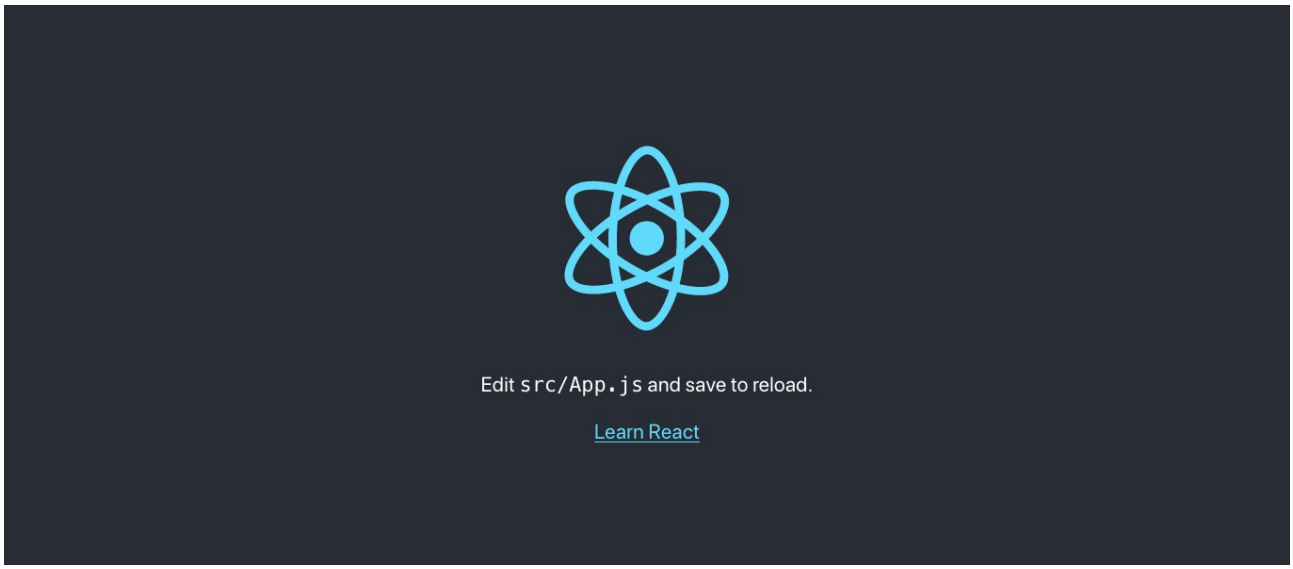
React Project Create

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

```
cd first_app
npm start
```



