

A9: Main accesses to the database and transactions

This A9 shows the main accesses to the database, including the transactions.

For each transaction, the isolation level is explicitly stated and read-only transactions are identified to improve global performance.

1. Main Accesses

Main accesses to the database.

1.1 M01: Registration

SQL101	Creates a new customer in the platform
Web Resource	R105
<pre>INSERT INTO "user" VALUES (\$username, \$passw , \$email); INSERT INTO customer VALUES (\$username, \$name , \$address);</pre>	

1.2 M02: Full text search on Products

SQL201	Searches a product on the database
Web Resource	R202 , R204
<pre>SELECT * FROM product P, category C WHERE P.search @ plainto_tsquery('english', \$search_words) and C.id = P.category_idcat ORDER BY ts_rank(P.search, plainto_tsquery('english', \$search_words)) DESC LIMIT \$max_number_results OFFSET \$page;</pre>	

1.3 M03: Comments

SQL301	Gets comments of a given product
Web Resource	R304
<pre>SELECT * FROM comment C, answer A, "user" U, WHERE C.product_idproduct = \$sku AND C.user_username = U.username AND ((C.id = A.idparent) OR (C.id = A.idchild) OR (NOT EXISTS (SELECT * FROM answer A2 where A2.idparent = C.id))) ORDER BY C."date" ASC;</pre>	

1.4 M04: Moderation

SQL401	Gets comments for moderator to review
Web Resource	R508
<pre>SELECT * FROM comment C, "user" U, WHERE C.deleted = false AND C.flagsno > \$threshold, AND C.user_username = U.username;</pre>	

2. Transactions

T01	Insert a new customer in the system
Isolation level	SERIALIZABLE
Justification	When a customer is created there is an insert at the User table and at the Customer table and any operation in between must be such that there aren't any Phantom Reads.
<pre>BEGIN TRANSACTION; SET TRANSACTION ISOLATION SERIALIZABLE -- Insert User INSERT INTO "user" VALUES (\$username, \$password, \$email); -- Insert Customer INSERT INTO customer VALUES (\$username, \$name, \$address); COMMIT;</pre>	

T02	Get customer info
Isolation level	READ UNCOMMITTED READONLY
Justification	When a customer views it's profile, it isn't very worrissome if not all of their information is updated. As such, we don't mind dirty reads.
<pre>BEGIN TRANSACTION; SET TRANSACTION ISOLATION READ UNCOMMITTED READ ONLY -- Get customer info SELECT * FROM "user" U, customer C WHERE U.username = \$username AND U.username = C.username; -- Get customer purchases SELECT * FROM purchase PUR, purchase_product PURPRO, product PRO WHERE PUR.customer_username = \$username AND PUR.id = PURPRO.purchase_idpurchase AND PURPRO.product_idproduct = PRO.sku ORDER BY PUR."date" DESC -- Get customer favorites SELECT * FROM product P, favorite F WHERE F.customer_username = \$username AND P.sku = F.product_idproduct; COMMIT;</pre>	

T03	Get products for main page
Isolation level	READ COMMITTED READONLY
Justification	When a customer is in the homepage we want to display discounted and recommended products and allow the user to search products but we don't want dirty reads to happen because products might be undergoing updates.
<pre>BEGIN TRANSACTION; SET TRANSACTION ISOLATION READ COMMITTED READ ONLY -- Get discounted products SELECT *, (P.price - P.discountprice)/P.price AS rank FROM product P WHERE P.discountprice IS NOT NULL ORDER BY rank DESC LIMIT \$limit; -- Get products with higher rating SELECT * FROM product P ORDER BY rating DESC LIMIT \$limit; -- Get best selling products SELECT *, SUM(PP.quantity) as sumQ FROM product P, purchase_product PP WHERE P.sku = PP.product_idproduct GROUP BY P.sku ORDER BY sumQ DESC LIMIT \$limit; COMMIT;</pre>	

Revision history

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