEW.member_status='banned' THEN  
            NEW.dateBanned := now();  
        ELSIF NEW.member_status='suspended' THEN  
            NEW.dateSuspended:= now();  
        ELSIF NEW.member_status='terminated' THEN  
            NEW.dateTerminated:= now();  
        END IF;  
    END IF;  
    RETURN NEW;  
END  
$BODY$  
LANGUAGE plpgsql;
```

```
CREATE TRIGGER tr_change_member_status  
    BEFORE UPDATE ON member  
    FOR EACH ROW  
        EXECUTE PROCEDURE change_member_status();
```

```
CREATE FUNCTION change_auction_status() RETURNS TRIGGER AS  
$BODY$  
BEGIN
```

```

        IF EXISTS (SELECT * FROM auction WHERE NEW.id = auction.id) THEN
            IF NEW.auction_status='approved' THEN
                NEW.dateApproved := now();
            ELSIF NEW.auction_status='removed' THEN
                NEW.dateRemoved:= now();
            END IF;
        END IF;
        RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;

CREATE TRIGGER tr_change_auction_status
    BEFORE UPDATE ON auction
    FOR EACH ROW
        EXECUTE PROCEDURE change_auction_status();

CREATE FUNCTION check_buyer() RETURNS TRIGGER AS
$BODY$
BEGIN
    IF EXISTS (SELECT * FROM auction WHERE NEW.idAuction = auction.id AND
NEW.idBuyer = auction.idSeller) THEN
        RAISE EXCEPTION 'A User cant interact with is own auctions.';
    END IF;
    RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;

CREATE TRIGGER tr_whishlist_check_buyer
    BEFORE INSERT OR UPDATE ON wishlist
    FOR EACH ROW
        EXECUTE PROCEDURE check_buyer();

CREATE TRIGGER tr_bid_check_buyer
    BEFORE INSERT OR UPDATE ON bid
    FOR EACH ROW
        EXECUTE PROCEDURE check_buyer();

CREATE FUNCTION check_approved_auction() RETURNS TRIGGER AS
$BODY$
BEGIN
    IF EXISTS (SELECT * FROM auction WHERE NEW.idApprovedAuction = auction.id
AND auction.auction_status != 'approved') THEN
        RAISE EXCEPTION 'A User cant request an auction modification if its not
approved.';
    END IF;
    RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;

```

```

CREATE TRIGGER tr_check_approved_auction
  BEFORE INSERT OR UPDATE ON auction_modification
  FOR EACH ROW
    EXECUTE PROCEDURE check_approved_auction();

CREATE FUNCTION change_auction_modification_is_approved() RETURNS TRIGGER AS
$BODY$
BEGIN
  IF EXISTS (SELECT * FROM auction WHERE NEW.id = auction.id) THEN
    IF NEW.is_approved=TRUE THEN
      NEW.dateApproved := now();
    END IF;
  END IF;
  RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;

CREATE TRIGGER tr_change_auction_modification_is_approved
  BEFORE UPDATE ON auction_modification
  FOR EACH ROW
    EXECUTE PROCEDURE
change_auction_modification_is_approved();

CREATE FUNCTION image_auction_or_member() RETURNS TRIGGER AS
$BODY$
BEGIN
  IF (NEW.idMember!=NULL) AND (NEW.idAuction!=NULL OR
NEW.idAuctionModification!= NULL) THEN
    RAISE EXCEPTION 'An image cant belong to an auction and an user';
  END IF;
  RETURN NEW;
END
$BODY$
LANGUAGE plpgsql;

CREATE TRIGGER tr_image_auction_or_member
  BEFORE INSERT OR UPDATE ON image
  FOR EACH ROW
    EXECUTE PROCEDURE image_auction_or_member();

```

Ficheiro *lbaw1726_data.sql* (requer acesso ao repositório GitHub do projeto)

```

--1
INSERT INTO "administrator" (username, password) VALUES ('admin','AXkWnVFw');

--2
INSERT INTO "country" (countryName) VALUES ('Austria');
INSERT INTO "country" (countryName) VALUES ('Italy');

```

```

INSERT INTO "country" (countryName) VALUES ('Belgium');
INSERT INTO "country" (countryName) VALUES ('Latvia');
INSERT INTO "country" (countryName) VALUES ('Bulgaria');
INSERT INTO "country" (countryName) VALUES ('Lithuania');
INSERT INTO "country" (countryName) VALUES ('Croatia');
INSERT INTO "country" (countryName) VALUES ('Luxembourg');
INSERT INTO "country" (countryName) VALUES ('Cyprus');
INSERT INTO "country" (countryName) VALUES ('Malta');
INSERT INTO "country" (countryName) VALUES ('Czech Republic');
INSERT INTO "country" (countryName) VALUES ('Netherlands');
INSERT INTO "country" (countryName) VALUES ('Denmark');
INSERT INTO "country" (countryName) VALUES ('Indonesia');
INSERT INTO "country" (countryName) VALUES ('Poland');
INSERT INTO "country" (countryName) VALUES ('Estonia');
INSERT INTO "country" (countryName) VALUES ('Portugal');
INSERT INTO "country" (countryName) VALUES ('Finland');
INSERT INTO "country" (countryName) VALUES ('Romania');
INSERT INTO "country" (countryName) VALUES ('France');
INSERT INTO "country" (countryName) VALUES ('Slovakia');
INSERT INTO "country" (countryName) VALUES ('Germany');
INSERT INTO "country" (countryName) VALUES ('Slovenia');
INSERT INTO "country" (countryName) VALUES ('Greece');
INSERT INTO "country" (countryName) VALUES ('Spain');
INSERT INTO "country" (countryName) VALUES ('Hungary');
INSERT INTO "country" (countryName) VALUES ('Sweden');
INSERT INTO "country" (countryName) VALUES ('Ireland');
INSERT INTO "country" (countryName) VALUES ('United Kingdom');

