React Project Create

```
npx create-react-app first_app
```

```
cd first_app
npm start
```


Edit src/App.js and save to reload.

Learn React
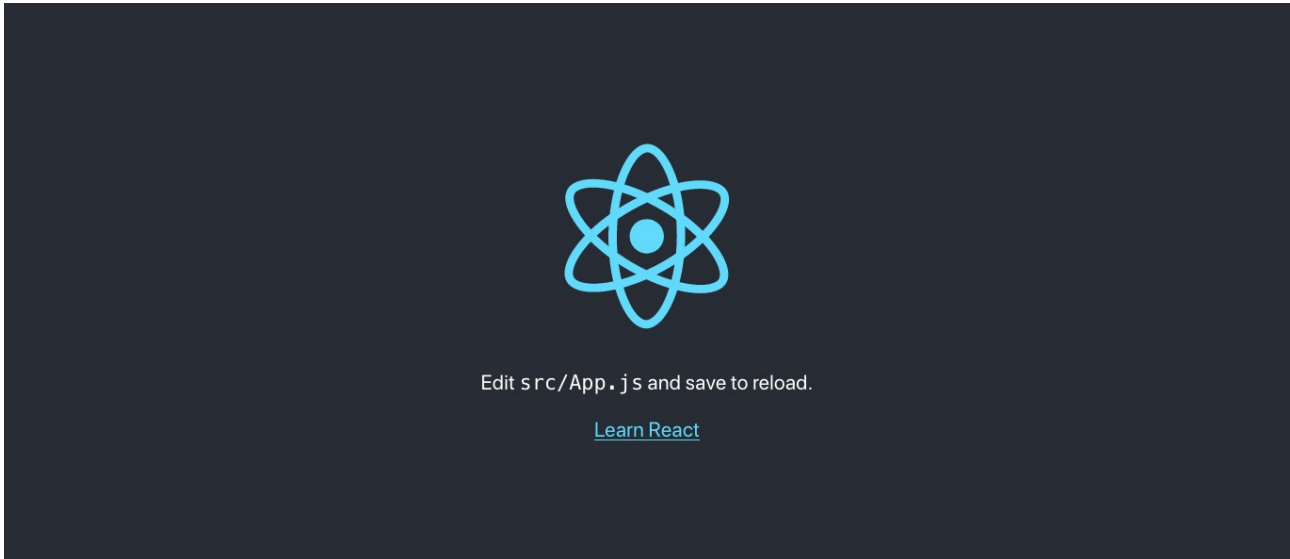
React Project Structure

0_install
  - first_app -
    - node_modules
    - package.json
    - package-lock.json
    - public
    - **src** -
      - App.css
      - App.js
      - index.css
      - index.js
      - reportWebVitals.js
      - components -
        - header.js
        - footer.js

1_hello_react_app
  - src
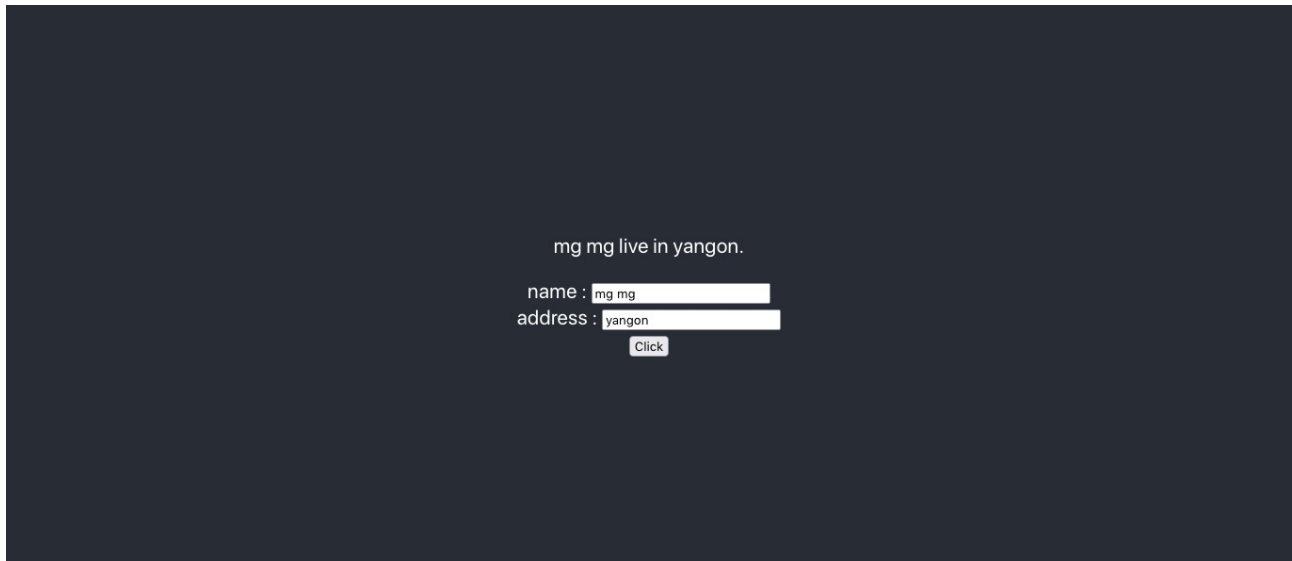**2_components**
  - src
3_props
  - src
4_events
  - src
5_state
  - src

(5) React State Assignment

Copy 0_install/first_app/src folder to 5_state folder.
Create components/about.js file.

```
import React, {Component} from 'react';

class AboutUs extends Component {
    state = {
        name: '...'
    }
    setName = evt => {
        this.state.name = evt.target.value;
    }
    clickMe = evt => {
        this.setState({name: this.state.name});
    }

    render() {
        return (
            <div>
                <div>
                    <p> {this.state.name} </p>
                </div>
                <div>
                    name : <input onChange={this.setName} type="text" />
                </div>
                <button onClick={this.clickMe}> Click </button>
            </div>
        )
    }
}
export default AboutUs;
```

2

Change App.js file.

```
import './App.css';
import AboutUs from './components/about.js';

function App() {
  return (
    <div className="App">
      <header className="App-header">
        <AboutUs />
      </header>
    </div>
  );
}

export default App;
```

```
cd 0_install/first_app
```

Run react server.

```
npm start
```

Create 5_state/assignment folder.
Copy 0_install/first_app/src folder to 5_state/assignment folder.

