Node: Callback Hell

In this document we'll cover:

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The Problem

```javascript
// Find user by username
findUserByUsername(username, function (err, user) {

    // Check if user is active
    if (user.isActive) {

        // Find user permissions by user id
        findUserPermissions(user.id, function (err, permissions) {

            // Check for error
            if (err) {
                console.error(err);
                return;
            }

            if (permission.contains('admin')) {

                // Insert data into database
                sql.query('INSERT INTO ....', function (err, result) {

                    // Check for error
                    if (err) {
                        console.error(err);
                        return;
                    }

                    // Update data in database
                    sql.query('UPDATE ....', function (err, result) {

                        // Check for error
                        if (err) {
                            console.error(err);
                            return;
                        }

                        // Call third party api
                        http.get(url, function (err, response) {

                            // Check for error
                            if (err) {
                                console.error(err);
                                return;
                            }
```

```
                                          // Send JSON object to client
                                          sendJSONToClient();
                                    });
                              });
                        });
                 }else {

                        // Insert data into database
                        sql.query('INSERT INTO ....', function (err, result) {

                              // Check for error
                              if (err) {
                                    console.error(err);
                                    return;
                              }

                               // Send JSON object to client
                              sendJSONToClient();
                        });
                 }
            });
      }
});
```

The Solution

```
// Find user by username
findUserByUsername(username).then(function(user) {

      // Check if user is active
      if (user.isActive) {

            // Find user permissions by user id
            return findUserPermissions(user.id);
      }

}).then(function (permission) {
       if (permission.contains('admin')) {

             // Insert data into database
             return sql.query('INSERT INTO ....');

       } else {

             // Insert data into database
             return sql.query('INSERT INTO ....');

       }
}).then(function (result) {

      // Call third party api
      return http.get(url);

}).then(function (response) {
```

```
        // Send JSON object to client
        sendJSONToClient();

    }).catch(function (err) {
        console.error(err);
    });
```

Frameworks

Frameworks to make async calls read better:

- CO
- BlueBird
- Async.js

CO Example

```
co(function* () {
    // Find user by username
    var user = yield findUserByUsername(username);

    // Check if user is active
    if (user.isActive) {

        // Find user permissions by user id
        var permissions = yield findUserPermissions(user.id);

        if (permission.contains('admin')) {

            // Insert data into database
            var result = yield sql.query('INSERT INTO ....');

            var response = yield http.get(url);

            // Send JSON object to client
            sendJSONToClient();

        } else {

            // Insert data into database
            var result = yield sql.query('INSERT INTO ....');

        }
    }
});
```