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--8

```

INSERT INTO "language" (languageName) VALUES('English');
INSERT INTO "language" (languageName) VALUES('Afar');
INSERT INTO "language" (languageName) VALUES('Abkhazian');
INSERT INTO "language" (languageName) VALUES('Afrikaans');
INSERT INTO "language" (languageName) VALUES('Amharic');
INSERT INTO "language" (languageName) VALUES('Arabic');
INSERT INTO "language" (languageName) VALUES('Assamese');
INSERT INTO "language" (languageName) VALUES('Aymara');
INSERT INTO "language" (languageName) VALUES('Azerbaijani');
INSERT INTO "language" (languageName) VALUES('Bashkir');
INSERT INTO "language" (languageName) VALUES('Belarusian');
INSERT INTO "language" (languageName) VALUES('Bulgarian');
INSERT INTO "language" (languageName) VALUES('Bihari');
INSERT INTO "language" (languageName) VALUES('Bislama');
INSERT INTO "language" (languageName) VALUES('Bengali/Bangla');
INSERT INTO "language" (languageName) VALUES('Tibetan');
INSERT INTO "language" (languageName) VALUES('Breton');
INSERT INTO "language" (languageName) VALUES('Catalan');
INSERT INTO "language" (languageName) VALUES('Corsican');
INSERT INTO "language" (languageName) VALUES('Czech');
INSERT INTO "language" (languageName) VALUES('Welsh');
INSERT INTO "language" (languageName) VALUES('Danish');
INSERT INTO "language" (languageName) VALUES('German');