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(6) React Life Cycle

Change about.js file.

```
class AboutUs extends Component {
        state = {
        }

        constructor(props) {
                super(props);
                console.log('constructor call');
        }

        componentDidMount() {
                console.log('componentDidMount call');
        }

        componentDidUpdate() {
                console.log('componentDidUpdate call');
        }

        componentWillUpdate() {
                console.log('componentWillUpdate call');
        }

        componentWillUnmount() {
                console.log('componentWillUnmount call');
        }

        render() {
                console.log('render call');
                return (
                        . . .
                )
        }
}
```

```
cd 0_install/first_app
```

Run react server.

```
npm start
```

Create 6_life_cycle folder.
Copy 0_install/first_app/src folder to 6_life_cycle folder.

(7) React Conditional

Example 1

Even Odd Number using conditional.

Create component/even_odd.js file.

```
class EvenOdd extends Component {
        state = {
                num: 0
        }
        setNum = evt => {
                this.state.num = evt.target.value;
        }
        click  = evt =>  {
                this.setState({num: this.state.num});
        }
        render() {
                return (
                        <div>
                                <div>
                                        <input onChange={ this.setNum } type="text" />
                                </div>
                                <div>
                                        <button onClick={ this.click }> Click </button>
                                </div>
                                <div>
                                        { this.state.num % 2 == 0 ? "Even Number" : "Odd Number"}
                                </div>
                        </div>
                )
        }
}
export default EvenOdd;
```
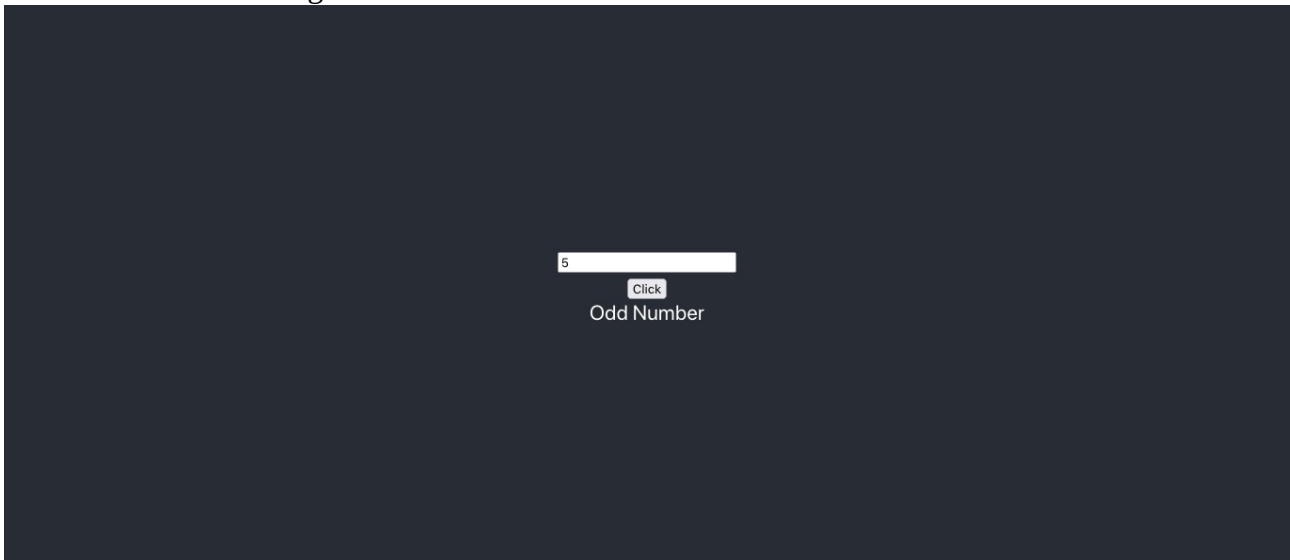
Change App.js file.

```
import './App.css';
import EvenOdd from './components/even_odd.js';

function App() {
  return (
    <div className="App">
      <header className="App-header">
        <EvenOdd />
      </header>
    </div>
  );
}

export default App;
```

Example 2

Login and Logout screen using conditional.

Copy even_odd.js and rename component/login.js file**.**

```
class Login extends Component {
        state = {
                isLogin: false,
                username: '',
        }
        setUser = evt => {
                this.state.username = evt.target.value;
        }
        clickLogin  = evt =>  {
                if (this.state.username == 'kyaw' && this.state.passwd == '123') {
                        this.setState({isLogin: true});
                }
        }
        clickLogout  = evt =>  {
                this.setState({isLogin: false});
        }
        render() {
                return (
                        <div>
                            { this.state.isLogin ? (
                                  <div>
                                     <div>
                                       Welcome home screen !
                                     </div>
                                     <div>
                                       <button onClick={ this.clickLogout }> Logout </button>
                                      </div>
                                  </div>
                              ) : (
                                  <div>
                                     <div>
                                        username: <input onChange={ this.setUser} type="text" />
                                     </div>
                                     <div>
                                        <button onClick={ this.clickLogin }> Login </button>
                                     </div>
                                   </div>
                                 )
                              }
                        </div>
                )
        }
}
export default Login;
```

Create 7_conditional folder.
Copy 0_install/first_app/src folder to 7_conditional folder.

(8) React Keys

Create component/home.js file**.**

```
import React, { Component } from 'react';

class Home extends Component {

    render() {
        const employees = ['aung aung', 'mg mg', 'kyaw kyaw', 'aye aye']
        return (
            <div>
                { employees.map(employee => {
                    return (
                        <div>
                            <h1> { employee } </h1>
                        </div>
                    )

                })
            }
            </div>
        )
    }
}

export default Home;
```

Inspect browser console.

Warning: Each child in a list should have a unique "key" prop.

