

## ปฏิบัติการที่ 6 Trigger on Database

### วัตถุประสงค์

- เพื่อให้นิสิตเข้าใจ และประยุกต์ใช้ Trigger

ตารางข้อมูลที่ใช้ประกอบ

#### 1. ตาราง Customer

CUSTOMER_ID	NAME	EMAIL	COUNTRY_CODE	BUDGET	USED
C001	Win Weerachai	win.weerachai@thaicreate.com	TH	1000000.00	600000.00
C002	John Smith	john.smith@thaicreate.com	UK	2000000.00	800000.00
C003	Jame Born	jame.born@thaicreate.com	US	3000000.00	600000.00
C004	Chalee Angel	chalee.angel@thaicreate.com	US	4000000.00	100000.00
C005	Somnuk Weerachai	somnuk.weerachai@thaicreate.com	TH	1000000.00	600000.00
C006	Adison Smith	adison.smith@thaicreate.com	UK	2000000.00	800000.00
C007	Shusuk Born	shusuk.born@thaicreate.com	US	3000000.00	600000.00
C008	Lee Angel	lee.angel@thaicreate.com	US	4000000.00	100000.00

#### 2. ตาราง Audit

AUDIT_ID	CUSTOMER_ID	LOG_DATE	USED
1	C001	2015-08-01	100000.00
2	C001	2015-08-05	200000.00
3	C001	2015-08-10	300000.00
4	C002	2015-08-02	400000.00
5	C002	2015-08-07	100000.00
6	C002	2015-08-15	300000.00
7	C003	2015-08-20	400000.00
8	C003	2015-08-25	200000.00
9	C004	2015-07-04	100000.00
10	C005	2015-08-01	100000.00
11	C005	2015-08-05	200000.00
12	C005	2015-08-10	300000.00
13	C006	2015-08-02	400000.00
14	C006	2015-08-07	100000.00
15	C006	2015-08-15	300000.00
16	C007	2015-08-20	400000.00
17	C007	2015-08-25	200000.00
18	C008	2015-07-04	100000.00



## 2. จงสร้าง Trigger โดยมีเงื่อนไขดังนี้

1. จงสร้าง Trigger ชื่อ sumUsed
2. เมื่อเพิ่มข้อมูลในตาราง Audit ให้ทำการคำนวณผลรวมของเงินที่ใช้ใหม่พร้อมแก้ไขข้อมูลในตาราง Customer ใหม่อีกครั้ง
3. เมื่อข้อมูลจากตาราง Audit ถูกเพิ่มเข้าไปแล้วจึงค่อยแก้ไขข้อมูลในตาราง Customer

Condition	ผลลัพธ์
<b>Code</b> สร้าง Trigger ชื่อ sumUsed	<pre> DROP PROCEDURE IF EXISTS updateCustomerUsedFromAudit; DELIMITER // CREATE PROCEDURE updateCustomerUsedFromAudit(IN toUpdateCustomerId varchar(4)) BEGIN     DECLARE dUsed DECIMAL(18, 2) DEFAULT 0;     SELECT COALESCE(SUM(USED), 0) INTO dUsed FROM `audit` WHERE CUSTOMER_ID = toUpdateCustomerId;     UPDATE customer SET USED = dUsed WHERE CUSTOMER_ID = toUpdateCustomerId; END // DELIMITER ;  DROP TRIGGER IF EXISTS sumUsed; DELIMITER // CREATE TRIGGER sumUsed AFTER INSERT ON `audit` FOR EACH ROW BEGIN     CALL updateCustomerUsedFromAudit(new.CUSTOMER_ID); END // DELIMITER ; </pre>
<b>เรียกใช้ Trigger</b> ชื่อ sumUsed เงื่อนไขของเพิ่ม ข้อมูลในตาราง Audit AUDIT_ID: 19 CUSTOMER_ID: C002 LOG_DATE: 2015-10-10 USED: 200000	<p>ภาพหน้าจอผลลัพธ์ตาราง Audit หลังเพิ่มข้อมูล</p>