```

```

INSERT INTO "language" (languageName) VALUES('Bhutani');
INSERT INTO "language" (languageName) VALUES('Greek');
INSERT INTO "language" (languageName) VALUES('Esperanto');
INSERT INTO "language" (languageName) VALUES('Spanish');
INSERT INTO "language" (languageName) VALUES('Estonian');
INSERT INTO "language" (languageName) VALUES('Basque');
INSERT INTO "language" (languageName) VALUES('Persian');
INSERT INTO "language" (languageName) VALUES('Finnish');
INSERT INTO "language" (languageName) VALUES('Fiji');
INSERT INTO "language" (languageName) VALUES('Faeroese');
INSERT INTO "language" (languageName) VALUES('French');
INSERT INTO "language" (languageName) VALUES('Frisian');
INSERT INTO "language" (languageName) VALUES('Irish');
INSERT INTO "language" (languageName) VALUES('Scots/Gaelic');
INSERT INTO "language" (languageName) VALUES('Galician');
INSERT INTO "language" (languageName) VALUES('Guarani');
INSERT INTO "language" (languageName) VALUES('Gujarati');
INSERT INTO "language" (languageName) VALUES('Hausa');
INSERT INTO "language" (languageName) VALUES('Hindi');
INSERT INTO "language" (languageName) VALUES('Croatian');
INSERT INTO "language" (languageName) VALUES('Hungarian');
INSERT INTO "language" (languageName) VALUES('Armenian');
INSERT INTO "language" (languageName) VALUES('Interlingua');
INSERT INTO "language" (languageName) VALUES('Interlingue');
INSERT INTO "language" (languageName) VALUES('Inupiak');
INSERT INTO "language" (languageName) VALUES('Indonesian');
INSERT INTO "language" (languageName) VALUES('Icelandic');
INSERT INTO "language" (languageName) VALUES('Italian');
INSERT INTO "language" (languageName) VALUES('Hebrew');
INSERT INTO "language" (languageName) VALUES('Japanese');
INSERT INTO "language" (languageName) VALUES('Yiddish');
INSERT INTO "language" (languageName) VALUES('Javanese');
INSERT INTO "language" (languageName) VALUES('Georgian');
INSERT INTO "language" (languageName) VALUES('Kazakh');
INSERT INTO "language" (languageName) VALUES('Greenlandic');
INSERT INTO "language" (languageName) VALUES('Cambodian');
INSERT INTO "language" (languageName) VALUES('Kannada');
INSERT INTO "language" (languageName) VALUES('Korean');
INSERT INTO "language" (languageName) VALUES('Kashmiri');
INSERT INTO "language" (languageName) VALUES('Kurdish');
INSERT INTO "language" (languageName) VALUES('Kirghiz');
INSERT INTO "language" (languageName) VALUES('Latin');
INSERT INTO "language" (languageName) VALUES('Lingala');
INSERT INTO "language" (languageName) VALUES('Laothian');
INSERT INTO "language" (languageName) VALUES('Lithuanian');
INSERT INTO "language" (languageName) VALUES('Latvian/Lettish');
INSERT INTO "language" (languageName) VALUES('Malagasy');
INSERT INTO "language" (languageName) VALUES('Maori');
INSERT INTO "language" (languageName) VALUES('Macedonian');
INSERT INTO "language" (languageName) VALUES('Malayalam');
INSERT INTO "language" (languageName) VALUES('Mongolian');
INSERT INTO "language" (languageName) VALUES('Moldavian');

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INSERT INTO "language" (languageName) VALUES ('Marathi');
INSERT INTO "language" (languageName) VALUES ('Malay');
INSERT INTO "language" (languageName) VALUES ('Maltese');
INSERT INTO "language" (languageName) VALUES ('Burmese');
INSERT INTO "language" (languageName) VALUES ('Nauru');
INSERT INTO "language" (languageName) VALUES ('Nepali');
INSERT INTO "language" (languageName) VALUES ('Dutch');
INSERT INTO "language" (languageName) VALUES ('Norwegian');
INSERT INTO "language" (languageName) VALUES ('Occitan');
INSERT INTO "language" (languageName) VALUES ('(Afan)/Oromoor/Oriya');
INSERT INTO "language" (languageName) VALUES ('Punjabi');
INSERT INTO "language" (languageName) VALUES ('Polish');
INSERT INTO "language" (languageName) VALUES ('Pashto/Pushto');
INSERT INTO "language" (languageName) VALUES ('Portuguese');
INSERT INTO "language" (languageName) VALUES ('Quechua');
INSERT INTO "language" (languageName) VALUES ('Rhaeto-Romance');
INSERT INTO "language" (languageName) VALUES ('Kirundi');
INSERT INTO "language" (languageName) VALUES ('Romanian');
INSERT INTO "language" (languageName) VALUES ('Russian');
INSERT INTO "language" (languageName) VALUES ('Kinyarwanda');
INSERT INTO "language" (languageName) VALUES ('Sanskrit');
INSERT INTO "language" (languageName) VALUES ('Sindhi');
INSERT INTO "language" (languageName) VALUES ('Sangro');
INSERT INTO "language" (languageName) VALUES ('Serbo-Croatian');
INSERT INTO "language" (languageName) VALUES ('Singhalese');
INSERT INTO "language" (languageName) VALUES ('Slovak');
INSERT INTO "language" (languageName) VALUES ('Slovenian');
INSERT INTO "language" (languageName) VALUES ('Samoan');
INSERT INTO "language" (languageName) VALUES ('Shona');
INSERT INTO "language" (languageName) VALUES ('Somali');
INSERT INTO "language" (languageName) VALUES ('Albanian');
INSERT INTO "language" (languageName) VALUES ('Serbian');
INSERT INTO "language" (languageName) VALUES ('Siswati');
INSERT INTO "language" (languageName) VALUES ('Sesotho');
INSERT INTO "language" (languageName) VALUES ('Sundanese');
INSERT INTO "language" (languageName) VALUES ('Swedish');
INSERT INTO "language" (languageName) VALUES ('Swahili');
INSERT INTO "language" (languageName) VALUES ('Tamil');
INSERT INTO "language" (languageName) VALUES ('Telugu');
INSERT INTO "language" (languageName) VALUES ('Tajik');
INSERT INTO "language" (languageName) VALUES ('Thai');
INSERT INTO "language" (languageName) VALUES ('Tigrinya');
INSERT INTO "language" (languageName) VALUES ('Turkmen');
INSERT INTO "language" (languageName) VALUES ('Tagalog');
INSERT INTO "language" (languageName) VALUES ('Setswana');
INSERT INTO "language" (languageName) VALUES ('Tonga');
INSERT INTO "language" (languageName) VALUES ('Turkish');
INSERT INTO "language" (languageName) VALUES ('Tsonga');
INSERT INTO "language" (languageName) VALUES ('Tatar');
INSERT INTO "language" (languageName) VALUES ('Twi');
INSERT INTO "language" (languageName) VALUES ('Ukrainian');
INSERT INTO "language" (languageName) VALUES ('Urdu');

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INSERT INTO "language" (languageName) VALUES ('Uzbek');
INSERT INTO "language" (languageName) VALUES ('Vietnamese');
INSERT INTO "language" (languageName) VALUES ('Volapuk');
INSERT INTO "language" (languageName) VALUES ('Wolof');
INSERT INTO "language" (languageName) VALUES ('Xhosa');
INSERT INTO "language" (languageName) VALUES ('Yoruba');
INSERT INTO "language" (languageName) VALUES ('Chinese');
INSERT INTO "language" (languageName) VALUES ('Zulu');

--6
INSERT INTO "category" (categoryName) VALUES ('Arts&Music');
INSERT INTO "category" (categoryName) VALUES ('Biographies');
INSERT INTO "category" (categoryName) VALUES ('Business');
INSERT INTO "category" (categoryName) VALUES ('Kids');
INSERT INTO "category" (categoryName) VALUES ('Comics');
INSERT INTO "category" (categoryName) VALUES ('Cooking');
INSERT INTO "category" (categoryName) VALUES ('Computation&Tech');
INSERT INTO "category" (categoryName) VALUES ('Education');
INSERT INTO "category" (categoryName) VALUES ('Health&Fitness');
INSERT INTO "category" (categoryName) VALUES ('History');
INSERT INTO "category" (categoryName) VALUES ('Horror');
INSERT INTO "category" (categoryName) VALUES ('Literature');
INSERT INTO "category" (categoryName) VALUES ('Anthologies');
INSERT INTO "category" (categoryName) VALUES ('Classics');
INSERT INTO "category" (categoryName) VALUES ('Contemporary');
INSERT INTO "category" (categoryName) VALUES ('Sci-Fi&Fantasy');
INSERT INTO "category" (categoryName) VALUES ('Romance');
INSERT INTO "category" (categoryName) VALUES ('Crime');
INSERT INTO "category" (categoryName) VALUES ('Science');
INSERT INTO "category" (categoryName) VALUES ('Self-Help');
INSERT INTO "category" (categoryName) VALUES ('Travel');
INSERT INTO "category" (categoryName) VALUES ('Other');

--7
INSERT INTO "publisher" (publisherName) VALUES ('Ballantine Books');
INSERT INTO "publisher" (publisherName) VALUES ('Bloodaxe Books');
INSERT INTO "publisher" (publisherName) VALUES ('Time Inc. ');
INSERT INTO "publisher" (publisherName) VALUES ('McGraw-Hill Education');
INSERT INTO "publisher" (publisherName) VALUES ('Dobson Books');
INSERT INTO "publisher" (publisherName) VALUES ('Berg Publishers ');
INSERT INTO "publisher" (publisherName) VALUES ('Vintage Books');

--3
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('2066 Straubel Court',
28, 'eluty0@bizjournals.com', 'Eustacia Luty', 'oRE56BNQ',
'eluty0@theguardian.com', '+46 904 159 9108', '692 24', 'eluty0', 'normal',
22);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('7361 Mallard Road',

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19, 'ehould1@hp.com', 'Edmund Hould', 'pEU60gGA', 'ehould1@opensource.org',
'+998 945 505 7553', '692 24', 'ehould1', 'normal', 3);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('5 John Wall Drive',
21, 'clittrell2@imgur.com', 'Clemmy Littrell', 'Uh4dAtIR',
'clittrell2@wunderground.com', '+63 781 701 0990', '8301', 'clittrell2',
'normal', 1);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('10 Shoshone Terrace',
48, 'ndolley3@tiny.cc', 'Nev Dolley', '9QbuY0de', 'ndolley3@paypal.com', '+62
912 696 8250', '692 24', 'ndolley3', 'normal', 1);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('6 John Wall
Crossing', 56, 'nfant4@sina.com.cn', 'Nissy Fant', '2eagNED2',
'nfant4@telegraph.co.uk', '+86 998 868 7658', '692 24', 'nfant4', 'normal',
1);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('93 Moland Circle',
48, 'ihaylock5@nps.gov', 'Izak Haylock', 'Xn9P6fn9', 'ihaylock5@ca.gov', '+1
405 965 4695', '73129', 'ihaylock5', 'normal', 20);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('41185 Arrowood
Street', 64, 'fblum6@bing.com', 'Filberto Blum', 'jb4VQLkf', 'fblum6@vk.com',
'+46 813 516 1461', '351 88', 'fblum6', 'normal', 12);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('528 Golden Leaf
Parkway', 56, 'mkees7@house.gov', 'Marietta Kees', 'uUMLA25z',
'mkees7@soundcloud.com', '+7 598 409 8497', '678030', 'mkees7', 'normal', 18);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('05804 Randy
Crossing', 24, 'gblanc8@chicagotribune.com', 'Gerladina Blanc', 'ggbEHY7j',
'gblanc8@dagondesign.com', '+1 408 842 4388', '95138', 'gblanc8', 'normal',
14);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('55 Kennedy Circle',
30, 'jscanterbury9@symantec.com', 'Joceline Scanterbury', 'Z4WdQmIb',
'jscanterbury9@cbc.ca', '+86 607 522 5709', '692 24', 'jscanterbury9',
'normal', 14);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('5416 Karstens Road',
26, 'aticehursta@home.pl', 'Annamaria Ticehurst', '1acALjhr',
'aticehursta@wisc.edu', '+7 393 867 7780', '649743', 'aticehursta', 'normal',
11);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('9 Lerdahl Drive', 24,
'jmckkeefryb@nationalgeographic.com', 'Jesse McKeefry', 'qz5YPb0B',
'jmckkeefryb@newsvine.com', '+86 739 638 1745', '692 24', 'jmckkeefryb',
'normal', 7);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('5 Leroy Point', 33,
'cjobbingsc@php.net', 'Christos Jobbings', 'm2wDFcfd',
'cjobbingsc@earthlink.net', '+351 909 729 1955', '4615-131', 'cjobbingsc',

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'normal', 22);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('9894 Union Park', 52,
'cmackiewicz@a8.net', 'Clay Mackiewicz', 'ktAA8NYY', 'cmackiewicz@noaa.gov',
'+86 520 608 3542', '692 24', 'cmackiewicz', 'normal', 16);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('41 Pierstorff Park',
58, 'dproome@meetup.com', 'Donal Proom', 'Buq6BSfL', 'dproome@bbb.org', '+7
776 314 7169', '181518', 'dproome', 'normal', 6);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('2 Petterle Crossing',
43, 'cgristonf@admin.ch', 'Constantino Griston', 'uKD716by',
'cgristonf@amazon.de', '+593 422 998 3244', '692 24', 'cgristonf', 'normal',
7);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('84 Fremont Pass', 36,
'cstofferg@bigcartel.com', 'Consuelo Stoffer', 'BmrUL6gv',
'cstofferg@hatena.ne.jp', '+86 573 198 3621', '692 24', 'cstofferg', 'normal',
17);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('203 Anzinger Hill',
33, 'bselesnickh@microsoft.com', 'Brocky Selesnick', 'srH1tc53',
'bselesnickh@answers.com', '+86 150 134 1271', '692 24', 'bselesnickh',
'normal', 10);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('8 Tomscot Center',
18, 'jkennificki@upenn.edu', 'Jarvis Kennifick', 'Cc3NuZTf',
'jkennificki@cbc.ca', '+81 862 520 2384', '360-0201', 'jkennificki', 'normal',
16);
INSERT INTO "member" (address, age, email, name, password, paypalEmail, phone,
postalCode, username, member_status, idCountry) VALUES ('159 Kropf Avenue',
28, 'tlinkinj@netlog.com', 'Trefor Linkin', 'ef76XTc1',
'tlinkinj@yellowpages.com', '+62 395 867 0445', '692 24', 'tlinkinj',
'normal', 18);

