

Report of home assignment from IBM – Omer Amar

1. Design:

Technologies:

Server-side – C#.

Client-side - HTML/Javascript/Jquery.

Database – Microsoft SQL.

I worked with “ASP.NET Core Web Application” project in Visual Studio 2017.

The database contains three tables:

(1) Users:

UserID (P.K)	IP	Useragent
--------------	----	-----------

This table contains the information about the users by IP and useragent. On page load the user is immediately added to the table.

(2) Drawings:

DrawID (P.K)	Xcords	Ycords	isDragging	Color	PenWidth	UserID (F.K)	isPrivate
--------------	--------	--------	------------	-------	----------	--------------	-----------

This table contains information about all the drawings:

DrawID – serial number of the drawing.

Xcords – X coordinates of the drawing in order.

Ycords – Y coordinates of the drawing in order.

isDraggings – are two adjacent points continuous?

Color – the color of the drawing.

PenWidth – the marker size.

UserID – the user that draw it.

isPrivate – true: the drawing is in the user’s private page.

false: the drawing is in the shared page.

(3) Rects:

RectID (P.K)	Cords	RectColor	UserID (F.K)	isPrivate
--------------	-------	-----------	--------------	-----------

RectID – serial number of the rectangle.

Cords – the two opposite corners points of the rectangle.

RectColor – the color of the rectangle.

UserID – the user that draw it.

isPrivate – true: the drawing is in the user’s private page.

false: the drawing is in the shared page.

2. The app:

Each user has the access to the “Shared Room” and the “Private Room”. Because I couldn’t simulate various IP’s, I distinguish users only by useragent. I used the Google Chrome extension “Chrome UA Spoofer” to simulate various users.

In the shared room the users see every drawing of every user that used this room. In this room users are limited to a number of drawings (easily controlled in the server side). In the private room the user gets a board for his drawings only. In this room the user is not limited, he can paint as much as he pleases.

When user presses “Shared Room” button, a request is sent to the database and gets every row in the Drawings and Rects tables where the column isPrivate is equal to “false”. In this room, if you want to see changes by other users you have to press “Load”. Also, if you press “Clear” you will see a blank page, pressing “Save” clears only the current user’s drawings and rectangles.

When user presses “Private Room” button, a request is sent to the database and gets every row in the Drawings and Rects tables where the column isPrivate is equal to “true” and the “UserID” matches the useragent of the current user.

A drawing/rectangle is saved in the database at “mouseup” event. That’s why after each drawing the page is refreshed.

Tools:

- (1) Eraser – erase drawings by simply painting over them with white pen. This tool doesn’t erase rectangles.
- (2) Erase Rectangle – erase user’s rectangles only, one press inside the rectangle and if it’s your rectangle it will be erased.
- (3) Draw Rectangle – drawing rectangle by a simple click and drag.
- (4) Undo – delete drawings of the user from last to first (not including rectangles, for deleting rectangles use the erase rectangles tool).
- (5) Download Image – download the current painting to your local drive.
- (6) Color Change – you are given 13 different colors.
- (7) Marker Size Change – you are given 5 marker size levels.
- (8) Background Image – only in private room, uploads an image to the canvas to draw upon.

3. Tests:

- (1) Open Google Chrome and Mozilla Firefox with the app and simulate two users drawing and deleting.
- (2) Try to draw more than 5 drawings/rectangles total, see that you get an alert the you reached the maximum number of drawings allowed.
- (3) Move to the private room, see that another tool appeared saying “Choose Background Image”. Try to switch background images.

- (4) Draw as much as you want and see that you don't get the alert you got in the "Shared Room".
- (5) Try to draw and erase rectangle in the private room. Click "Erase Rectangle" and then click inside a rectangle that you drew, see that the rectangle is removed. Repeat the action but click outside of a rectangle, see that nothing happens.
- (6) Try to draw and erase rectangle in the shared room. See that you can erase only your rectangles.
- (7) In the shared room press "Clear" and then "Save". See that only your drawings were erased.
- (8) Use "Undo" in both rooms. See that it clears drawings from last one to first one.
- (9) Draw something and press "Download Image". You can open the downloaded file and watch you painting.
- (10) Change colors and see that everything works.
- (11) Change marker size and see that it works fine.