Final Project Report for Computer Graphic

My final project is a billiards game. One is a typical pool game of 16-ball. The other is a bumper billiards.

My implementations are about the texture mapping of all things, ball movement, camera view and so on. For the texture mapping, I focus on the room, lamp, pool table, ball, stick. For the ball movement, I deal with the rolling effect, ball-table collision, ball-ball collision and hitting of ball and pockets. I have 2 camera transformations. One is the normal one, you can change by parameters. The other is following the vision of the ball you hit. I have also draw the stick and the set all the rules for the game. If the cue ball is in the hole, it will return to his previous state. Most geometry is created using sphere, cube, and cylinder primitives. Ball shadows are done by drawing grey disks below them. Table holes are done by drawing black disks on the table.

For the bumper billiards. Each player gets 5 balls. The table has two pockets and twelve bumpers. And it has all the rules for that game. First, if a player sinks one of his own balls (but not the last) in their opponent's pocket, the opponent may drop two balls into their pocket. Secondly, avoid knocking you opponent's balls off of the table. If you knock an opponent's ball off of the table, replace it in the position it was before the shot and place 1 of your own balls in the dead center of the table. Play passes to your opponent.

And I have a special strike. If the cue ball hits any other balls, all balls disappear and become lots of particles.

My video link is https://www.youtube.com/watch?v=KH3U7l0Dozw