```

--4

```

INSERT INTO "requested_termination" (idMember) VALUES (19);
INSERT INTO "requested_termination" (idMember) VALUES (8);
INSERT INTO "requested_termination" (idMember) VALUES (17);
INSERT INTO "requested_termination" (idMember) VALUES (3);
INSERT INTO "requested_termination" (idMember) VALUES (13);

```

--5

```

INSERT INTO "auction" (author, description, duration, ISBN, title,
auction_status, idPublisher, idLanguage, idSeller) VALUES ('Rachelle Wadge',
'rhoncus aliquet pulvinar sed nisl nunc rhoncus dui vel sem sed', '02:00:00',
'878551550-7', 'ligula in lacus curabitur at', 'approved', 7, 93, 12);
INSERT INTO "auction" (author, description, duration, ISBN, title,
auction_status, idPublisher, idLanguage, idSeller) VALUES ('Elfie Videan', 'in
leo maecenas pulvinar lobortis est phasellus sit amet erat nulla tempus
vivamus in', '08:00:00', '406669717-8', 'donec posuere', 'approved', 6, 118,
12);

```

```

INSERT INTO "auction" (author, description, duration, ISBN, title,
auction_status, idPublisher, idLanguage, idSeller) VALUES ('Alisander
Freckleton', 'blandit mi in porttitor pede justo eu massa donec dapibus',
'18:00:00', '986634222-0', 'fusce lacus purus aliquet', 'approved', 3, 10,
10);
INSERT INTO "auction" (author, description, duration, ISBN, title,
auction_status, idPublisher, idLanguage, idSeller) VALUES ('Audi Kleingrub',
'nonummy integer non velit donec diam neque vestibulum eget vulputate ut
ultrices vel augue vestibulum', '18:00:00', '067934878-6', 'dui nec nisi
volutpat eleifend', 'approved', 6, 81, 1);
INSERT INTO "auction" (author, description, duration, ISBN, title,
auction_status, idPublisher, idLanguage, idSeller) VALUES ('Merci Szreter',
'orci vehicula condimentum curabitur in libero ut massa volutpat convallis
morbi odio odio elementum eu interdum eu tincidunt in', '18:00:00',
'404602964-1', 'turpis elementum', 'approved', 7, 2, 12);
INSERT INTO "auction" (author, description, duration, ISBN, title,
auction_status, idPublisher, idLanguage, idSeller) VALUES ('Lurette Kennet',
'arcu adipiscing molestie hendrerit at vulputate vitae nisl aenean lectus
pellentesque eget nunc donec quis orci', '23:00:00', '633223264-1', 'non
interdum', 'approved', 7, 17, 4);
INSERT INTO "auction" (author, description, duration, ISBN, title,
auction_status, idPublisher, idLanguage, idSeller) VALUES ('Gardner Stoffer',
'justo pellentesque viverra pede ac diam cras pellentesque volutpat dui',
'23:00:00', '292310247-9', 'dictumst etiam', 'approved', 7, 88, 8);
INSERT INTO "auction" (author, description, duration, ISBN, title,
auction_status, idPublisher, idLanguage, idSeller) VALUES ('Raynard Mapstone',
'donec posuere metus vitae ipsum aliquam non mauris morbi non lectus',
'19:00:00', '650395953-2', 'cursus urna ut', 'approved', 6, 85, 8);
INSERT INTO "auction" (author, description, duration, ISBN, title,
auction_status, idPublisher, idLanguage, idSeller) VALUES ('Andris Dornin',
'non mattis pulvinar nulla pede ullamcorper augue a suscipit nulla elit ac
nulla sed vel enim sit', '19:00:00', '270101807-2', 'sagittis dui vel nisl',
'approved', 6, 43, 12);
INSERT INTO "auction" (author, description, duration, ISBN, title,
auction_status, idPublisher, idLanguage, idSeller) VALUES ('Tricia Sture',
'fringilla rhoncus mauris enim leo rhoncus sed vestibulum sit amet cursus id
turpis integer aliquet massa id lobortis convallis tortor', '19:00:00',
'201829112-2', 'justo etiam pretium iaculis', 'approved', 1, 89, 12);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Harcourt Hibbart', 'et ultrices
posuere cubilia curae nulla dapibus dolor vel est donec odio justo
sollicitudin ut suscipit a', '19:00:00', '663418251-5', 'cursus urna ut tellus
nulla ut', 4, 109, 14);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Sheilah Holdin', 'ligula
suspendisse ornare consequat lectus in est risus auctor sed tristique in
tempus sit amet sem fusce', '19:00:00', '620263498-7', 'non ligula
pellentesque ultrices', 4, 125, 14);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Earvin Heis', 'at nulla
suspendisse potenti cras in purus eu magna vulputate luctus cum sociis',
'00:05:00', '438334161-6', 'ut nulla', 1, 1, 14);