Check the render method of `Home`. See https://reactjs.org/link/warning-keys for more information.
div
Home@http://localhost:3000/static/js/bundle.js:354:1
header
div
App

Create component/new_home.js file.

```
import React, { Component } from 'react';

class NewHome extends Component {

    render() {
        const employees = [
                {id: 1, name: 'aung aung'},
                {id: 2, name: 'mg mg'},
                {id: 3, name: 'kyaw kyaw'},
                {id: 4, name: 'aye aye'}
        ]

        return (
            <div>
                    { employees.map(employee => {
                            return (
                                    <div key={employee.id}>
                                            <h1> { employee.name } </h1>
                                    </div>
                            )

                    })
            }
            </div>
        )
    }
}

export default NewHome;
```


Create 8_keys folder.
Copy 0_install/first_app/src folder to 8_keys folder.

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(9) React Router

```
npm install react-router-dom
```

Check in package.json file.

```
npm list
```

Create component/menu.js file.

```
import { BrowserRouter, Routes, Route } from "react-router-dom";
import EvenOdd from './even_odd.js';
import Login from './login.js';
import Home from './new_home.js';

const Menu = () => {
  return (
    <BrowserRouter>
     <Routes>
       <Route path="login" element={<Login />} />
       <Route path="home" element={<Home />} />
       <Route path="evenodd" element={<EvenOdd />} />
     </Routes>
    </BrowserRouter>
 )
};

export default Menu;
```

Run in browser -

```
localhost:3000/login
localhost:3000/home
localhost:3000/evenodd
```

Create 9_router folder.
Copy 0_install/first_app/src folder to 9_router folder.

(10) React Hooks

useState

Copy component/login.js and Create component/new_login.js file.
Change class state instead function useState and remove this keyword.

```
import { useState } from 'react';

function NewLogin() {
        const [islogin, setlogin] = useState(false);
        const [username, setusername] = useState("");

        const setUsername = evt => {
                setusername(evt.target.value);
        }

        const clickLogin  = evt =>  {
                if (username == 'kyaw' && passwd == '123') {
                        setlogin(true);
                } else {
                        alert('sorry, invalid username and password !');
                }
        }

        const clickLogout  = evt =>  {
                setlogin(false);
        }
        . . .
}

export default NewLogin;
```

Change Menu.js file.

```
. . .
import Login from './new_login.js';
. . .
```

useEffect

Change new_login.js file.

```
import { useState, useEffect } from 'react';

function NewLogin() {
     . . .
     useEffect(() => {
         // run after every rendering
         if (islogin && username) {
             console.log(username, 'logged in.');
         }
     });

     const clickLogin  = evt =>  {
             if (username == 'kyaw' && passwd == '123') {
                     setlogin(true);
             } else {
                     alert('sorry, invalid username and password !');
             }
     }
     . . .
```

Add new users.

```
username = aung
passwd == 321

username = aye
passwd == 456
```

useContext

Copy component/menu.js and Create component/new_menu.js file.

```
import { BrowserRouter, Routes, Route } from "react-router-dom";
import EvenOdd from './even_odd.js';
import Login from './new_login.js';
import Home from './new_home.js';
import { createContext } from 'react';

export const Context = createContext();

const NewMenu = () => {

  const app_name = 'First App';

  return (
    <BrowserRouter>
     <Context.Provider value={app_name}>
      <Routes>
       . . .
      </Routes>
     </Context.Provider>
    </BrowserRouter>
 )
};

export default NewMenu;
```

Change new_login.js file.

```
. . .
import { Context } from './new_menu.js';
. . .
return (
        <div>
           <Context.Consumer>
               { value => <span> { value } </span> }
           </Context.Consumer>
        { islogin ? (
. . .
```

Add Context Consumer in **new_home.js** and **even_odd.js** and app_name change to **Second App**.

Create 10_router folder.
Copy 0_install/first_app/src folder to 10_router folder.

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(11) React Styling

CSS Stylesheet

Create src/Login.css file.

```css
.Login {
  background-color: blue;
}
```

Change new_login.js file.

```
. . .
import '../Login.css';
. . .
return (
        <div className="Login">
          <Context.Consumer>
. . .
```

Style Object

Change even_odd.js file.

```
. . .
render() {
            const myStyle = {
              backgroundColor: "orange",
            };

            return (
                    <div style={myStyle}>
                            <Context.Consumer>
. . .
```

Inline Style

Change new_home.js file.

```
. . .
return (
        <div style={{ backgroundColor: "green" }}>
            <Context.Consumer>
. . .
```

Create 11_style folder.
Copy 0_install/first_app/src folder to 11_style folder.

Django

1) Create new folder **4_django_restful** beside **3_react**.

```
mkdir 4_django_react
```

2) Check python version available 3.7.

```
py -0
```

3) Create new python virtual environment.

```
py -3.7 -m venv django2.2-venv
```

4) Activate virtual environment.

```
./django2.2-venv/Script/activate
```

5) Install django and check by pip list.

```
python -m pip install django==2.2
```

6) Create new project using django.

```
python -m django startproject hrms
```

7) Rename hrms project name as hrms-api.

```
cd hrms-api
```

8) Run server by manage.py file.

```
python manage.py runserver
```

9) Test in localhost:8000 in browser.

The install worked successfully! Congratulations!

Application Programming Interface (API)

1) Create new django application.

```
python manage.py startapp api
```

2) Register new app in setting.py

3) Database tables migrate.

```
python manage.py migrate
```

4) Check **hrms-api/db.sqlite3** database.
   Download SQL Query Browser (www.sqlitebrowser.org)

5) Create new admin user.

```
python manage.py createsuperuser
```

username: admin
email: admin@gmail.com
password: superuser

6) Login django administration at localhost:8000/admin in browser.