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;
```

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.

(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**.**

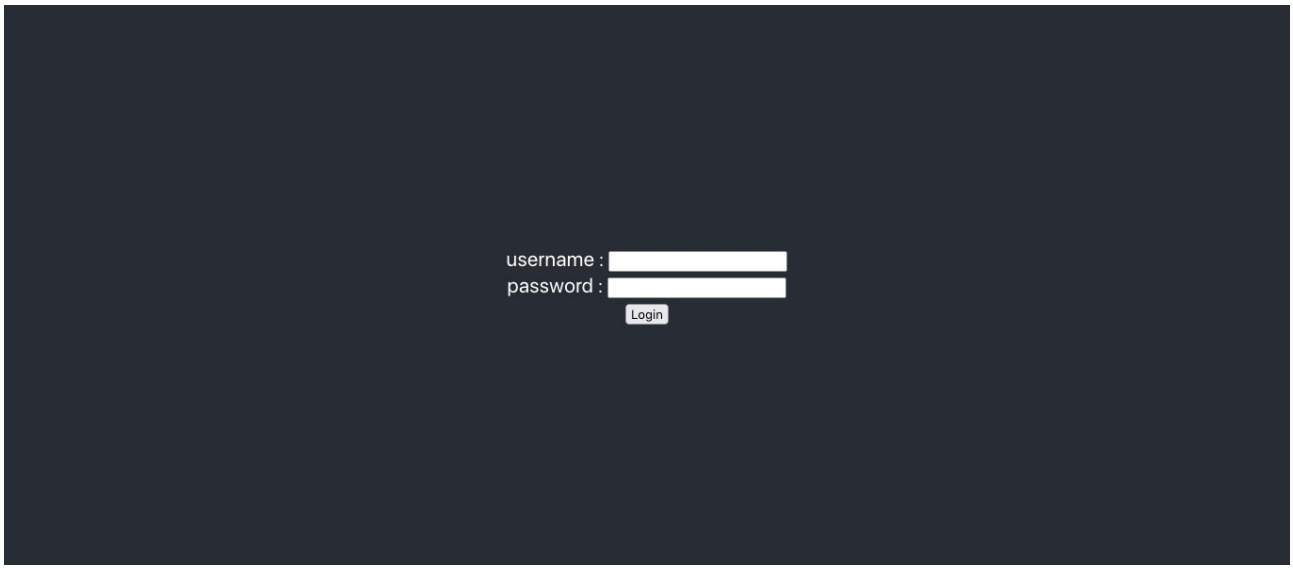
```
class EvenOdd extends Component {
	state = {
		num: 0
	}
	setNum = evt => {
		this.state.num = evt.target.value;
	}
	click  = evt =>  {
		this.setState({num: this.state.num});
	}
	render() {
		return (
			<div>
				<div>
					<input onChange={ this.setNum } type="text" />
				</div>
				<div>
					<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;
```

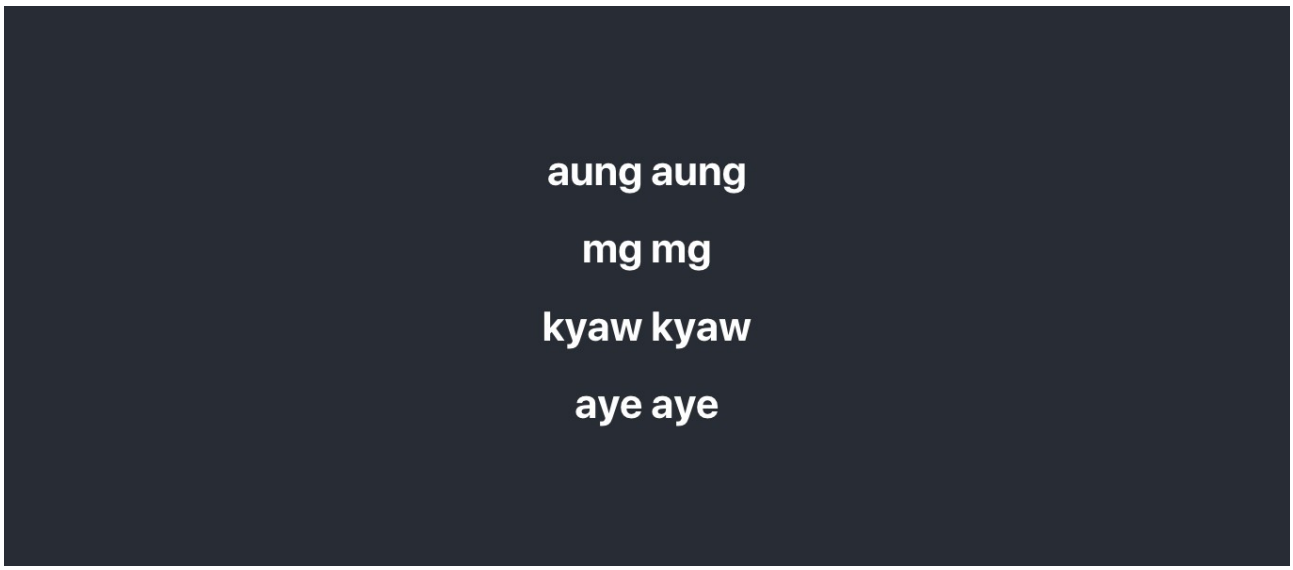
Inspect browser console.

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.

(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.

(11) React Styling

CSS Stylesheet

Create src/Login.css file.

```
.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)
```

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

```
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

```
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"
}
```

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"}
```

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;
```

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;
```

(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
```

(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.

