

### Step 3:

```
mysql> select * from bkp5190_instructors;
+----+-----+-----+-----+-----+
| instructorid | psuid | fname | mname | lname |
+----+-----+-----+-----+-----+
| 1 | DGC8415 | Deaaron | Gerrad | CONLEY |
| 2 | PDM4857 | Praveen | Duncan | MCDONALD |
| 3 | AJS4929 | Anise | Jordyn | SINGH |
| 4 | NBL1250 | Natsumi | Bina | LESTER |
| 5 | JBD5651 | Jeanpierre | Brek | DORSEY |
| 6 | TSJ6190 | Todd | Shamona | JEFFERSON |
| 7 | JMB1632 | Jaquan | Meryl | BRUCE |
| 8 | VKK2112 | Vana | Katisha | KLINE |
| 9 | KTG5189 | Kierre | Tarence | GLOVER |
| 10 | KJW4059 | Kelson | Jamarkus | WELLS |
| 11 | KST2854 | Katty | Shereen | TREJO |
| 12 | IYP6380 | Ilaisaane | Yaquelin | PRICE |
| 13 | GBS7708 | Gennesis | Bj | SALAZAR |
| 14 | MWH5293 | Marie | Whitlee | HURLEY |
| 15 | JAA8457 | Jorel | Anahy | ABBOTT |
| 16 | DTB3951 | Darick | Tristine | BECKER |
| 17 | SMS5949 | Smanatha | Markees | STAFFORD |
| 18 | IAB2364 | Icey | Amauri | BUCK |
| 19 | HCA4001 | Haywood | Chellsea | ANTHONY |
| 20 | SCO7055 | Shakia | Cyle | OLSEN |
| 21 | WCI2734 | Waverly | Charnessa | IBARRA |
| 22 | MNM8099 | Neisha | William | NICHOLSON |
| 23 | LTK1154 | Laverne | Torreon | KIM |
| 24 | J3R2326 | Shaveen | Jonluke | REID |
| 25 | CMV2096 | Camara | Munear | VILLA |
| 26 | DJK2181 | Denni | Jae | KELLY |
| 27 | ACT3604 | Ashlyn | Cobay | TRIVINO |
| 28 | GDM4513 | Gale | Gaurav | WALLER |
| 29 | MNK1427 | Marcedez | Kameron | NIXON |
| 30 | KTO7228 | Ronbini | Tatisha | ORR |
| 31 | JCK5688 | Josslyn | Chaston | KELLER |
| 32 | VOS2224 | Vanessa | Gregoria | SANDERS |
| 33 | SCH2153 | Shatoria | Kaydee | CAMPOS |
| 34 | SCH2582 | Shauntelle | Callin | HARTMAN |
| 35 | LHM4856 | Levon | Delany | MARQUEZ |
| 36 | TOM4075 | Tasmine | Giacomo | WOOD |
+----+-----+-----+-----+-----+

36 rows in set (0.00 sec)

mysql> delete from bkp5190_courses_taken where 'course_takenid' = 26826;
ERROR 1292 (22007): Truncated incorrect DOUBLE value: 'course_takenid'
mysql> delete from bkp5190_courses_taken where 'semester' = '2018FA';
ERROR 1064 (42002): Unknown column '2018FA' in 'where clause'
mysql> delete from bkp5190_courses_taken where 'semester' = '2018FA';
Query OK, 0 rows affected (0.00 sec)

mysql> select user();
+-----+
| user() |
+-----+
| bkp5190@localhost |
+-----+
1 row in set (0.00 sec)

mysql>
```

### Step 4:

```
mysql> create table bkp5190_temp as select * from bkp5190_instructors;
Query OK, 36 rows affected (0.04 sec)
Records: 36 Duplicates: 0 Warnings: 0
```

```
mysql> select * from bkp5190_temp;
```

instructorid	psuid	fname	mname	lname
1	DGC8415	Deaaron	Gerrad	CONLEY
2	PDM4857	Praveen	Duncan	MCDONALD
3	AJS4929	Anise	Jordyn	SINGH
4	NBL1250	Natsumi	Bina	LESTER
5	JBD5651	Jeanpierre	Brek	DORSEY
6	TSJ6190	Todd	Shamona	JEFFERSON
7	JMB1632	Jaquan	Meryl	BRUCE
8	VKK2112	Vana	Katisha	KLINE
9	KTG5189	Kierre	Tarence	GLOVER
10	KJW4059	Kelson	Jamarkus	WELLS
11	KST2854	Katty	Shereen	TREJO
12	IYP6380	Ilaisaane	Yaquelin	PRICE
13	GBS7708	Gennesis	Bj	SALAZAR
14	MWH5293	Marie	Whitlee	HURLEY
15	JAA8457	Jorel	Anahy	ABBOTT
16	DTB3951	Darick	Tristine	BECKER
17	SMS5949	Smanatha	Markees	STAFFORD
18	IAB2364	Icey	Amauri	BUCK
19	HCA4001	Haywood	Chellsea	ANTHONY
20	SCO7055	Shakia	Cyle	OLSEN
21	WCI2734	Waverly	Charnessa	IBARRA