7) Create new employee table.

hrms-api/api/models.py

```
from django.db import models
# Create your models here.
class EmployeeModel(models.Model):
        name = models.CharField(max_length=20)
        phone = models.CharField(max_length=20)
        address = models.CharField(max_length=20)
```

8) makemigrations and migrate for new change.
```
python manage.py makemigrations api
python manage.py migrate api
```

9) Register for django administration.
```
from django.contrib import admin
from .models import EmployeeModel

# Register your models here.
admin.site.register(EmployeeModel)
```

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Django Restful Framework

1) Install django restful framework. (www.django-rest-framework.org)

```
python -m pip install djangorestframework==3.9.2
```

2) Register in setting.py

```
INSTALLED_APPS = [
    . . .
    'django.contrib.staticfiles',
    'rest_framework',
    'api',
]
```

3) Create new serializers.py

hrms-api/api/serializers.py

```
from rest_framework import serializers
from .models import EmployeeModel

class EmployeeSerializer(serializers.ModelSerializer):
      class Meta:
            model = EmployeeModel
            fields = ['id', 'name', 'phone', 'address']
```

4) Edit views.py.

hrms-api/api/views.py

```
from django.shortcuts import render

# Create your views here.
from rest_framework import viewsets
from .models import EmployeeModel
from .serializers import EmployeeSerializer

class EmployeeViewSet(viewsets.ModelViewSet):
        serializer_class = EmployeeSerializer
        queryset = EmployeeModel.objects.all()
```

5) Creat new urls.py

hrms-api/api/urls.py

```python
from rest_framework import routers
from django.urls import path, include
from .views import EmployeeViewSet

router = routers.DefaultRouter()
router.register('employees', EmployeeViewSet)

urlpatterns = [
        path(", include(router.urls))
]
```

6) Edit root urls.py

hrms-api/hrms/urls.py

```python
from django.contrib import admin
from django.urls import path, include

urlpatterns = [
    path('admin/', admin.site.urls),
    path('api/', include('api.urls'))
]
```

7) Run **localhost:8000/api/employees** in browser.

Test API Method

POST (Create new employee)

```
HTTP 201 Created
Allow: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "id": 2,
    "name": "Mg Mg",
    "phone": "09787897878",
    "address": "Mandalay"
}
```

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GET (Read employee)

```
HTTP 200 OK
Allow: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

[
    {
        "id": 1,
        "name": "Kyaw Kyaw",
        "phone": "09383838",
        "address": "Yangon"
    }
]
```

PUT (Update employee)

Change url => **http://localhost:8000/api/employees/2**

```
HTTP 200 OK
Allow: GET, PUT, PATCH, DELETE, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "id": 2,
    "name": "Maung Maung",
    "phone": "09787897878",
    "address": "Mandalay"
}
```

DELETE (Delete employee)

Change url => **http://localhost:8000/api/employees/2**

```
HTTP 204 No Content
Allow: GET, PUT, PATCH, DELETE, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept
```

Are you sure you want to delete this Employee Instance?

Auth Token

1) Register in setting.py

```
INSTALLED_APPS = [
    . . .
    'rest_framework',
    'rest_framework.authtoken',
    'api',
]
```

2) Migrate auth token table.

```
Python manage.py migrate
```

3) Create token for admin user at django administration.

```
5bfc020cdc3bbe1f3e399fe2c5727c6c7e85c28a
```

Postman API Platform

Download postman (www.postman.com)

1) Edit root urls.py

hrms-api/hrms/urls.py

```
from django.contrib import admin
from django.urls import path, include
from rest_framework.authtoken.views import obtain_auth_token

urlpatterns = [
    path('admin/', admin.site.urls),
    path('api/', include('api.urls')),
    path('auth/', obtain_auth_token)
]
```

2) In postman api platform.

POST => **localhost:8000/auth/**.

Body Form Data
        username = admin
        password = superuser

Return Result
```
{"token":"5bfc020cdc3bbe1f3e399fe2c5727c6c7e85c28a"}
```

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Permission IsAuthenticated

1) Edit setting.py

```
. . .
WSGI_APPLICATION = 'hrms.wsgi.application'

REST_FRAMEWORK = {
   'DEFAULT_PERMISSION_CLASSES': (
       'rest_framework.permissions.IsAuthenticated',
   )
}
. . .
```

2) Edit views.py

```
from django.shortcuts import render

# Create your views here.
from rest_framework import viewsets
from .models import EmployeeModel
from .serializers import EmployeeSerializer
from rest_framework.authentication import TokenAuthentication

class EmployeeViewSet(viewsets.ModelViewSet):
        serializer_class = EmployeeSerializer
        queryset = EmployeeModel.objects.all()
        authentication_classes = (TokenAuthentication,)
```

3) In postman api platform.

GET => **localhost:8000/employees**.

Body Form Data

        username = admin
        password = superuser

Return Result

```
{
   "detail": "Authentication credentials were not provided."
}
```

4) Include headers.

GET => **localhost:8000/employees**.

Body Form Data
      username = admin
      password = superuser

Headers

      Authorization = Token 5bfc020cdc3bbe1f3e399fe2c5727c6c7e85c28a

Return Result

```
[
  {
    "id": 1,
    "name": "Kyaw Kyaw Kwa",
    "phone": "09383838",
    "address": "Yangon"
  }
]
```

Django React

Inside **4_django_restful** folder.

```
npx create-react-app hrms-web
```

project structure

```
- hrms-web -
            - node_modules
            - package.json
            - package-lock.json
            - public
            - src -
                    - App.css
                    - App.js
                    - index.css
                    - index.js
                    - reportWebVitals.js
                    - components -
                                    - home.js
                                    - login.js
                                    - menu.js
```

home.js

```
import React, { Component } from 'react';

class Home extends Component {
        render() {
                const employees = ['aung aung', 'mg mg', 'kyaw kyaw', 'aye aye']
                return (
                        <div>
                                { employees.map(employee => {
                                        return (
                                                <div>
                                                        <h1> { employee } </h1>
                                                </div>
                                        )

                                })
                        }
                        </div>
                )
        }
}

export default Home;
```

menu.js

```
import { BrowserRouter, Routes, Route } from "react-router-dom";
import Login from './login.js';
import Home from './home.js';

const Menu = () => {
 return (
   <BrowserRouter>
    <Routes>
      <Route path="login" element={<Login />} />
      <Route path="home" element={<Home />} />
    </Routes>
   </BrowserRouter>
 )
};

export default Menu;
```

