Lab: Implementing a chat using SignalR

# Scenario

The Adventures Works board and managers are pleased with the Photo Sharing application, but have requested that interactivity should be maximized to encourage users to register and participate fully in the community. Therefore, you have been asked to add chat functionality to the application.

Users should be able to start and stop a chat on a particular photo from the Display view. Chat rooms for each photo should be separated from each other. Users in the chat room should be able to send a message to all other users in that chat room, and they should be able to see all the messages that have been sent since they joined the chat room.

You have decided to use SignalR to implement the chat room over Web Sockets.

You will give the user the chance to join or leave a group. The group name will depend on the id of the Photo. Whenever a user sends a message to the SignalR Hub, the Hub will dispatch the message to every client in the same group.

# Objectives

After completing this lab, you will be able to:

* Create and implement a SignalR Hub that uses groups to manage chat rooms
* Create and implement a SignalR JavaScript client

Estimated Time: 60 minutes

# Exercise 1: Create and implement a SignalR Hub

## Scenario

Users should be able to start and stop a chat on a particular photo. Chat rooms for each photo should be separated from each other. Users in the chat room should be able to send a message to all other users in that chat room, and they should be able to see all the messages that have been sent since they joined the chat room.

In this exercise, you will:

* Create and implement a SignalR Hub.

The main tasks for this exercise are as follows:

1. Create a SignalR hub to push content to clients.
2. Modify the Startup class and configure the app.

**Results**: At the end of this exercise, you will have created a SignalR Hub.

# Exercise 2: Create the JavaScript SignalR client

## Scenario

Users should be able to

* Start a chat on a particular photo from the Display view
* Stop a chat on a particular photo from the Display view
* Send a message to all other users in that chat room
* See all the messages that have been sent since they joined the chat room

To implement this feature you decide to write an HTML view and a JavaScript Chat Class that will handle the user interactions, invoke the SignalR Hub and dynamically build the user interface client side.

In this exercise, you will:

* Import the npm package for signalR
* Modify the Photo Details view to include
  + An empty container for the chat messages
  + An HTML template for a chat message
  + A Button to Join a chat room
  + A Button to leave a chat room
  + HTML input fields and a button to send a chat message
  + JavaScript code to create an instance of a JavaScript Chat class
* Create a JavaScript Chat class, with methods to
  + Join a chat room
  + Leave a chat room
  + Send a message to the SignalR Hub
  + Handle messages received from the SignalR Hub

The main tasks for this exercise are as follows:

1. Modify the package.json file
2. Modify the Details View
3. Create and implement a Chat class

The Chat class:

* Handles the click event of all the chat-related buttons in the view and invokes the signalR hub to send messages to the server
* Handles messages from the server and dynamically builds the view with the message content

**Result: After completing this exercise, you will be able to build a JavaScript client that uses SignalR and dynamically build the HTML view client side.**