IST769 Homework Submission Template

Basic Information

Your Name: Mark Roberts  
Your SUID: 598273961  
Your Email: mrober04@syr.edu  
Date Due: July 27, 2021   
Homework #: 3

Your Answers:

* In the demo database, create two tables:
* The first table players should have columns player id (int pk), player name (varchar), shots attempted (int) shots made (int)
* The second table shots should have columns shot id (int pk), player id (int fk to players), clock time (datetime) shot made (bit)
* Add two players to the players table. Mary and Sue initialize the players with 0 shots attempted and made.

|  |
| --- |
| CODE |
| --Exercise 1  USE demo  go  DROP PROCEDURE IF EXISTS dbo.write\_shot  go  DROP TABLE IF EXISTS dbo.shots  go  DROP TABLE IF EXISTS dbo.players  GO  CREATE TABLE dbo.players(  player\_id int NOT NULL IDENTITY,  player\_name varchar(80) NOT NULL,  shots\_attempted int NOT NULL DEFAULT 0,  shots\_made int NOT NULL DEFAULT 0,  CONSTRAINT players\_PK PRIMARY KEY (player\_id)  );  CREATE TABLE dbo.shots(  shot\_id int NOT NULL IDENTITY,  player\_id int NOT NULL,  clock\_time datetime NOT NULL,  shot\_made bit NOT NULL,  CONSTRAINT shots\_PK PRIMARY KEY (shot\_ID),  CONSTRAINT shots\_FK1 FOREIGN KEY (player\_id) REFERENCES dbo.players (player\_id)  );  go  INSERT INTO players (player\_name, shots\_attempted, shots\_made)  VALUES ('Mary', 0, 0),('Sue',0,0)  GO  SELECT \* FROM players  go |
| SCREENSHOT/OUTPUT |
|  |

* Write transaction safe code as a stored procedure which when given a player id, clock time, and whether the shot was made (bit value) will add the record to the shots table and update the player record in the players table. For example, If Mary takes a shot and makes it, then misses the next one, there would be two records in the shots table and her row in the players table should have 2 attempt and 1 shot made. Execute the stored procedure to demonstrate the transaction is ACID compliant.

|  |
| --- |
| CODE |
| --Exercise 2  CREATE or ALTER PROCEDURE dbo.write\_shot  @player\_id int,  @clock\_time datetime,  @shot\_made bit  AS  BEGIN TRY  BEGIN TRANSACTION  INSERT dbo.shots (player\_id,clock\_time,shot\_made)  VALUES (@player\_id,@clock\_time,@shot\_made);  UPDATE dbo.players  SET shots\_attempted = shots\_attempted +1,  shots\_made = CASE @shot\_made  WHEN 1 THEN COALESCE (shots\_made,0) +1  ELSE shots\_made  END  WHERE player\_id = @player\_id;  COMMIT TRANSACTION;  PRINT 'Transaction successful';  END TRY  BEGIN CATCH  IF @@TRANCOUNT > 1  ROLLBACK TRANSACTION  PRINT 'Transaction rolled back';  THROW;  END CATCH  go  INSERT dbo.players (player\_name,shots\_attempted,shots\_made)  VALUES  ('Mary',0,0),  ('Sue',0,0);  go  SELECT \* FROM players  go |
| SCREENSHOT/OUTPUT |
|  |

* Alter the players table to be a system-versioned temporal table.

|  |
| --- |
| CODE |
| --Exercise 3  ALTER TABLE dbo.players  ADD StartTime DATETIME2 GENERATED ALWAYS AS ROW START  HIDDEN DEFAULT GETUTCDATE(),  EndTime DATETIME2 GENERATED ALWAYS AS ROW END HIDDEN DEFAULT  CONVERT(DATETIME2, '9999-12-31 23:59:59.9999999'),  PERIOD FOR SYSTEM\_TIME (StartTime, EndTime);  GO  ​  ALTER TABLE dbo.players  SET (SYSTEM\_VERSIONING = ON (HISTORY\_TABLE=dbo.player\_history));  GO |
| SCREENSHOT/OUTPUT |
|  |

* Execute your stored procedure from part 2 to create at least 15 shot records over a 5-minute period. Make sure there are records in the first ½ of the 5-minute period and at few in the last minute of the 5-minute period.

|  |
| --- |
| CODE |
| --Exercise 4  EXEC dbo.write\_shot @player\_id = 1,@clock\_time = '2021-07-26 10:45:30.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 2,@clock\_time = '2021-07-26 10:46:00.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 1,@clock\_time = '2021-07-26 10:46:30.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 2,@clock\_time = '2021-07-26 10:47:00.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 1,@clock\_time = '2021-07-26 10:47:30.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 2,@clock\_time = '2021-07-26 10:48:00.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 1,@clock\_time = '2021-07-26 10:48:30.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 2,@clock\_time = '2021-07-26 10:49:00.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 1,@clock\_time = '2021-07-26 10:49:30.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 2,@clock\_time = '2021-07-26 10:50:00.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 1,@clock\_time = '2021-07-26 10:50:30.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 2,@clock\_time = '2021-07-26 10:51:00.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 1,@clock\_time = '2021-07-26 10:51:30.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 2,@clock\_time = '2021-07-26 10:52:00.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 1,@clock\_time = '2021-07-26 10:52:30.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  EXEC dbo.write\_shot @player\_id = 2,@clock\_time = '2021-07-26 10:53:00.00',@shot\_made = 1;  WAITFOR DELAY '00:00:05';  SELECT \* FROM dbo.players  GO |
| SCREENSHOT/OUTPUT |
|  |

* Write SQL queries to show:
* The player statistics at the end of the 5-minute period (current statistics).
* The player statistics exactly 2 minutes and 30 seconds into the period.
* The player statistics in the last minute of the period.

|  |
| --- |
| CODE |
| --Exercise 5  SELECT \*  FROM dbo.players  FOR SYSTEM\_TIME BETWEEN '2021-07-26 10:48:00.00' AND '2021-07-26 10:50:00.00'  GO  SELECT \*  FROM dbo.players  FOR SYSTEM\_TIME BETWEEN '2021-07-26 10:47:30.00' AND '2021-07-26 10:47:30.00'  GO  SELECT \*  FROM dbo.players  FOR SYSTEM\_TIME BETWEEN '2021-07-26 10:52:00.00' AND '2021-07-26 10:53:00.00'  SELECT \*  FROM player\_history  GO |
| SCREENSHOT/OUTPUT |
|  |