22	NWN8899	Nieisha	William	NICHOLSON
23	LTK1154	Laverne	Torrean	KIM
24	SJR2326	Shavawn	Jonluke	REID
25	CMV2096	Camara	Muneer	VILLA
26	DJK2101	Denni	Jae	KELLY
27	ACT3604	Ashlyn	Cobey	TREVINO
28	GGW4513	Gale	Gaurav	WALLER
29	MKN1427	Marcedez	Kamaron	NIXON
30	RT07328	Roshini	Tarnisha	ORR
31	JCK5688	Josslyn	Chaston	KELLER
32	VGS6224	Vaness	Gregoria	SANDERS
33	SKC7153	Shatonia	Kaydee	CAMPOS
34	SCH2502	Shauntelle	Callin	HARTMAN
35	LDM4065	Levon	Delany	MARQUEZ
36	TGW4075	Tasmine	Giacomo	WOOD

36 rows in set (0.00 sec)

### Step 5:

```
mysql> SELECT * FROM bkp5190_temp;
```

instructorid	psuid	fname	mname	lname
1	DGC8415	Deaaron	Gerrad	CONLEY
2	PDM4857	Praveen	Duncan	MCDONALD
3	AJS4929	Anise	Jordyn	SINGH
4	NBL1250	Natsumi	Bina	LESTER
5	JBD5651	Jeanpierre	Brek	DORSEY
6	TSJ6190	Todd	Shamona	JEFFERSON
7	JMB1632	Jaquan	Meryl	BRUCE
8	VKK2112	Vana	Katisha	KLINE
9	KTG5189	Kierre	Tarence	GLOVER
10	KJW4059	Kelson	Jamarkus	WELLS
11	KST2854	Katty	Shereen	TREJO
12	IYP6380	Ilaisaane	Yaquelin	PRICE
13	GBS7708	Gennesis	Bj	SALAZAR
14	MWH5293	Marie	Whitlee	HURLEY
15	JAA8457	Jorel	Anahy	ABBOTT
16	DTB3951	Darick	Tristine	BECKER
17	SMS5949	Smanatha	Markees	STAFFORD
18	IAB2364	Icey	Amauri	BUCK
19	HCA4001	Haywood	Chellsea	ANTHONY
20	SCO7055	Shakia	Cyle	OLSEN
21	WCI2734	Waverly	Charnessa	IBARRA
22	NWN8899	Nieisha	William	NICHOLSON
23	LTK1154	Laverne	Torrean	KIM
24	SJR2326	Shavawn	Jonluke	REID
25	CMV2096	Camara	Muneer	VILLA
26	DJK2101	Denni	Jae	KELLY
27	ACT3604	Ashlyn	Cobey	TREVINO
28	GGW4513	Gale	Gaurav	WALLER
29	MKN1427	Marcedez	Kamaron	NIXON
30	RT07328	Roshini	Tarnisha	ORR
31	JCK5688	Josslyn	Chaston	KELLER
32	VGS6224	Vaness	Gregoria	SANDERS
33	SKC7153	Shatonia	Kaydee	CAMPOS
34	SCH2502	Shauntelle	Callin	HARTMAN

35	LDM4065	Levon	Delany	MARQUEZ
36	TGW4075	Tasmine	Giacomo	WOOD

36 rows in set (0.00 sec)

