

main.js - main application logic

This module describes the main application logic

1. Local variables

Declare local variables for constants, SFU SDK, local display and controls

code

```
const constants = SFU.constants;
const sfu = SFU;
let localDisplay;
let cControls;
```

2. Default configuration

Declare default room and publishing configuration which will be used if there was no `config.json` file available

code

With this config client will be preconfigured to connect to localhost over WSS, enter room `ROOM1` with pin `1234` and nickname `Alice`. Media section directs client to publish audio and video tracks. Video will have two sub-tracks - high (h) and medium (m).

```
const defaultConfig = {
  room: {
    url: "wss://127.0.0.1:8888",
    name: "ROOM1",
    pin: "1234",
    nickName: "Alice"
  },
  media: {
    audio: {
      tracks: [
        {
          source: "mic",
          channels: 1
        }
      ]
    },
    video: {
      tracks: [
        {
```

```

        source: "camera",
        width: 1280,
        height: 720,
        codec: "H264",
        encodings: [
          { rid: "h", active: true, maxBitrate: 900000 },
          { rid: "m", active: true, maxBitrate: 300000,
            scaleResolutionDownBy: 2 }
        ]
      }
    ]
  }
}
};

```

3. Initialization

`init()` code

`init()` function is called when page is finished loading. The function will load `config.json` or default config, create local display and open entrance modal window.

```


/**
 * load config and show entrance modal
 */
const init = function() {
  //read config
  $.getJSON("config.json", function(config){
    cControls = createControls(config);
  }).fail(function(){
    //use default config
    cControls = createControls(defaultConfig);
  });
  //create local display to show local streams
  localDisplay = initLocalDisplay(document.getElementById("localDisplay"));
  //open entrance modal
  $('#entranceModal').modal('show');
}

```

4. Connect to the server and create or enter to the room

`connect()` code

The function that is called once user clicks `Enter` in entrance modal window.

 **connect**



Hide modal as we don't need it anymore and mute controls before connection is established

code

```
//hide modal
$('#entranceModal').modal('hide');
//disable controls
cControls.muteInput();
```

Create `PeerConnection` and prepare the room config for the creation of session and room

code

```
//create peer connection
const pc = new RTCPeerConnection();
//get config object for room creation
const roomConfig = cControls.roomConfig();
roomConfig.pc = pc;
```

Create session (which will automatically connect to the server)

code

```
const session = sfu.createRoom(roomConfig);
```

Subscribe to session's `CONNECTED` event

code

```
session.on(constants.SFU_EVENT.CONNECTED, function(room) {
  ...
});
```

Once we are connected initialize room chat

code

```
//connected to server
const chatDiv = document.getElementById('messages');
const chatInput = document.getElementById('localMessage');
const chatButton = document.getElementById('sendMessage');
//create and bind chat to the new room
createChat(room, chatDiv, chatInput, chatButton);
```

Subscribe to room error events

code

```
room.on(constants.SFU_ROOM_EVENT.FAILED, function(e) {
  const errField = document.getElementById("errorMsg");
  errField.style.color = "red";
  errField.innerText = e;
}).on(constants.SFU_ROOM_EVENT.OPERATION_FAILED, function (e) {
```

```
const errField = document.getElementById("errorMsg");
errField.style.color = "red";
errField.innerText = e.operation + " failed: " + e.error;
})
```

Initialize remote display

code

```
//setup remote display for showing remote audio/video tracks
const remoteDisplay = document.getElementById("display");
initRemoteDisplay(room, remoteDisplay, pc);
```

Get preconfigured local media from controls

code

```
//get configured local video streams
let streams = cControls.getVideoStreams();
//combine local video streams with audio streams
streams.push.apply(streams, cControls.getAudioStreams());
```

Add each stream to local display (so we can see it on page) and peer connection

code

```
//add our local streams to the room (to PeerConnection)
streams.forEach(function (s) {
  //add local stream to local display
  localDisplay.add(s.stream.id, "local", s.stream);
  //add each track to PeerConnection
  s.stream.getTracks().forEach((track) => {
    addTrackToPeerConnection(pc, s.stream, track, s.encodings);
    subscribeTrackToEndedEvent(room, track, pc);
  });
});
```

Add listener to controls so we know if user adds new local streams. Once we have a new stream we will need to add it to local display, add it to peer connection and kickoff renegotiation

code

```
//add callback for the new local stream to the local controls
cControls.onTrack(function (s) {
  //add local stream to local display
  localDisplay.add(s.stream.id, "local", s.stream);
  //add each track to PeerConnection
  s.stream.getTracks().forEach((track) => {
    addTrackToPeerConnection(pc, s.stream, track, s.encodings);
    subscribeTrackToEndedEvent(room, track, pc);
  });
});
```

```
//kickoff renegotiation
room.updateState();
});
```

Finally join the room

code

```
//join room
room.join();
```

5. Finalizing local track

`subscribeTrackToEndedEvent()` code

This is a helper function that subscribes new local track to `ended` event. Once event fired we remove track from peer connection and kickoff renegotiation.

```
const subscribeTrackToEndedEvent = function(room, track, pc) {
  track.addEventListener("ended", function() {
    //track ended, see if we need to cleanup
    let negotiate = false;
    for (const sender of pc.getSenders()) {
      if (sender.track === track) {
        pc.removeTrack(sender);
        //track found, set renegotiation flag
        negotiate = true;
        break;
      }
    }
    if (negotiate) {
      //kickoff renegotiation
      room.updateState();
    }
  });
};
```

6. Add new local track to peer connection

`addTrackToPeerConnection()` code

This is a helper function which adds new local track to peer connection.

```
const addTrackToPeerConnection = function(pc, stream, track, encodings) {
  pc.addTransceiver(track, {
    direction: "sendonly",
    streams: [stream],
    sendEncodings: encodings ? encodings : [] //passing encoding types
    for video simulcast tracks
  });
};
```

```
});  
}
```