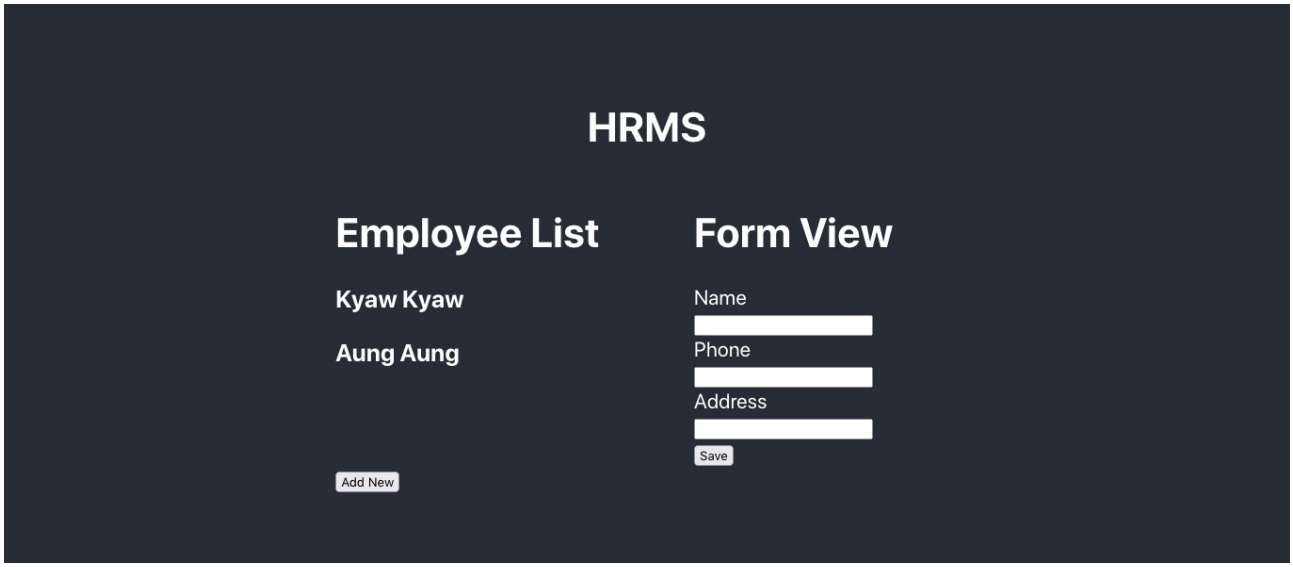
```
. . .
import EmployeeForm from './employees/form.js';

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>
                )
        }
}
```



(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;
```

(7) Form Update

Font Awesome Install

```
npm install react-fontawesome
```

public/index.html

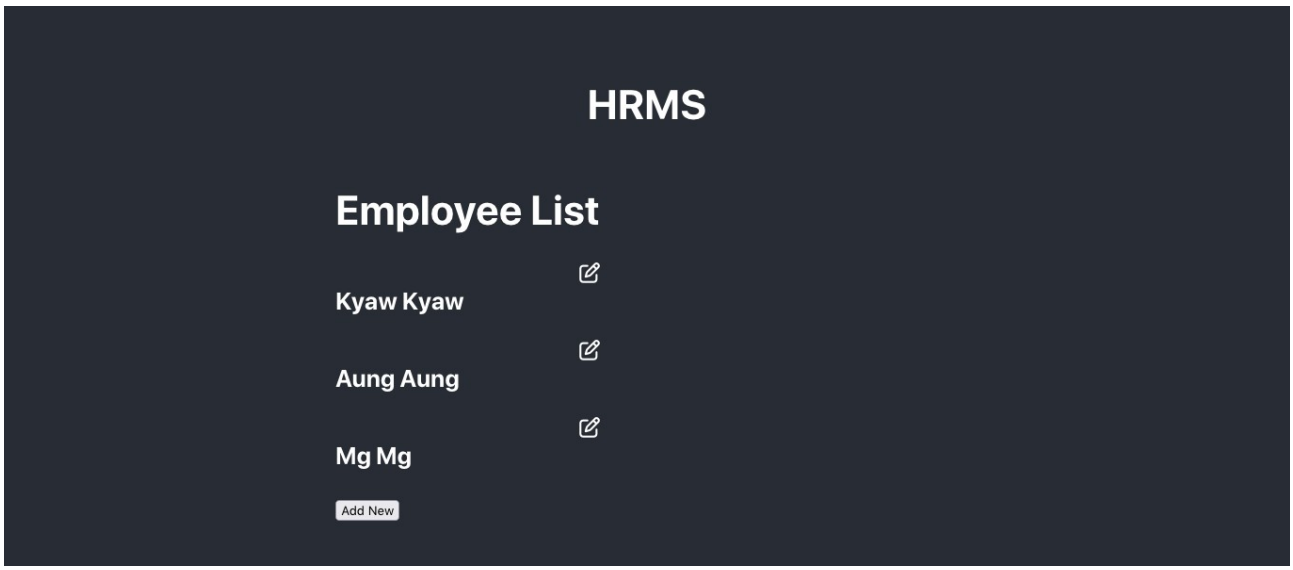
```
<script src="https://kit.fontawesome.com/7f0377bcc2.js" crossorigin="anonymous"></script>
```

List.css

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

list.js