App.js

```
import './App.css';
import Menu from './components/menu.js';

function App() {
 return (
   <div className="App">
    <header className="App-header">
       <Menu />
    </header>
   </div>
 );
}

export default App;
```

Test url

localhost:3000/home
localhost:3000/login

(1) Using Fetch Method

home.js

```
import React, { Component } from 'react';

class Home extends Component {

    componentDidMount(){
        fetch('http://127.0.0.1:8000/api/employees/', {
            method: 'GET',
            headers: {
            'Content-Type': 'application/json',
            'Authorization': 'Token 5bfc020cdc3bbe1f3e399fe2c5727c6c7e85c28a'
            }
        })
        .then( resp => resp.json())
        .then( res => console.log(res))
        .catch( error => console.log(error))
    }

    render() {
        const employees = ['aung aung', 'mg mg', 'kyaw kyaw', 'aye aye']
        return (
            <div>
                { employees.map(employee => {
                    return (
                        <div>
                            <h1> { employee } </h1>
                        </div>
                    )

                })
                }
            </div>
        )
    }
}

export default Home;
```

Key Error

Warning: Each child in a list should have a unique "key" prop.

Update home.js

```
render() {
        const employees = ['aung aung', 'mg mg', 'kyaw kyaw', 'aye aye']
        return (
            <div>
                    { employees.map(employee => {
                            return (
                                    <div key= { employee }>
                                        <h1> { employee } </h1>
                                    </div>
                            )

                    })
            }
            </div>
        )
    }
```

Cross-Origin Request Blocked

Cross-Origin Request Blocked: The Same Origin Policy disallows reading the remote resource at http://127.0.0.1:8000/api/employees/. (Reason: CORS header 'Access-Control-Allow-Origin' missing). Status code: 401.

Install django-cors-headers

```
python -m pip install django-cors-headers==2.5.3
```

Change hrms-api/hrms/settings.py

```
MIDDLEWARE = [
   'django.middleware.security.SecurityMiddleware',
   'django.contrib.sessions.middleware.SessionMiddleware',
   'corsheaders.middleware.CorsMiddleware',
   . . .
]

CORS_ORIGIN_WHITELIST = (
   'localhost:3000'
)
```

Update return data into state

Change home.js

```
import React, { Component } from 'react';

class Home extends Component {

        state = {
                employees: []
        }

        componentDidMount(){
                fetch('http://127.0.0.1:8000/api/employees/', {
                        method: 'GET',
                        headers: {
                           'Content-Type': 'application/json',
                           'Authorization': 'Token 5bfc020cdc3bbe1f3e399fe2c5727c6c7e85c28a'
                        }
                })
                .then( resp => resp.json())
                .then( res => this.setState({ employees: res }))
                .catch( error => console.log(error))
        }

        render() {
                //const employees = ['aung aung', 'mg mg', 'kyaw kyaw', 'aye aye']
                return (
                        <div>
                                {
                                        this.state.employees.map(employee => {
                                                return (
                                                        <div key={ employee.id }>
                                                                <h1> { employee.name } </h1>
                                                        </div>
                                                )

                                        })
                                }
                        </div>
                )
        }
}

export default Home;
```

(2) List View

Create hrms-web/src/components/employees folder.
Create detail.js, list.js and form.js

project structure

- hrms-web -
     . . .
    - public
    - **src** -
        - App.css
        - App.js
        . . .
        - **components** -
            - home.js
            - login.js
            - menu.js
            - **employees**
                - detail.js
                - list.js
                - form.js

Change list.js

```
import React, { Component } from 'react';

class EmployeeList extends Component {

    render() {
        return (
            <div>
                <h1> List View </h1>
                {
                    this.props.employees.map(employee => {
                        return (
                            <div key={ employee.id }>
                                <h3> { employee.name } </h3>
                            </div>
                        )

                    })
                }
            </div>
        )
    }
}

export default EmployeeList;
```

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Change home.js

```
import React, { Component } from 'react';
import EmployeeList from './employees/list.js';

class Home extends Component {

        state = {
                employees: []
        }

        componentDidMount(){
                . . .
        }

        render() {
                return (
                        <div>
                                <h1> HRMS </h1>
                                <div>
                                        <EmployeeList employees={ this.state.employees }/>
                                </div>
                        </div>
                )
        }
}

export default Home;
```

HRMS

List View

Kyaw Kyaw

Aung Aung

(3) Detail View

detail.js

```
import React, { Component } from 'react';

class EmployeeDetail extends Component {

        render() {
                return (
                        <div>
                                <h1> Detail View </h1>
                        </div>
                )
        }
}

export default EmployeeDetail;
```

home.js

```
import React, { Component } from 'react';
import EmployeeList from './employees/list.js';
import EmployeeDetail from './employees/detail.js';

class Home extends Component {

        state = {
                employees: []
        }

        componentDidMount(){
                . . .
        }

        render() {
                return (
                        <div>
                                <h1> HRMS </h1>
                                <div>
                                        <EmployeeList employees={ this.state.employees }/>
                                        <EmployeeDetail />
                                </div>
                        </div>
                )
        }
}

export default Home;
```

Create src/Home.css

Home.css

```
.Header {
    display: grid;
    grid-template-columns: 1fr 1fr;
    text-align: left;
    grid-gap: 100px;
}
```

Import css at home.js

```
import '../Home.css';

<h1> HRMS </h1>
        <div className="Header">
```