```

```

INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Cam Cork', 'aliquet massa id
lobortis convallis tortor risus dapibus augue vel', '00:05:00', '385051206-1',
'in felis donec', 3, 36, 10);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Frederich Brotherheed', 'vivamus
metus arcu adipiscing molestie hendrerit at vulputate vitae nisl aenean',
'00:05:00', '623757218-X', 'justo aliquam quis turpis eget elit', 1, 130, 8);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Gan Leverington', 'mauris enim leo
rhoncus sed vestibulum sit amet cursus id turpis integer aliquet massa',
'00:05:00', '515219349-3', 'est quam pharetra', 7, 16, 8);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Jacquelin Noto', 'fusce lacus
purus aliquet at feugiat non pretium quis lectus suspendisse potenti in
eleifend quam', '00:05:00', '758332313-4', 'amet diam in magna', 4, 124, 8);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Silas Randell', 'at nulla
suspendisse potenti cras in purus eu magna vulputate luctus', '00:05:00',
'919830540-9', 'ut rhoncus aliquet pulvinar sed nisl', 2, 102, 8);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Marietta Shama', 'vel nisl duis ac
nibh fusce lacus purus aliquet at feugiat non pretium quis lectus',
'00:25:00', '716386818-9', 'justo pellentesque viverra', 1, 117, 14);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Gloria McCaskill', 'id nulla
ultrices aliquet maecenas leo odio condimentum id luctus nec molestie sed
justo pellentesque viverra pede ac diam', '00:25:00', '903576151-0', 'sit amet
justo morbi ut', 4, 110, 14);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Germana Castree', 'quam turpis
adipiscing lorem vitae mattis nibh ligula nec sem duis aliquam convallis nunc
proin at turpis a pede posuere', '00:30:00', '707493571-9', 'in purus eu magna
vulputate', 4, 32, 3);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Ginnifer Frain', 'eros vestibulum
ac est lacinia nisi venenatis tristique fusce congue diam id ornare imperdiet
sapien urna pretium nisl ut volutpat', '00:30:00', '156227457-0', 'ligula nec
sem duis', 1, 102, 1);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Renaldo Lambis', 'justo
pellentesque viverra pede ac diam cras pellentesque volutpat dui maecenas',
'74:00:00', '432923138-7', 'duis ac nibh fusce', 3, 42, 14);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Adah Balding', 'id nulla ultrices
aliquet maecenas leo odio condimentum id luctus nec molestie sed', '74:00:00',
'065642982-8', 'non lectus aliquam sit amet diam', 5, 99, 6);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Ricki Breznovic', 'curabitur
convallis duis consequat dui nec nisi volutpat eleifend donec ut', '74:00:00',
'816917757-X', 'orci luctus et ultrices posuere cubilia', 3, 3, 4);
INSERT INTO "auction" (author, description, duration, ISBN, title,

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idPublisher, idLanguage, idSeller) VALUES ('Bernadina Runnacles', 'ac diam
cras pellentesque volutpat dui maecenas tristique est et', '74:00:00',
'792975125-2', 'fusce consequat nulla nisl', 2, 64, 3);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Tobiah Arkcoll', 'eros suspendisse
accumsan tortor quis turpis sed ante vivamus tortor dui mattis egestas metus
aenean fermentum donec', '74:00:00', '384214891-7', 'pharetra magna ac
consequat', 3, 11, 6);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Enrique Overbury', 'sapient arcu
sed augue aliquam erat volutpat in congue etiam justo etiam pretium iaculis
justo in hac habitasse platea', '122:00:00', '176118988-3', 'tristique fusce
congue diam', 2, 46, 4);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Isabel Saberton', 'hac habitasse
platea dictumst maecenas ut massa quis augue luctus tincidunt nulla mollis
molestie lorem quisque ut', '122:00:00', '724637184-2', 'lectus vestibulum
quam sapient varius ut', 7, 36, 12);
INSERT INTO "auction" (author, description, duration, ISBN, title,
idPublisher, idLanguage, idSeller) VALUES ('Anabella Sheron', 'in faucibus
orci luctus et ultrices posuere cubilia curae donec pharetra magna vestibulum
aliquet', '122:00:00', '262700576-6', 'dapibus dolor vel est', 5, 69, 8);

--9
INSERT INTO "category_auction" (idCategory, idAuction) VALUES(4,4);
INSERT INTO "category_auction" (idCategory, idAuction) VALUES(6,3);
INSERT INTO "category_auction" (idCategory, idAuction) VALUES(10,12);
INSERT INTO "category_auction" (idCategory, idAuction) VALUES(9,17);
INSERT INTO "category_auction" (idCategory, idAuction) VALUES(10,13);
INSERT INTO "category_auction" (idCategory, idAuction) VALUES(13,11);
INSERT INTO "category_auction" (idCategory, idAuction) VALUES(19,13);

--10
INSERT INTO "whishlist" (idBuyer, idAuction) VALUES(10,13);
INSERT INTO "whishlist" (idBuyer, idAuction) VALUES(5,25);
INSERT INTO "whishlist" (idBuyer, idAuction) VALUES(4,21);
INSERT INTO "whishlist" (idBuyer, idAuction) VALUES(12,12);
INSERT INTO "whishlist" (idBuyer, idAuction) VALUES(19,3);
INSERT INTO "whishlist" (idBuyer, idAuction) VALUES(1,6);
INSERT INTO "whishlist" (idBuyer, idAuction) VALUES(8,19);
INSERT INTO "whishlist" (idBuyer, idAuction) VALUES(9,12);
INSERT INTO "whishlist" (idBuyer, idAuction) VALUES(7,16);
INSERT INTO "whishlist" (idBuyer, idAuction) VALUES(11,14);

--11
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (16, 12, 87.61);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (16, 8, 77.29);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (16, 3, 64.57);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (18, 17, 25.72);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (18, 10, 35.96);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (11, 21, 92.11);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (19, 10, 23.92);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (19, 14, 41.46);

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INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (19, 17, 53.29);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (16, 20, 4.73);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (11, 15, 34.25);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (11, 8, 1.02);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (20, 6, 19.26);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (20, 7, 39.37);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (3, 4, 77.13);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (7, 5, 46.32);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (9, 4, 48.03);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (9, 2, 58.62);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (19, 5, 95.52);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (15, 9, 85.09);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (15, 10, 60.05);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (17, 5, 8.21);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (1, 8, 41.85);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (16, 9, 30.02);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (1, 9, 53.92);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (16, 19, 90.93);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (13, 20, 11.07);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (16, 15, 38.45);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (16, 7, 73.97);
INSERT INTO "bid" (idBuyer, idAuction, bidValue) VALUES (15, 4, 81.92);

--12
INSERT INTO "auction_modification" (newDescription, is_approved,
idApprovedAuction) VALUES ('at vulputate vitae nisl aenean lectus pellentesque
eget nunc donec quis', 'false', 1);
INSERT INTO "auction_modification" (newDescription, is_approved,
idApprovedAuction) VALUES ('tellus semper interdum mauris ullamcorper purus
sit amet nulla quisque arcu libero rutrum ac lobortis vel dapibus', 'false',
2);
INSERT INTO "auction_modification" (newDescription, is_approved,