```
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;
```

(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.

React Native

Create New Project first_app.

```
expo init first_app
```

Create new first_app/components folder and Create header.js and footer.js under components folder.

project structure

- first_app -
    - node_modules
    - assets
    - babel.config.js
    - package.json
    - package-lock.json
    - App.js
    - app.json
    - **components** -
        - header.js
        - footer.js

(1) Components

header.js

```
import React from 'react';
import {Text, View} from 'react-native';

function Header() {
    return (
        <View>
            <Text> Header </Text>
        </View>
    );
}

export { Header };
```

footer.js

```
import React, { Component } from 'react';
import {Text, View} from 'react-native';

class Footer extends Component {
        render() {
                return (
                        <View>
                                <Text> Footer </Text>
                        </View>
                );
        }
}

export default Footer;
```

App.js

```
import { StyleSheet, Text, View } from 'react-native';
import { Header } from './components/header';
import Footer from './components/footer';

export default function App() {
  return (
    <View style={styles.container}>
      <Header />
        <Text> Hello React Native World </Text>
      <Footer />
    </View>
  );
}

const styles = StyleSheet.create({
  container: {
    flex: 1,
    backgroundColor: '#fff',
    alignItems: 'center',
    justifyContent: 'center',
  },
});
```

(2) Props

App.js

```
import { StyleSheet, Text, View } from 'react-native';
. . .

export default function App() {
  return (
    <View style={styles.container}>
      <Header message="header page" name="testing" />
        <Text> main page </Text>
      <Footer address="yangon" />
    </View>
  );
}
. . .
```

header.js

```
import React from 'react';
import {Text, View} from 'react-native';

function Header(props) {
        return (
                <View>
                        <Text> { props.message } </Text>
                        <Text> Our { props.name } page </Text>
                </View>
        );
}
export { Header };
```

footer.js

```
import React, { Component } from 'react';
import {Text, View} from 'react-native';

class Footer extends Component {
        render() {
                return (
                        <View>
                                <Text> { this.props.address } </Text>
                        </View>
                );
        }
}
export default Footer;
```

(3) Events

App.js

```
import { StyleSheet, Text, View, Alert } from 'react-native';
import { Header } from './components/header';
import Footer from './components/footer';

function showTesting() {
  Alert.alert('you click testing !');
}

export default function App() {
  return (
    <View style={styles.container}>
      <Header message="header page" name="testing" popup={ showTesting }/>
        <Text> main page </Text>
      <Footer address="yangon" />
    </View>
  );
}