### Step 6:

```
mysql> SELECT * FROM bkp5190_temp;
```

instructorid	psuid	fname	mname	lname
1	DGC8415	Deaaron	Gerrad	CONLEY
2	PDM4857	Praveen	Duncan	MCDONALD
3	AJS4929	Anise	Jordyn	SINGH
4	NBL1250	Natsumi	Bina	LESTER
5	JBD5651	Jeanpierre	Brek	DORSEY
6	TSJ6190	Todd	Shamona	JEFFERSON
7	JMB1632	Jaquan	Meryl	BRUCE
8	VKK2112	Vana	Katisha	KLIN
9	KTG5189	Kierre	Tarence	GLOVER
10	KJW4059	Kelson	Jamarkus	WELLS
11	KST2854	Katty	Shereen	TREJO
12	IYP6380	Ilaisaane	Yaquelin	PRICE
13	GBS7708	Gennessee	Bj	SALAZAR
14	MWH5293	Marie	Whitlee	HURLEY
15	JAA8457	Jorel	Anahy	ABBOTT
16	DTB3951	Darick	Tristine	BECKER
17	SMS5949	Smanatha	Markees	STAFFORD
18	*IAB2364	Icey	Amauri	BUCK
19	*HCA4001	Haywood	Chellsea	ANTHONY
20	*SCO7055	Shakia	Cyle	OLSEN
21	*WCI2734	Waverly	Charnessa	IBARRA
22	*NWN8899	Nieisha	William	NICHOLSON
23	*LTK1154	Laverne	Torrean	KIM
24	*SJR2326	Shavawn	Jonluke	REID
25	*CMV2096	Camara	Muneer	VILLA
26	*DJK2101	Denni	Jae	KELLY
27	*ACT3604	Ashlyn	Cobey	TREVINO
28	*GGW4513	Gale	Gaurav	WALLER
29	*MKN1427	Marcedez	Kamaron	NIXON
30	*RTO7328	Roshini	Tarnisha	ORR
31	*JCK5688	Josslyn	Chaston	KELLER
32	*VGS6224	Vaness	Gregoria	SANDERS
33	*SKC7153	Shatonia	Kaydee	CAMPOS
34	*SCH2502	Shauntelle	Callin	HARTMAN
35	*LDM4065	Levon	Delany	MARQUEZ
36	*TGW4075	Tasmine	Giacomo	WOOD

36 rows in set (0.00 sec)

### Step 7:

```
mysql> select * from bkp5190_temp;
```

instructorid	psuid	fname	mname	lname
1	DGC8415	Deaaron	Gerrad	CONLEY
2	PDM4857	Praveen	Duncan	MCDONALD
3	AJS4929	Anise	Jordyn	SINGH
4	NBL1250	Natsumi	Bina	LESTER
5	JBD5651	Jeanpierre	Brek	DORSEY
6	TSJ6190	Todd	Shamona	JEFFERSON

7	JMB1632	Jaquan	Meryl	BRUCE
8	VKK2112	Vana	Katisha	KLINE
9	KTG5189	Kierre	Tarence	GLOVER
10	KJW4059	Kelson	Jamarkus	WELLS
11	KST2854	Katty	Shereen	TREJO
12	IYP6380	Ilaisaane	Yaquelin	PRICE
13	GBS7708	Gennesis	Bj	SALAZAR
14	MWH5293	Marie	Whitlee	HURLEY
15	JAA8457	Jorel	Anahy	ABBOTT
16	DTB3951	Darick	Tristine	BECKER
17	SMS5949	Smanatha	Markees	STAFFORD
18	IAB2364	Icey	Amauri	BUCK
19	HCA4001	Haywood	Chellsea	ANTHONY
20	SCO7055	Shakia	Cyle	OLSEN
21	WCI2734	Waverly	Charnessa	IBARRA
22	NWN8899	Nieisha	William	NICHOLSON
23	LTK1154	Laverne	Torrean	KIM
24	SJR2326	Shavawn	Jonluke	REID
25	CMV2096	Camara	Muneer	VILLA
26	DJK2101	Denni	Jae	KELLY
27	ACT3604	Ashlyn	Cobey	TREVINO
28	GGW4513	Gale	Gaurav	WALLER
29	MKN1427	Marcedez	Kamaron	NIXON
30	RTO7328	Roshini	Tarnisha	ORR
31	JCK5688	Josslyn	Chaston	KELLER
32	VGS6224	Vaness	Gregoria	SANDERS
33	SKC7153	Shatonia	Kaydee	CAMPOS
34	SCH2502	Shauntelle	Callin	HARTMAN
35	LDM4065	Levon	Delany	MARQUEZ
36	TGW4075	Tasmine	Giacomo	WOOD

-----+-----+-----+-----+-----+  
36 rows in set (0.00 sec)

### Step 8:

```
mysql> update bkp5190_temp set fname = concat('?', fname) where instructorid = 1;
ERROR 1205 (HY000): Lock wait timeout exceeded; try restarting transaction
```

When I ran this command, the request timed out because there was a transaction started with user1 already and when user2 tries updating the table, it cannot because user1 is currently changing it and has not yet finished the transaction.