idApprovedAuction) VALUES ('integer pede justo lacinia eget tincidunt eget
tempus vel pede', 'false', 3);
INSERT INTO "auction_modification" (newDescription, is_approved,
idApprovedAuction) VALUES ('augue a suscipit nulla elit ac nulla sed vel enim
sit amet nunc viverra dapibus nulla', 'false', 4);
INSERT INTO "auction_modification" (newDescription, is_approved,
idApprovedAuction) VALUES ('venenatis tristique fusce congue diam id ornare
imperdiet sapien urna pretium nisl ut volutpat sapien arcu sed augue aliquam',
'false', 6);
INSERT INTO "auction_modification" (newDescription, is_approved,
idApprovedAuction) VALUES ('nibh quisque id justo sit amet sapien dignissim
vestibulum vestibulum ante ipsum primis', 'false', 5);
INSERT INTO "auction_modification" (newDescription, is_approved,
idApprovedAuction) VALUES ('pretium iaculis diam erat fermentum justo nec
condimentum neque sapien placerat ante nulla justo aliquam quis turpis eget
elit', 'false', 7);
INSERT INTO "auction_modification" (newDescription, is_approved,
idApprovedAuction) VALUES ('vestibulum sit amet cursus id turpis integer
aliquet massa id lobortis convallis', 'false', 8);
INSERT INTO "auction_modification" (newDescription, is_approved,

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idApprovedAuction) VALUES ('donec semper sapien a libero nam dui proin leo
odio porttitor id consequat in consequat ut nulla', 'false',9);
INSERT INTO "auction_modification" (newDescription, is_approved,
idApprovedAuction) VALUES ('vestibulum velit id pretium iaculis diam erat
fermentum justo nec condimentum neque', 'false',10);

--13
INSERT INTO "notification" (information, idMember) VALUES ('neque dui
bibendum morbi non quam nec dui luctus rutrum', 8);
INSERT INTO "notification" (information, idMember) VALUES ('eleifend donec ut
dolor morbi vel lectus in quam fringilla rhoncus mauris enim leo rhoncus sed
vestibulum sit amet', 6);
INSERT INTO "notification" (information, idMember) VALUES ('augue quam
sollicitudin vitae consectetur eget rutrum at lorem integer tincidunt ante
vel ipsum praesent blandit lacinia', 2);
INSERT INTO "notification" (information, idMember) VALUES ('ultrices eu nibh
quisque id justo sit amet sapien dignissim vestibulum', 13);
INSERT INTO "notification" (information, idMember) VALUES ('convallis dui
consequat dui nec nisi volutpat eleifend donec ut dolor morbi vel lectus in',
7);
INSERT INTO "notification" (information, idMember) VALUES ('potenti cras in
purus eu magna vulputate luctus cum sociis', 7);
INSERT INTO "notification" (information, idMember) VALUES ('et ultrices
posuere cubilia curae nulla dapibus dolor vel est donec odio justo
sollicitudin ut suscipit a feugiat et eros', 11);
INSERT INTO "notification" (information, idMember) VALUES ('odio consequat
varius integer ac leo pellentesque ultrices mattis odio donec vitae nisi nam
ultrices libero non mattis', 9);
INSERT INTO "notification" (information, idMember) VALUES ('porttitor pede
justo eu massa donec dapibus dui at velit eu est congue elementum in hac',
9);
INSERT INTO "notification" (information, idMember) VALUES ('ultrices mattis
odio donec vitae nisi nam ultrices libero non mattis pulvinar nulla pede
ullamcorper', 8);
INSERT INTO "notification" (information, idMember) VALUES ('nam nulla integer
pede justo lacinia eget tincidunt eget tempus vel pede', 3);
INSERT INTO "notification" (information, idMember) VALUES ('sodales sed
tincidunt eu felis fusce posuere felis sed lacus morbi sem mauris laoreet ut
rhoncus aliquet', 5);
INSERT INTO "notification" (information, idMember) VALUES ('eget congue eget
semper rutrum nulla nunc purus phasellus in', 10);
INSERT INTO "notification" (information, idMember) VALUES ('viverra eget
congue eget semper rutrum nulla nunc purus phasellus', 2);
INSERT INTO "notification" (information, idMember) VALUES ('diam id ornare
imperdiet sapien urna pretium nisl ut volutpat sapien', 14);
INSERT INTO "notification" (information, idMember) VALUES ('lobortis convallis
tortor risus dapibus augue vel accumsan tellus nisi', 18);
INSERT INTO "notification" (information, idMember) VALUES ('sit amet nulla
quisque arcu libero rutrum ac lobortis vel dapibus', 7);
INSERT INTO "notification" (information, idMember) VALUES ('libero convallis
eget eleifend luctus ultricies eu nibh quisque id justo sit', 20);
INSERT INTO "notification" (information, idMember) VALUES ('velit id pretium

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iaculis diam erat fermentum justo nec condimentum neque', 12);
INSERT INTO "notification" (information, idMember) VALUES ('mauris enim leo
rhoncus sed vestibulum sit amet cursus id turpis integer aliquet', 14);
INSERT INTO "notification" (information, idMember) VALUES ('et commodo
vulputate justo in blandit ultrices enim lorem ipsum dolor', 3);
INSERT INTO "notification" (information, idMember) VALUES ('primis in faucibus
orci luctus et ultrices posuere cubilia curae dui faucibus accumsan odio',
19);
INSERT INTO "notification" (information, idMember) VALUES ('phasellus in felis
donec semper sapien a libero nam dui proin leo odio porttitor id', 10);
INSERT INTO "notification" (information, idMember) VALUES ('suspendisse
potenti cras in purus eu magna vulputate luctus cum sociis natoque penatibus
et', 17);
INSERT INTO "notification" (information, idMember) VALUES ('sit amet
consectetuer adipiscing elit proin risus praesent lectus vestibulum quam
sapien', 8);
INSERT INTO "notification" (information, idMember) VALUES ('orci eget orci
vehicula condimentum curabitur in libero ut massa volutpat convallis morbi',
8);
INSERT INTO "notification" (information, idMember) VALUES ('felis sed lacus
morbi sem mauris laoreet ut rhoncus aliquet pulvinar sed nisl nunc rhoncus dui
vel sem sed', 5);
INSERT INTO "notification" (information, idMember) VALUES ('condimentum id
luctus nec molestie sed justo pellentesque viverra pede ac diam cras
pellentesque volutpat', 17);
INSERT INTO "notification" (information, idMember) VALUES ('odio odio
elementum eu interdum eu tincidunt in leo maecenas pulvinar lobortis est
phasellus sit amet erat nulla tempus vivamus', 8);
INSERT INTO "notification" (information, idMember) VALUES ('donec dapibus dui
at velit eu est congue elementum in hac habitasse platea dictumst morbi', 10);

--14
INSERT INTO "notification_auction" (idAuction, idNotification) VALUES (12,
19);
INSERT INTO "notification_auction" (idAuction, idNotification) VALUES (15,
27);
INSERT INTO "notification_auction" (idAuction, idNotification) VALUES (2, 1);
INSERT INTO "notification_auction" (idAuction, idNotification) VALUES (7, 24);
INSERT INTO "notification_auction" (idAuction, idNotification) VALUES (14, 5);
INSERT INTO "notification_auction" (idAuction, idNotification) VALUES (19, 8);

--15
INSERT INTO "image" (source, idAuction) VALUES ('img/levithanwakes.jpg',10);
INSERT INTO "image" (source, idAuction) VALUES ('img/bornacrime.jpg',3);
INSERT INTO "image" (source, idAuction) VALUES ('img/theorphanstale.jpg',7);
INSERT INTO "image" (source, idAuction) VALUES
('img/thehusbandssecret.jpg',13);

--16
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('cubilia
curae dui faucibus accumsan odio curabitur convallis dui consequat dui nec
nisi', 11, 8);

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INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('nulla ut
erat id mauris vulputate elementum nullam varius nulla', 15, 13);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('aenean
auctor gravida sem praesent id massa id nisl venenatis lacinia', 17, 6);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('tincidunt
lacus at velit vivamus vel nulla eget eros elementum pellentesque quisque
porta volutpat', 14, 7);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES
('condimentum curabitur in libero ut massa volutpat convallis morbi odio
odio', 11, 9);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('nulla