. . .
```

header.js

```
import React from 'react';
import {Text, View} from 'react-native';

function Header(props) {
        return (
                <View>
                        <Text> { props.message } </Text>
                        <Text onPress={ props.popup }> Our { props.name } page </Text>
                </View>
        );
}

export { Header };
```

footer.js

```
import React, { Component } from 'react';
import {Text, View, TextInput, Alert} from 'react-native';

class Footer extends Component {

        logConsole() {
                Alert.alert('you typed in footer ...');
        }

        render() {
                return (
                        <View>
                                <Text> { this.props.address } </Text>
                                <TextInput onChangeText={ this.logConsole } />
                        </View>
                );
        }
}

export default Footer;
```

(4) State

footer.js

```
import React, { Component } from 'react';
import {Text, TextInput, View, Button, Alert} from 'react-native';

class Footer extends Component {

        state = {
                name: 'Aung Aung'
        }

        logConsole() {
                Alert.alert('you typed in footer ...');
        }

        setName = name => {
                this.setState({name});
        }

        showName = () => {
                Alert.alert("You typed " + this.state.name);
        }

        render() {
                return (
                        <View>
                                <Text> { this.props.address } </Text>
                                <TextInput onChangeText={ this.logConsole } />
                                <TextInput onChangeText={ this.setName }
                                        style={{ backgroundColor: 'orange'}}/>
                                <Button onPress={ this.showName } title="Click Me"/>
                        </View>
                );
        }
}

export default Footer;
```

App.js is not change.

header.js

```
import React, { useState } from 'react';
import {Text, View, TextInput, Button} from 'react-native';

function Header(props) {

        const [name, setName] = useState('Aung Aung');

        return (
                <View>
                        <Text> { props.message } </Text>
                        <Text onPress={ props.popup }> Our { props.name } page </Text>
                        <TextInput onChangeText={(name) => setName(name)}
                                style={{ backgroundColor: 'gray'}}/>
                        <Button onPress={() => alert("You typed" + name)} title="Click Me"/>
                </View>
        );
}

export { Header };
```

(5) Flat List

Create new list.js under components folder.

```
import React from 'react';
import {Text, View, FlatList, Alert} from 'react-native';

function List() {
   const clickEmployee = (item) => {
      Alert.alert("you clicked " + item.name);
   }

    return (
         <View>
            <FlatList
            data={[
               {name: 'Aung Aung'}, {name: 'Mg Mg'}, {name: 'Kyaw Kyaw'}
            ]}
            renderItem={({item}) => (
               <Text onPress={() => clickEmployee(item)}>
                  <View>
                     <Text >{item.name}</Text>
                  </View>
               </Text>
            )}
          />
        </View>
     );
}
export default List;
```

Import from App.js

```
import { StyleSheet, Text, View, Alert } from 'react-native';
import List from './components/list';

export default function App() {
  return (
    <View style={styles.container}>
      <List />
    </View>
  );
}

const styles = StyleSheet.create({
  container: {
    flex: 1,
    marginTop: 100,
    . . .
   }
});
```

(6) Navigation

Install React Navigation.

```
npm install
react-navigation
react-navigation-stack
react-native-gesture-handler
react-native-safe-area-context
```

Create new detail.js under components folder.

```
import React from 'react';
import {Text, TextInput, View, Button} from 'react-native';

function Detail() {
	return (
		<View>
			<Text> Detail Screen </Text>
		</View>
	);
}

export default Detail;
```

Update App.js

```
import React from 'react';
import List from './components/list';
import Detail from './components/detail';

import { createAppContainer } from 'react-navigation';
import { createStackNavigator } from 'react-navigation-stack';

const AppNavigator = createStackNavigator(
  {
    List: {screen: List},
    Detail: {screen: Detail},
  },
  {
    initialRouteName: "List"
  }
)

const App = createAppContainer(AppNavigator);

export default App;
```

To click one screen to another screen.

list.js

```
import React from 'react';
import {Text, View, Button, FlatList, Alert} from 'react-native';

function List(props) {
   return (
      <View>
         <FlatList
            . . .
         />