### Step 9:

Now, since the changes have been committed from user1, the changes are also reflected in user2's view of the table. Therefore, there are now stars preceding the psuid starting from 18 and on. Note: Nothing happened after the commit was run on user1 in terms of looking back at user2.

From user1:

```
mysql> commit;
Query OK, 0 rows affected (0.00 sec)
```

### Step 10:

```
mysql> select * from bkp5190_temp;
-----+-----+-----+-----+-----+

```

instructorid	psuid	fname	mname	lname
1	DGC8415	Deaaron	Gerrad	CONLEY
2	PDM4857	Praveen	Duncan	MCDONALD
3	AJS4929	Anise	Jordyn	SINGH
4	NBL1250	Natsumi	Bina	LESTER
5	JBD5651	Jeanpierre	Brek	DORSEY
6	TSJ6190	Todd	Shamona	JEFFERSON
7	JMB1632	Jaquan	Meryl	BRUCE
8	VKK2112	Vana	Katisha	KLIN
9	KTG5189	Kierre	Tarence	GLOVER
10	KJW4059	Kelson	Jamarkus	WELLS
11	KST2854	Katty	Shereen	TREJO
12	IYP6380	Ilaisaane	Yaquelin	PRICE
13	GBS7708	Genneesis	Bj	SALAZAR
14	MWH5293	Marie	Whitlee	HURLEY
15	JAA8457	Jorel	Anahy	ABBOTT
16	DTB3951	Darick	Tristine	BECKER
17	SMS5949	Smanatha	Markees	STAFFORD
18	*IAB2364	Icey	Amauri	BUCK
19	*HCA4001	Haywood	Chellsea	ANTHONY
20	*SCO7055	Shakia	Cyle	OLSEN
21	*WCI2734	Waverly	Charnessa	IBARRA
22	*NWN8899	Nieisha	William	NICHOLSON
23	*LTK1154	Laverne	Torrean	KIM
24	*SJR2326	Shavawn	Jonluke	REID
25	*CMV2096	Camara	Muneer	VILLA
26	*DJK2101	Denni	Jae	KELLY
27	*ACT3604	Ashlyn	Cobey	TREVINO
28	*GGW4513	Gale	Gaurav	WALLER
29	*MKN1427	Marcedez	Kamaron	NIXON
30	*RT07328	Roshini	Tarnisha	ORR
31	*JCK5688	Josslyn	Chaston	KELLER
32	*VGS6224	Vaness	Gregoria	SANDERS
33	*SKC7153	Shatonia	Kaydee	CAMPOS
34	*SCH2502	Shauntelle	Callin	HARTMAN
35	*LDM4065	Levon	Delany	MARQUEZ
36	*TGW4075	Tasmine	Giacomo	WOOD

36 rows in set (0.00 sec)

### Step 11:

**ALTER TABLE bkp5190\_tmp2 ADD PRIMARY KEY(courses\_takenid);**

```
mysql> ALTER TABLE bkp5190_tmp2 ADD PRIMARY KEY(course_takenid);
Query OK, 0 rows affected (0.55 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> describe bkp5190_tmp2;
```

Field	Type	Null	Key	Default	Extra
course_takenid	int(11)	NO	PRI	0	
psuid	varchar(10)	NO		NULL	
course	varchar(25)	NO		NULL	
grade	varchar(5)	NO		NULL	
semester	varchar(10)	NO		NULL	

5 rows in set (0.00 sec)

### Step 12:

```
mysql> select * from bkp5190_tmp2 ORDER BY course_takenid DESC LIMIT 10;
```

course_takenid	psuid	course	grade	semester
25825	BBP4828	CMPSC-ELECTIVE03	C	2018FA
25824	BBP4828	CMPSC-ELECTIVE02	B+	2018FA
25823	BBP4828	CMPSC461	C+	2018FA
25822	BBP4828	CMPSC464	C	2018FA
25821	BBP4828	CMPSC465	B+	2018FA
25820	BBP4828	CMPSC360	C	2018 SP
25819	BBP4828	CMPEN331	B	2018 SP
25818	BBP4828	PHYS212	C+	2018 SP
25817	BBP4828	MATH220	B-	2017FA
25816	BBP4828	1STYEARSEM	D	2018 SP

10 rows in set (0.00 sec)

### Step 13:

```
mysql> START TRANSACTION;
```

Query OK, 0 rows affected (0.00 sec)

```
mysql> UPDATE bkp5190_tmp2 SET course = concat('@', course) WHERE  
course_takenid>=25816;
```