neque libero convallis eget eleifend luctus ultricies eu nibh quisque', 20,
9);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('curabitur
gravida nisi at nibh in hac habitasse platea dictumst aliquam augue quam
sollicitudin vitae', 15, 14);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('neque
sapien placerat ante nulla justo aliquam quis turpis eget elit sodales
scelerisque mauris sit amet', 6, 4);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('ac tellus
semper interdum mauris ullamcorper purus sit amet nulla quisque', 11, 5);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES
('consectetuer adipiscing elit proin interdum mauris non ligula pellentesque
ultrices phasellus id sapien', 15, 12);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('tincidunt
eu felis fusce posuere felis sed lacus morbi sem mauris laoreet ut rhoncus
aliquet pulvinar sed nisl nunc rhoncus', 17, 3);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('rhoncus
aliquet pulvinar sed nisl nunc rhoncus dui vel sem sed sagittis nam', 10, 12);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('ac neque
duis bibendum morbi non quam nec dui luctus rutrum nulla tellus in sagittis
dui vel nisl', 2, 9);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('nisl dui
ac nibh fusce lacus purus aliquet at feugiat non pretium quis lectus', 11,
17);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('odio cras
mi pede malesuada in imperdiet et commodo vulputate justo in blandit ultrices
enim lorem', 4, 20);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('congue
vivamus metus arcu adipiscing molestie hendrerit at vulputate vitae nisl
aenean lectus pellentesque', 8, 11);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('blandit
nam nulla integer pede justo lacinia eget tincidunt eget tempus', 5, 15);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('massa
volutpat convallis morbi odio odio elementum eu interdum eu tincidunt in', 17,
10);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('dignissim
vestibulum vestibulum ante ipsum primis in faucibus orci luctus et ultrices
posuere cubilia curae', 13, 4);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('sed
accumsan felis ut at dolor quis odio consequat varius integer', 10, 12);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('ante

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ipsum primis in faucibus orci luctus et ultrices posuere cubilia curae donec
pharetra magna vestibulum aliquet ultrices erat', 14, 8);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('duis
bibendum felis sed interdum venenatis turpis enim blandit mi in porttitor pede
justo eu massa', 15, 6);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('erat
curabitur gravida nisi at nibh in hac habitasse platea', 16, 15);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('faucibus
accumsan odio curabitur convallis duis consequat dui nec nisi volutpat
eleifend donec ut dolor morbi vel', 6, 10);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES
('vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere
cubilia curae nulla dapibus', 7, 8);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES
('pellentesque volutpat dui maecenas tristique est et tempus semper est quam
pharetra magna ac consequat metus sapien', 1, 2);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('in
faucibus orci luctus et ultrices posuere cubilia curae nulla dapibus dolor vel
est', 3, 5);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('nullam
sit amet turpis elementum ligula vehicula consequat morbi a ipsum integer a
nibh in quis', 10, 17);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('primis in
faucibus orci luctus et ultrices posuere cubilia curae duis faucibus accumsan
odio curabitur convallis duis', 20, 3);
INSERT INTO "message" (message_text, idSender , idReceiver) VALUES ('ipsum
primis in faucibus orci luctus et ultrices posuere cubilia curae duis', 18,
19);

--17
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'mattis odio donec vitae nisi nam ultrices libero
non mattis pulvinar nulla pede ullamcorper augue a suscipit nulla', true,
null, 8, 14);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'consequat in consequat ut nulla sed accumsan felis
ut at', false, null, 16, 15);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'ut at dolor quis odio consequat varius integer ac
leo pellentesque ultrices mattis odio donec vitae', false, null, 19, 5);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'arcu sed augue aliquam erat volutpat in congue
etiam justo etiam pretium iaculis justo in hac habitasse platea dictumst',
true, null, 15, 12);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'potenti in eleifend quam a odio in hac habitasse
platea dictumst maecenas ut massa quis augue luctus tincidunt nulla mollis',
true, null, 3, 6);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'ac enim in tempor turpis nec euismod scelerisque
quam turpis adipiscing lorem vitae mattis nibh ligula nec', false, null, 6,
11);

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INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'magna bibendum imperdiet nullam orci pede
venenatis non sodales sed tincidunt', false, null, 4, 9);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'vel ipsum praesent blandit lacinia erat vestibulum
sed magna at nunc commodo placerat praesent blandit nam nulla integer pede',
true, null, 2, 1);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (true, 'porttitor id consequat in consequat ut nulla sed
accumsan felis ut at dolor quis odio consequat varius', true, null, 11, 8);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'in blandit ultrices enim lorem ipsum dolor sit
amet consectetur adipiscing elit proin interdum mauris non ligula
pellentesque ultrices', true, null, 14, 19);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (true, 'a odio in hac habitasse platea dictumst maecenas ut
massa quis augue luctus tincidunt nulla mollis molestie lorem quisque ut',
false, null, 10, 17);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (true, 'natoque penatibus et magnis dis parturient montes
nascetur ridiculus mus', false, null, 1, 5);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (true, 'nullam orci pede venenatis non sodales sed
tincidunt eu felis fusce', true, null, 5, 10);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'libero non mattis pulvinar nulla pede ullamcorper
augue a suscipit nulla elit ac nulla', true, null, 10, 11);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (true, 'congue etiam justo etiam pretium iaculis justo in
hac habitasse platea dictumst etiam', true, null, 20, 11);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'a feugiat et eros vestibulum ac est lacinia nisi
venenatis tristique fusce congue diam id ornare', false, null, 16, 11);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'tortor id nulla ultrices aliquet maecenas leo odio
condimentum id luctus', false, null, 16, 4);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'suscipit ligula in lacus curabitur at ipsum ac
tellus semper interdum mauris ullamcorper purus', true, null, 5, 7);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (true, 'imperdiet nullam orci pede venenatis non sodales
sed tincidunt eu felis fusce posuere felis', true, null, 15, 6);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'accumsan odio curabitur convallis duis consequat
dui nec nisi volutpat eleifend donec ut', true, null, 7, 14);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'sed tristique in tempus sit amet sem fusce
consequat nulla nisl nunc nisl duis', true, null, 4, 2);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'lectus pellentesque at nulla suspendisse potenti
cras in purus eu magna', false, null, 13, 13);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,