(3) List Item Click

home.js

```
import React, { Component } from 'react';
import EmployeeList from './employees/list.js';
import EmployeeDetail from './employees/detail.js';
import '../Home.css';

class Home extends Component {

        state = {
                employees: []
        }

        componentDidMount(){
                . . .
        }

        employeeClicked = employee => {
                console.log("Employee Clicked ", employee);
        }

        render() {
                return (
                        <div>
                                <h1> HRMS </h1>
                                <div className="Header">
                                        <EmployeeList employees={this.state.employees}
                                                employeeClicked={this.employeeClicked}/>
                                        <EmployeeDetail />
                                </div>
                        </div>
                )
        }
}

export default Home;
```

list.js

```
import React, { Component } from 'react';

class EmployeeList extends Component {

    employeeClicked = employee => evt => {
        this.props.employeeClicked(employee);
    };

    render() {
        return (
            <div>
                <h1> Employee List </h1>
                {
                    his.props.employees.map(employee => {
                        return (
                            <div key={ employee.id }>
                                <h3
                                    onClick={this.employeeClicked(employee)}>
                                    { employee.name }
                                </h3>
                            </div>
                        )

                    })
                }
            </div>
        )
    }
}

export default EmployeeList;
```

console result

```
Employee Clicked
Object { id: 1, name: "Kyaw Kyaw", phone: "09383838", address: "Yangon" }
home.js:28

Employee Clicked
Object { id: 4, name: "Aung Aung", phone: "09373737373", address: "Mandalay" }
home.js:28
```

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(4) Connect List View with Detail View

home.js

```
state = {
       employees: [],
       selectedEmployee: null
}

employeeClicked = employee => {
       console.log("Employee Clicked ", employee);
       this.setState({ selectedEmployee: employee });
}

render() {
               return (
                       . . .
                       <EmployeeDetail employee={ this.state.selectedEmployee } />


                       . . .
               )
       }
```

detail.js

```
import React, { Component } from 'react';

class EmployeeDetail extends Component {

       render() {

               const employee = this.props.employee;

               return (
                       <div>
                         <h1> Detail View </h1>
                           <div>
                               <h3> {employee.name} </h3>
                               <p> {employee.phone} </p>
                               <p> {employee.address} </p>
                           </div>
                       </div>
               )
       }
}

export default EmployeeDetail;
```
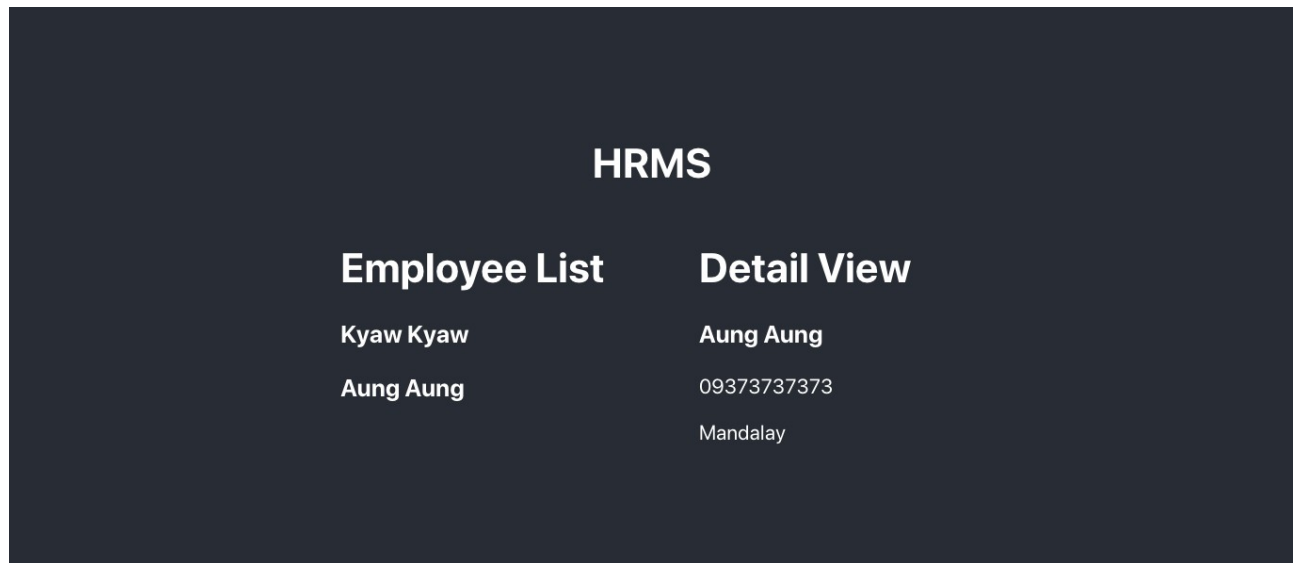
Uncaught TypeError: employee is null

Update home.js

```
{
    this.state.selectedEmployee
    ?
        <EmployeeDetail employee={ this.state.selectedEmployee } />
    :
        null
}
```


(5) Form View

Change form.js

```
import React, { Component } from 'react';

class EmployeeForm extends Component {

    render() {
        return (
            <div>
                <h1> Form View </h1>
            </div>
        )
    }
}

export default EmployeeForm;
```

Change home.js

Add new state view type and add new button.

```
. . .
import EmployeeForm from './employees/form.js';

class Home extends Component {
        state = {
                . . .
                view_type: ''
        }

        componentDidMount(){
                . . .
        }

        employeeClicked = employee => {
                . . .
                this.setState({ selectedEmployee: employee, view_type: 'detail' });
        }

        addNewClicked = () => {
                console.log("Add New Click");
                this.setState({ view_type: 'create'});
        };

        render() {
                return (
                        <div>
                                . . .
                                <div className="Header">
                                        {
                                                this.state.view_type == 'create'
                                                ? <EmployeeForm/> : null
                                        }

                                        {
                                                this.state.view_type == 'detail'
                                                ?   <EmployeeDetail
                                                        employee={ this.state.selectedEmployee } />
                                                :  null
                                        }
                                </div>
                                <div className="Footer">
                                        <button onClick={this.addNewClicked}>Add New</button>
                                </div>
                        </div>
                )
        }
}
```

Add new css class at Home.css

```
.Footer {
    text-align: left;
}
```

Change form.js

```
class EmployeeForm extends Component {
        save = () => {
            console.log('save click');
        }

        render() {
                return (
                        <div>
                            <h1> Form View </h1>
                                <div>
                                    <span> Name </span> <br/>
                                    <input name="name" type="text" /> <br/>
                                    <span> Phone </span> <br/>
                                    <input name="phone" type="text" /> <br/>
                                    <span> Address </span> <br/>
                                    <input name="address" type="text" /> <br/>
                                    <button onClick={this.save}> Save </button>
                                </div>
                        </div>
                )
        }
}
```