         <Button
            title="Go to Detail"
            onPress={() => props.navigation.navigate('Detail')}
         />
     </View>
    );
}

export default List;
```

To send data with navigation.

list.js

```
import React from 'react';
import {Text, View, Button, FlatList, Alert} from 'react-native';

function List(props) {

   const clickEmployee = (item) => {
      //Alert.alert("you clicked " + item.name);
      props.navigation.navigate('Detail', {
         name: item.name
      });
   }

    return (
         <View>
               . . .
         </View>
    );
}

export default List;
```

Update detail.js

```
import React, { useState } from 'react';
import {Text, TextInput, View, Button} from 'react-native';

function Detail(props) {

        const name = props.navigation.getParam('name', '');

         return (
                <View>
                        <Text> Detail Screen </Text>
                        <Text> Name: {name} </Text>
                </View>
        );
}

export default Detail;
```

To change tool bar title and color.

detail.js

```
import React, { useState } from 'react';
import {Text, TextInput, View, Button} from 'react-native';

function Detail(props) {
   const name = props.navigation.getParam('name', '');

   return (
        . . .
    );
}

Detail.navigationOptions = {
   title: "Detail Screen",
   headerStyle: {
     backgroundColor: 'orange'
   }
}

export default Detail;
```

(7) Styles

Create new login.js under components folder.
Change flexDirection to row to column.

login.js

```
import React from "react";
import {StyleSheet, Text, View, Image, TextInput, TouchableOpacity } from "react-native";

function Login() {

  return (
    <View style={styles.container}>
      <Image style={styles.image} source={require("../assets/logo.png")} />

      <View style={styles.inputView}>
        <TextInput
          style={styles.inputText}
          placeholder="Username"
        />
      </View>

      <View style={styles.inputView}>
        <TextInput
          style={styles.inputText}
          placeholder="Password"
          secureTextEntry={true}
        />
      </View>

      <TouchableOpacity>
        <Text style={styles.signup}> Create New Account ?</Text>
      </TouchableOpacity>

      <TouchableOpacity style={styles.login}>
        <Text> Login </Text>
      </TouchableOpacity>
    </View>
  );
}

const styles = StyleSheet.create({
  container: {
    flex: 1,
    backgroundColor: "#fff",
    alignItems: "center",
    justifyContent: "center",
  },
```

```
  image: {
    marginBottom: 40,
    width: 100,
    height: 100
  },

  inputView: {
    backgroundColor: "#FFC7A1",
    borderRadius: 30,
    width: "70%",
    height: 45,
    marginBottom: 20,
  },

  inputText: {
    height: 50,
    padding: 10,
    marginLeft: 20,
  },

  signup: {
    height: 20,
    marginBottom: 20,
  },

  login: {
    width: "70%",
    height: 50,
    alignItems: "center",
    justifyContent: "center",
    marginTop: 40,
    backgroundColor: "#FF7D26",
  },
});

export default Login;
```

(8) Android or IOS Platfrm

For android change login.js to login.android.js.
For IOS change login.js to login.ios.js.

login.android.js

```
import React from "react";
import {StyleSheet, Text, View, Image, TextInput, TouchableOpacity, Platform } from "react-
native";

function Login() {

  return (
    <View style={styles.container}>
        . . .
    </View>
  );
}

const styles = StyleSheet.create({

  . . .
  inputView: {
    backgroundColor: Platform.OS == 'android' ? "#FFC7A1" : "blue",
    borderRadius: 30,
    width: "70%",
    height: 45,
    marginBottom: 20,
  },
  . . .
});

export default Login;
```

Change login.ios.js and run in ios.

(9) Icon and Splash Screen

Change app.json

```
{
  "expo": {
    "name": "fist_app",
    "slug": "fist_app",
    "version": "1.0.0",
    "orientation": "portrait",
    "icon": "./assets/my_logo.png",
    "userInterfaceStyle": "light",
    "splash": {
      "image": "./assets/my_splash.png",
      "resizeMode": "contain",
      "backgroundColor": "#ffffff"
    },
    "updates": {
      "fallbackToCacheTimeout": 0
    },
    "assetBundlePatterns": [
      "**/*"
    ],
    "ios": {
      "supportsTablet": true
    },
    "android": {
      "adaptiveIcon": {
        "foregroundImage": "./assets/adaptive-icon.png",
        "backgroundColor": "#FFFFFF"
      }
    },
    "web": {
      "favicon": "./assets/favicon.png"
    }
  }
}
```