```

```

idReceiver) VALUES (false, 'lorem ipsum dolor sit amet consectetur adipiscing
elit proin risus praesent lectus vestibulum quam sapien varius ut', true,
null, 15, 1);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (true, 'velit nec nisi vulputate nonummy maecenas tincidunt
lacus at velit vivamus vel nulla eget eros elementum pellentesque quisque
porta', true, null, 14, 11);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (true, 'lobortis sapien sapien non mi integer ac neque duis
bibendum morbi non quam nec dui', false, null, 15, 16);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'vestibulum proin eu mi nulla ac enim in tempor
turpis', true, null, 19, 17);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (true, 'primis in faucibus orci luctus et ultrices posuere
cubilia curae mauris viverra diam vitae quam suspendisse potenti nullam
porttitor lacus', false, null, 7, 13);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'viverra pede ac diam cras pellentesque volutpat
dui maecenas tristique est et tempus semper est quam pharetra', true, null, 5,
12);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (true, 'duis consequat dui nec nisi volutpat eleifend donec
ut dolor morbi vel lectus in quam fringilla rhoncus mauris', false, null, 12,
7);
INSERT INTO "comment" (liked, comment_text, is_removed, idParent, idSender ,
idReceiver) VALUES (false, 'nulla ultrices aliquet maecenas leo odio
condimentum id luctus nec molestie sed justo pellentesque viverra pede ac',
false, null, 5, 6);

```

Revision History

Changes made to the first submission:

1. Correction on tuple estimation the estimated growth of a member.
2. All indices got revised to make sure they don't create overhead on inserts or updates.
3. Changes to the database schema, to better follow SQL norms.
4. Conversion of unnecessary triggers to check constraints.
5. Creation of a new trigger with the reference: TRIGGER08.

GROUP1726, 9/4/2018

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