HRMS

Employee List   **Form View**

Kyaw Kyaw   Name

Aung Aung   Phone

                          Address

                          Save

Add New

(6) Form Save

Change form.js

```
import React, { Component } from 'react';

class EmployeeForm extends Component {

    state = {
        editedEmployee: {'name': '', 'phone': '', 'address': ''}
    }

    inputChanged = evt => {
        console.log('input change', evt.target.value);
        let employee = this.state.editedEmployee;
        employee[evt.target.name] = evt.target.value;
        this.setState({ editedEmployee: employee });
    }

    save = () => {
        console.log('save click');
        fetch('http://127.0.0.1:8000/api/employees/', {
            method: 'POST',
            headers: {
                'Content-Type': 'application/json',
                'Authorization': 'Token 5bfc020cdc3bbe1f3e399fe2c5727c6c7e85c28a'
            },
            body: JSON.stringify(this.state.editedEmployee)
        }).then( resp => resp.json())
        .then( res => console.log(res))
        .catch( error => console.log(error))
    }

    render() {
        return (
                <div>
                    <h1> Form View </h1>
                     <div>
                        <span> Name </span> <br/>
                        <input name="name" type="text" onChange={this.inputChanged}/> <br/>
                            . . .
                     </div>
                </div>
            )
        }
}

export default EmployeeForm;
```

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(7) Form Update

Font Awesome Install

```
npm install react-fontawesome
```

public/index.html

```
<script src="https://kit.fontawesome.com/7f0377bcc2.js" crossorigin="anonymous"></script>
```

List.css

```css
.List {
    display: grid;
    grid-template-columns: 1fr auto auto;
}
```

list.js

```jsx
import React, { Component } from 'react';
import '../../List.css';
var FontAwesome = require('react-fontawesome');

class EmployeeList extends Component {
  . . .

  updateClicked = employee => evt => {
    this.props.updateClicked(employee);
  };

  render() {
      return (
              <div>
                  <h1> Employee List </h1>
                  {
                      this.props.employees.map(employee => {
                          return (
                              <div key={employee.id} className="List">
                                  . . .
                                  <FontAwesome name="edit"
                                      onClick={this.updateClicked(employee)}/>
                              </div>
                          )
                      })
                  }
              </div>
  . . .
```
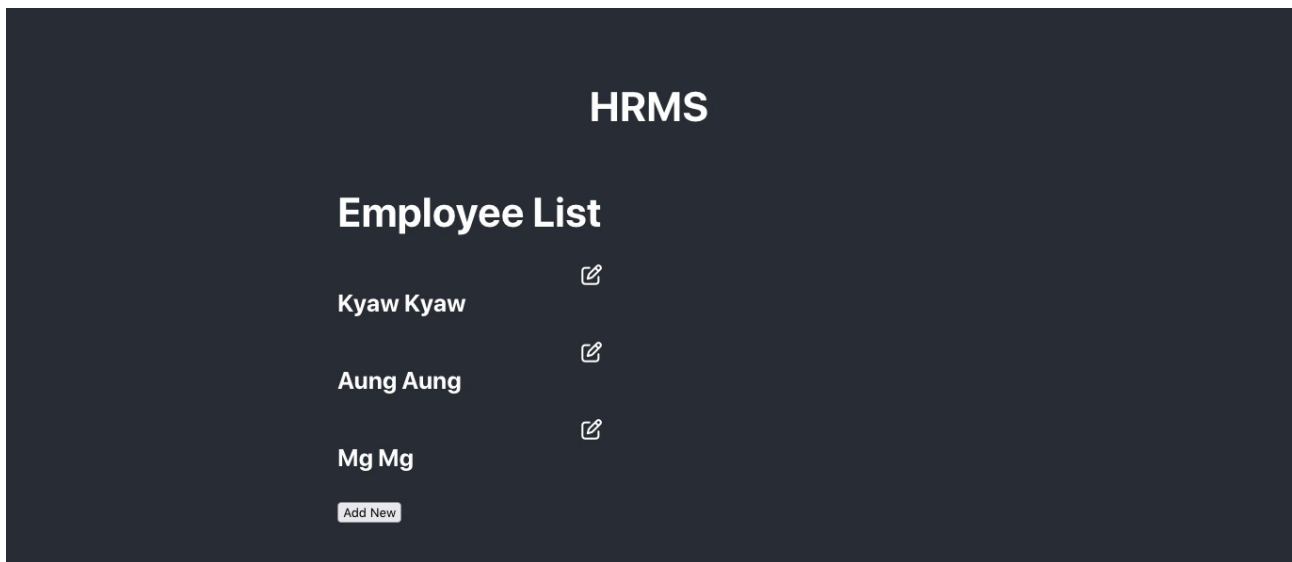
Change home.js

```
addNewClicked = () => {
  console.log("Add New Click");
  let newemployee = {'name': '', 'phone': '', 'address': ''};
  this.setState({selectedEmployee: newemployee, view_type: 'create'});
};

updateClicked = employee => {
  console.log("update Click");
  this.setState({selectedEmployee: employee, view_type: 'update'});
};

render() {
        return (
              <div>
                  <h1> HRMS </h1>
                      <div className="Header">
                          <EmployeeList employees={this.state.employees}
                                  employeeClicked={this.employeeClicked}
                                  updateClicked={this.updateClicked}/>
                          {
                                  this.state.view_type == 'create'
                                  || this.state.view_type == 'update'
                                  ?
                                          <EmployeeForm . . ./>
                                  :
                                          null
                          }
                          . . .
                  </div>
  . . .
```