<div><div>ภาพหน้าจอผลลัพธ์ตาราง Customer หลังเพิ่มข้อมูล</div><div><div>Showing rows 0 - 6 (7 total, Query took 0.0002 seconds.)</div><div><div>SELECT * FROM `customer`</div><div>Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]</div><div><div>Show all</div><div>Number of rows: 25</div><div>Filter rows: Search this table</div><div>Sort by key: None</div></div><div>Options</div><div><div><div></div><div>CUSTOMER_ID</div><div>NAME</div><div>EMAIL</div><div>COUNTRY_CODE</div><div>BUDGET</div><div>USED</div></div><div><div><div></div><div>Edit</div><div>Copy</div><div>Delete</div></div><div>C002</div><div>John Smith</div><div>john.smith@thaicreate.com</div><div>UK</div><div>2000000.00</div><div>1000000.00</div></div><div><div><div></div><div>Edit</div><div>Copy</div><div>Delete</div></div><div>C003</div><div>Jame Born</div><div>jame.born@thaicreate.com</div><div>US</div><div>3000000.00</div><div>600000.00</div></div><div><div><div></div><div>Edit</div><div>Copy</div><div>Delete</div></div><div>C004</div><div>Chaloe Angel</div><div>chaloe.angel@thaicreate.com</div><div>US</div><div>4000000.00</div><div>100000.00</div></div></div></div></div></div>			
การทดลองที่	คะแนนเต็ม	คะแนนที่ได้	ผู้ตรวจ
2	2		

## 3. จงสร้าง Trigger โดยมีเงื่อนไขดังนี้

1. จงสร้าง Trigger ชื่อ sumUsed\_Delete
2. เมื่อลบข้อมูลในตาราง Audit ให้ทำการคำนวณผลรวมของเงินที่ใช้ใหม่พร้อมแก้ไขข้อมูลในตาราง Customer ใหม่อีกครั้ง
3. เมื่อข้อมูลจากตาราง Audit ถูกลบไปแล้วจึงค่อยแก้ไขข้อมูลในตาราง Customer