Query OK, 10 rows affected (0.00 sec)

Rows matched: 10 Changed: 10 Warnings: 0

```
mysql> select * from bkp5190_tmp2 ORDER BY course_takenid DESC LIMIT 10;
```

course_takenid	psuid	course	grade	semester
25825	BBP4828	@CMPSC-ELECTIVE03	C	2018FA
25824	BBP4828	@CMPSC-ELECTIVE02	B+	2018FA
25823	BBP4828	@CMPSC461	C+	2018FA
25822	BBP4828	@CMPSC464	C	2018FA
25821	BBP4828	@CMPSC465	B+	2018FA
25820	BBP4828	@CMPSC360	C	2018 SP
25819	BBP4828	@CMPEN331	B	2018 SP
25818	BBP4828	@PHYS212	C+	2018 SP
25817	BBP4828	@MATH220	B-	2017FA
25816	BBP4828	@1STYEARSEM	D	2018 SP

10 rows in set (0.00 sec)

### Step 14:

```
mysql> select * from bkp5190_tmp2 ORDER BY course_takenid DESC LIMIT 10;
```

course_takenid	psuid	course	grade	semester
25825	BBP4828	CMPSC-ELECTIVE03	C	2018FA
25824	BBP4828	CMPSC-ELECTIVE02	B+	2018FA
25823	BBP4828	CMPSC461	C+	2018FA
25822	BBP4828	CMPSC464	C	2018FA
25821	BBP4828	CMPSC465	B+	2018FA

25820	BBP4828	CMPSC360	C	2018 SP
25819	BBP4828	CMPEN331	B	2018 SP
25818	BBP4828	PHYS212	C+	2018 SP
25817	BBP4828	MATH220	B-	2017FA
25816	BBP4828	1STYEARSEM	D	2018 SP

```

+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)

```

### Step 15:

```
mysql> SELECT * FROM bkp5190_tmp2 ORDER BY course_takenid LIMIT 10;
```

course_takenid	psuid	course	grade	semester
1	CJM1141	GENED-GH2	B	2016FA
2	CJM1141	GENED-GN1	B	2016FA
3	CJM1141	GENED-GN2	C	2016FA
4	CJM1141	GENED-GS2	C	2016FA
5	CJM1141	GENED-GA1	B	2016FA
6	CJM1141	GENED-GA2	B-	2017 SP
7	CJM1141	GENED-GHA	B	2017 SP
8	CJM1141	MATH140	A	2017 SP
9	CJM1141	CMPSC121	B-	2017 SP
10	CJM1141	CMPSC122	B-	2017 SP

```

+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)

```

### Step 16:

```
mysql> update bkp5190_tmp2 set grade = "F" where course_takenid <= 10;
Query OK, 10 rows affected (0.00 sec)
Rows matched: 10  Changed: 10  Warnings: 0
```

```
mysql> SELECT * FROM bkp5190_tmp2 ORDER BY course_takenid LIMIT 10;
```

course_takenid	psuid	course	grade	semester
1	CJM1141	GENED-GH2	F	2016FA
2	CJM1141	GENED-GN1	F	2016FA
3	CJM1141	GENED-GN2	F	2016FA
4	CJM1141	GENED-GS2	F	2016FA
5	CJM1141	GENED-GA1	F	2016FA
6	CJM1141	GENED-GA2	F	2017 SP
7	CJM1141	GENED-GHA	F	2017 SP
8	CJM1141	MATH140	F	2017 SP
9	CJM1141	CMPSC121	F	2017 SP
10	CJM1141	CMPSC122	F	2017 SP

```

+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)

```

### Step 17:

From research and prior video lectures, I learned that MySQL has a system implemented by default for repeatable reads. By this, when we tried to update in step 8, that specific row was

already selected and locked (in terms of using instructorid as the identifier). With this in mind, when we go to update from user2 when user1 is still within the transaction and has not yet committed, we run into a timeout error and the second update does not work. On the other hand, steps 13-16 does not specifically select the rows and lock them. Now when we perform 2 updates: one for the course from user1 and one for the grade from user2, both are executed and do not time out. Additionally, the start transaction from user1 during the second set of updates did not affect what user2 was able to change with the tables, other than simply having 2 different tables displayed (one with the "@" and one with the "F" for all grades). I believe this notion is highly important to keep in mind when working with databases since multiple users will often be looking at and trying to modify the same tables. If we use the second way when working in a more professional environment, then multiple people are able to complete work on the same table and not have to wait for one person to finish altering and committing every time (in turn saving time and money).