Change form.js

```
import React, { Component } from 'react';

class EmployeeForm extends Component {

  state = {
      editedEmployee: null
   }

  inputChanged = evt => {
    console.log('input change', evt.target.value);
    let employee = this.props.employee;
    employee[evt.target.name] = evt.target.value;
    this.setState({ editedEmployee: employee });
  }

  save = () => {
     . . .
  }

  update = () => {
    console.log('update click');
    fetch(`http://127.0.0.1:8000/api/employees/${this.props.employee.id}/`, {
      method: 'PUT',
      headers: {
        'Content-Type': 'application/json',
        'Authorization': 'Token 5bfc020cdc3bbe1f3e399fe2c5727c6c7e85c28a'
      },
      body: JSON.stringify(
        this.state.editedEmployee
      )
    }).then( resp => resp.json())
    .then( res => console.log(res))
    .catch( error => console.log(error))
  }

  render() {
      return (
          <div>
             <h1> Form View </h1>
               <div>
                  <input name="name" type="text" value={this.props.employee.name}
                         onChange={this.inputChanged}/> <br/>
                   . . .
                  <button onClick={this.save}> Save </button>
                  <button onClick={this.update}> Update </button>
               </div>
          </div>
      . . .
```

(8) Delete

list.js

```
. . .

  deleteClicked = employee => evt => {
    console.log('delete click');
              fetch(`http://127.0.0.1:8000/api/employees/${employee.id}/`, {
      method: 'DELETE',
      headers: {
        'Content-Type': 'application/json',
        'Authorization': 'Token 5bfc020cdc3bbe1f3e399fe2c5727c6c7e85c28a'
      }
    })
    .then( res => this.props.reload(employee, 'delete'))
    .catch( error => console.log(error))
  };

  . . .

  <FontAwesome name="edit" onClick={this.updateClicked(employee)}/>
  <FontAwesome name="trash" onClick={this.deleteClicked(employee)}/>
  . . .
```

(9) Reload

home.js

```
      reload = (employee, method) => {
            if (method == 'save') {
                    this.setState({employees: [...this.state.employees, employee]});
            } else if (method == 'update') {
                    this.setState({view_type: ''});
            } else if (method == 'delete') {
                    const employees = this.state.employees.filter( emp => emp.id !==
                                        employee.id);
                    this.setState({employees: employees});
            }
      }
```

Change form.js and list.js under save, update and delete function.

```
save = () => {
    fetch('http://127.0.0.1:8000/api/employees/', {
            . . .
    }).then( resp => resp.json())
    .then( res => this.props.reload(res, 'save'))
    .catch( error => console.log(error))
  }
```

(10) Login

Change login.js

```
class Login extends Component {
    state = {
        user: {
          username: '',
          password: ''
        },
    }

    inputChanged = event => {
        let user = this.state.user;
        user[event.target.name] = event.target.value;
        this.setState({user: user});
    }

    clickLogin  = () =>  {
        fetch('http://127.0.0.1:8000/auth/', {
            method: 'POST',
            headers: { 'Content-Type': 'application/json'},
            body: JSON.stringify(this.state.user)
        })
        .then( resp => resp.json())
        .then( res => {
            console.log(res.token);
            if (res.token) {
                window.location.href = "/home";
            } else {
                alert("Username & Password Invalid !");
            }
        }).catch( error => console.log(error))
    }

    render() {
        return (
            <div className="Login">
                <div>
                    <div>
                        username : <input name="username"
onChange={ this.inputChanged } type="text" />
                    </div>
                    . . .
                </div>
            </div>
        )
    }
}
export default Login;
```

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(11) React Cookie

React Cookie Install

```
npm install react-cookie
```

menu.js

```
import { BrowserRouter, Routes, Route } from "react-router-dom";
import Login from './login.js';
import Home from './home.js';
import { CookiesProvider } from "react-cookie";

const Menu = () => {
 return (
   <CookiesProvider>
    <BrowserRouter>
     <Routes>
        <Route path="" element={<Login />} />
        <Route path="home" element={<Home />} />
     </Routes>
    </BrowserRouter>
   </CookiesProvider>
 )
};

export default Menu;
```

login.js

```
import React, { Component } from 'react';
import { withCookies } from "react-cookie";

class Login extends Component {
    . . .
    clickLogin  = () =>  {
        fetch('http://127.0.0.1:8000/auth/', {
            . . .
        })
        .then( resp => resp.json())
        .then( res => {
                console.log(res.token);
                this.props.cookies.set('hrms-token', res.token);
                . . .
        }).catch( error => console.log(error))
    }
  . . .
}
export default withCookies(Login);
```

home.js

```
import React, { Component } from 'react';
. . .
import { withCookies } from 'react-cookie';

class Home extends Component {
    state = {
        . . .
        token: this.props.cookies.get('hrms-token')
    }

    componentDidMount(){
        fetch('http://127.0.0.1:8000/api/employees/', {
            method: 'GET',
            headers: {
        'Content-Type': 'application/json',
        'Authorization': `Token ${this.state.token}`
      }
        })
        .then( resp => resp.json())
        .then( res => this.setState({employees: res}))
        .catch( error => console.log(error))
    }


    . . .

    render() {
        return (
            <div>
                <h1> HRMS </h1>
                <div className="Header">
                    <EmployeeList employees={ this.state.employees }
employeeClicked={this.employeeClicked} updateClicked={this.updateClicked}
reload={this.reload} token={this.state.token}/>
                        . . .
            </div>
        )
    }
}

export default withCookies(Home);
```

form.js

```
import React, { Component } from 'react';

class EmployeeForm extends Component {

  . . .

  save = () => {
    console.log('save click');
    fetch('http://127.0.0.1:8000/api/employees/', {
      method: 'POST',
      headers: {
        'Content-Type': 'application/json',
        'Authorization': `Token ${this.props.token}`
      },
      body: JSON.stringify(this.state.editedEmployee)
    }).then( resp => resp.json())
    .then( res => this.props.reload(res, 'save'))
    .catch( error => console.log(error))
  }

  update = () => {
    console.log('update click');
    fetch(`http://127.0.0.1:8000/api/employees/${this.props.employee.id}/`, {
      method: 'PUT',
      headers: {
        'Content-Type': 'application/json',
        'Authorization': `Token ${this.props.token}`
      },
      body: JSON.stringify(
        this.state.editedEmployee
      )
    }).then( resp => resp.json())
    .then( res => this.props.reload(res, 'update'))
    .catch( error => console.log(error))
  }

    render() {
        . . .
    }
}

export default EmployeeForm;
```

Change also list.js fetch method.