Condition	ผลลัพธ์																																																																																																					
Code สร้าง Trigger ชื่อsumUsed_Delete	<pre>DROP PROCEDURE IF EXISTS updateCustomerUsedFromAudit; DELIMITER // CREATE PROCEDURE updateCustomerUsedFromAudit(IN toUpdateCustomerId varchar(4)) BEGIN     DECLARE dUsed DECIMAL(18, 2) DEFAULT 0;     SELECT COALESCE(SUM(USED), 0) INTO dUsed FROM `audit` WHERE CUSTOMER_ID = toUpdateCustomerId;     UPDATE customer SET USED = dUsed WHERE CUSTOMER_ID = toUpdateCustomerId; END // DELIMITER ;  DROP TRIGGER IF EXISTS sumUsed_Delete; DELIMITER // CREATE TRIGGER sumUsed_Delete AFTER DELETE ON `audit` FOR EACH ROW BEGIN     CALL updateCustomerUsedFromAudit(old.CUSTOMER_ID); END // DELIMITER ;</pre>																																																																																																					
เรียกใช้ Trigger ชื่อsumUsed_Delete เงื่อนไขของลบข้อมูลในตาราง audit CUSTOMER_ID: C003 USED: 200000	<p>ภาพหน้าจอผลลัพธ์ตาราง Audit หลังลบข้อมูล</p> <div><div>Showing rows 0 - 14 (15 total, Query took 0.0004 seconds.)</div><div><div>SELECT * FROM `audit`</div><div>Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]</div><div><div>Show all</div><div>Number of rows: 25</div><div>Filter rows: Search this table</div><div>Sor</div></div></div><table><tr><th colspan="5">Options</th></tr><tr><th></th><th></th><th>AUDIT_ID</th><th>CUSTOMER_ID</th><th>LOG_DATE</th><th>USED</th></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>4</td><td>C002</td><td>2015-08-02</td><td>400000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>5</td><td>C002</td><td>2015-08-07</td><td>100000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>6</td><td>C002</td><td>2015-08-15</td><td>300000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>7</td><td>C003</td><td>2015-08-20</td><td>400000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>9</td><td>C004</td><td>2015-07-04</td><td>100000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>10</td><td>C005</td><td>2015-08-01</td><td>100000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>11</td><td>C005</td><td>2015-08-05</td><td>200000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>12</td><td>C005</td><td>2015-08-10</td><td>300000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>13</td><td>C006</td><td>2015-08-02</td><td>400000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>14</td><td>C006</td><td>2015-08-07</td><td>100000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>15</td><td>C006</td><td>2015-08-15</td><td>300000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>16</td><td>C007</td><td>2015-08-20</td><td>400000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>17</td><td>C007</td><td>2015-08-25</td><td>200000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>18</td><td>C008</td><td>2015-08-25</td><td>100000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit Copy Delete</td><td>19</td><td>C002</td><td>2015-10-10</td><td>200000.00</td></tr></table></div>	Options							AUDIT_ID	CUSTOMER_ID	LOG_DATE	USED	<input type="checkbox"/>	Edit Copy Delete	4	C002	2015-08-02	400000.00	<input type="checkbox"/>	Edit Copy Delete	5	C002	2015-08-07	100000.00	<input type="checkbox"/>	Edit Copy Delete	6	C002	2015-08-15	300000.00	<input type="checkbox"/>	Edit Copy Delete	7	C003	2015-08-20	400000.00	<input type="checkbox"/>	Edit Copy Delete	9	C004	2015-07-04	100000.00	<input type="checkbox"/>	Edit Copy Delete	10	C005	2015-08-01	100000.00	<input type="checkbox"/>	Edit Copy Delete	11	C005	2015-08-05	200000.00	<input type="checkbox"/>	Edit Copy Delete	12	C005	2015-08-10	300000.00	<input type="checkbox"/>	Edit Copy Delete	13	C006	2015-08-02	400000.00	<input type="checkbox"/>	Edit Copy Delete	14	C006	2015-08-07	100000.00	<input type="checkbox"/>	Edit Copy Delete	15	C006	2015-08-15	300000.00	<input type="checkbox"/>	Edit Copy Delete	16	C007	2015-08-20	400000.00	<input type="checkbox"/>	Edit Copy Delete	17	C007	2015-08-25	200000.00	<input type="checkbox"/>	Edit Copy Delete	18	C008	2015-08-25	100000.00	<input type="checkbox"/>	Edit Copy Delete	19	C002	2015-10-10	200000.00
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การทดลองที่	คะแนนเต็ม	คะแนนที่ได้	ผู้ตรวจ
3	3		

## 4. จงเรียกใช้ Trigger โดยมีเงื่อนไขดังนี้

1. จงสร้าง Trigger ชื่อ editAudit
2. เมื่อแก้ไขข้อมูลในตาราง Audit ให้ทำการคำนวณผลรวมของเงินที่ใช้ใหม่พร้อมแก้ไขข้อมูลในตาราง Customer ใหม่อีกครั้ง
3. เมื่อข้อมูลจากตาราง Audit ถูกแก้ไขแล้วจึงค่อยแก้ไขข้อมูลในตาราง Customer

Condition	ผลลัพธ์																																																																																																																								
Code สร้าง Trigger ชื่อ editAudit	<pre>DROP PROCEDURE IF EXISTS updateCustomerUsedFromAudit; DELIMITER // CREATE PROCEDURE updateCustomerUsedFromAudit(IN toUpdateCustomerId varchar(4)) BEGIN     DECLARE dUsed DECIMAL(18, 2) DEFAULT 0;     SELECT COALESCE(SUM(USED), 0) INTO dUsed FROM `audit` WHERE CUSTOMER_ID = toUpdateCustomerId;     UPDATE customer SET USED = dUsed WHERE CUSTOMER_ID = toUpdateCustomerId; END // DELIMITER ;  DROP TRIGGER IF EXISTS editAudit; DELIMITER // CREATE TRIGGER editAudit AFTER UPDATE ON `audit` FOR EACH ROW BEGIN     IF new.USED &lt;&gt; old.USED THEN         CALL updateCustomerUsedFromAudit(old.CUSTOMER_ID);     END IF; END //</pre>																																																																																																																								
เรียกใช้ Trigger ชื่อ editAudit เงื่อนไขง่แก้ไขข้อมูลในตาราง audit AUDIT_ID: 7 CUSTOMER_ID: C003 USED: 100000	<p>ภาพหน้าจอผลลัพธ์ตาราง Audit หลังลบข้อมูล</p> <div><div>Showing rows 0 - 14 (15 total, Query took 0.0005 seconds.)</div><div><div>SELECT * FROM `audit`</div><div>Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]</div><div><div>Show all</div><div>Number of rows: 25</div><div>Filter rows: Search this table</div><div>Sort by key: None</div></div><div><div>+ Options</div><div><div></div><div>AUDIT_ID</div><div>CUSTOMER_ID</div><div>LOG_DATE</div><div>USED</div></div><table><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>4</td><td>C002</td><td>2015-08-02</td><td>400000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>5</td><td>C002</td><td>2015-08-07</td><td>100000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>6</td><td>C002</td><td>2015-08-15</td><td>300000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>7</td><td>C003</td><td>2015-08-20</td><td>100000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>9</td><td>C004</td><td>2015-07-04</td><td>100000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>10</td><td>C005</td><td>2015-08-01</td><td>100000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>11</td><td>C005</td><td>2015-08-05</td><td>200000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>12</td><td>C005</td><td>2015-08-10</td><td>300000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>13</td><td>C006</td><td>2015-08-02</td><td>400000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>14</td><td>C006</td><td>2015-08-07</td><td>100000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>15</td><td>C006</td><td>2015-08-15</td><td>300000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>16</td><td>C007</td><td>2015-08-20</td><td>400000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>17</td><td>C007</td><td>2015-08-25</td><td>200000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>18</td><td>C008</td><td>2015-08-25</td><td>100000.00</td></tr><tr><td><input type="checkbox"/></td><td>Edit</td><td>Copy</td><td>Delete</td><td>19</td><td>C002</td><td>2015-10-10</td><td>200000.00</td></tr></table><div><div>Check all</div><div>With selected:</div><div>Edit</div><div>Copy</div><div>Delete</div><div>Export</div></div></div></div></div>	<input type="checkbox"/>	Edit	Copy	Delete	4	C002	2015-08-02	400000.00	<input type="checkbox"/>	Edit	Copy	Delete	5	C002	2015-08-07	100000.00	<input type="checkbox"/>	Edit	Copy	Delete	6	C002	2015-08-15	300000.00	<input type="checkbox"/>	Edit	Copy	Delete	7	C003	2015-08-20	100000.00	<input type="checkbox"/>	Edit	Copy	Delete	9	C004	2015-07-04	100000.00	<input type="checkbox"/>	Edit	Copy	Delete	10	C005	2015-08-01	100000.00	<input type="checkbox"/>	Edit	Copy	Delete	11	C005	2015-08-05	200000.00	<input type="checkbox"/>	Edit	Copy	Delete	12	C005	2015-08-10	300000.00	<input type="checkbox"/>	Edit	Copy	Delete	13	C006	2015-08-02	400000.00	<input type="checkbox"/>	Edit	Copy	Delete	14	C006	2015-08-07	100000.00	<input type="checkbox"/>	Edit	Copy	Delete	15	C006	2015-08-15	300000.00	<input type="checkbox"/>	Edit	Copy	Delete	16	C007	2015-08-20	400000.00	<input type="checkbox"/>	Edit	Copy	Delete	17	C007	2015-08-25	200000.00	<input type="checkbox"/>	Edit	Copy	Delete	18	C008	2015-08-25	100000.00	<input type="checkbox"/>	Edit	Copy	Delete	19	C002	2015-10-10	200000.00
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<input type="checkbox"/>	Edit	Copy	Delete	14	C006	2015-08-07	100000.00																																																																																																																		
<input type="checkbox"/>	Edit	Copy	Delete	15	C006	2015-08-15	300000.00																																																																																																																		
<input type="checkbox"/>	Edit	Copy	Delete	16	C007	2015-08-20	400000.00																																																																																																																		
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<input type="checkbox"/>	Edit	Copy	Delete	18	C008	2015-08-25	100000.00																																																																																																																		
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