

## Phase 4: Development Part 2

### Index.html

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8" />
    <link rel="icon" type="image/png" href="./logo.png" />
    <meta name="viewport" content="width=device-width, initial-scale=1" />
    <meta name="theme-color" content="#000000" />
    <meta
      name="description"
      content="This is an IOT water monitoring system that shows you level
of water in tank and gives you analysis of water usage"
    />
    <link rel="apple-touch-icon" href="logo.png" />
    <link rel="manifest" href="./manifest.json" />
    <title>IOT Water Monitoring System</title>
  </head>
  <body>
    <div id="root"></div>
    <script>
      if ("serviceWorker" in navigator) {
        window.addEventListener("load", () => {
          navigator.serviceWorker
            .register("./serviceWorker.js")
            .then((reg) => console.log("Success:", reg.scope))
            .catch((err) => console.log("Failure:", err));
        });
      }
    </script>
  </body>
</html>
```

## Index.js

```
import React from "react";
import ReactDOM from "react-dom";
import "./Assets/styles.js";
import App from "./App";
```

```
ReactDOM.render(
  <React.StrictMode>
    <App />
  </React.StrictMode>,
  document.getElementById("root")
);
```

## App.js

```
import { CssBaseline } from "@mui/material";
import Layout from "./Components/Layout";
import Overview from "./Components/Overview page/Overview";
import TankDetails from "./Components/Tanks/TankDetails";
import Analytics from "./Components/Analytics";
import About from "./Components/About";
import { BrowserRouter as Router, Routes, Route } from "react-router-dom";
```

```
document.body.style.background = "#f5f5f5";
```

```
function App() {
  return (
    <div>
      <Router>
        <CssBaseline />
        <Layout>
          <Routes>
            <Route path="/" element={<Overview />} />
            <Route path="/tanks" element={<TankDetails />} />
            <Route path="/analytics" element={<Analytics />} />
          </Routes>
        </Layout>
      </Router>
    </div>
  );
}
```

```

        <Route path="/about" element={<About />} />
      </Routes>
    </Layout>
  </Router>
</div>
);
}
export default App;

```

## About.js

```

import React from "react";
import { Typography, Container, Box } from "@mui/material";

const About = () => {
  return (
    <div>
      <Box>
        <Container>
          <Typography
            variant="h5"
            component="h1"
            sx={{ textTransform: "uppercase" }}
            gutterBottom
          >
            About IOT Water Monitoring System
          </Typography>
          <Typography variant="body2" component="p" gutterBottom>
            The system allows a user to manage his/her water tank level in real
            time and also determine the average usage of water in the house.
          <br />
          <br />
            To observe the level of water in the tank and some description of

```

the tank, navigate to the tank section indicated on the sidebar.

<br />

To view the analysis of water usage of the water in the tank,  
navigate to analytics page on the sidebar.

</Typography>

<Typography variant="caption">&copy; Immanuel Kituku

2022</Typography>

</Container>

</Box>

</div>

);

};

export default About;

## **Analytics.js**

import React from "react";

import LineChart from "../Charts/LineChart";

const Analytics = () => {

return (

<div>

<LineChart />

</div>

);

};

export default Analytics;

## **Layout.js**

import React from "react";

import Navbar from "../Navbar";

import Sidebar from "../Sidebar";

import { NavProvider } from "../NavContext";

import { useStyles } from "../Assets/styles";

```

const Layout = ({ children }) => {
  const classes = useStyles();
  return (
    <div>
      <NavProvider>
        <Sidebar />
        <Navbar />
      </NavProvider>
      <div component="main" className={classes.container}>
        {children}
      </div>
    </div>
  );
};
export default Layout;

```

### **NavContext.js**

```

import React, { createContext, useState } from "react";
export const navContext = createContext();
export const NavProvider = ({ children }) => {
  const [mobileOpen, setMobileOpen] = useState(false);
  const handleDrawerToggle = () => {
    setMobileOpen(!mobileOpen);
  };
  return (
    <div>
      <navContext.Provider value={{ mobileOpen, handleDrawerToggle }}>
        {children}
      </navContext.Provider>
    </div>
  );
};

export default NavProvider;

```

## Navbar.js

```
import { useContext } from "react";
import { Link } from "react-router-dom";
import { AppBar, Toolbar, Typography, Button, IconButton } from
"@mui/material";
import MenuIcon from "@mui/icons-material/Menu";
import HelpOutlineIcon from "@mui/icons-material/HelpOutline";
import { drawerWidth } from "../Sidebar";
import { navContext } from "../NavContext";

const Navbar = () => {
  const { handleDrawerToggle } = useContext(navContext);
  return (
    <nav>
      <AppBar
        position="fixed"
        sx={{
          width: { sm: `calc(100% - ${drawerWidth}px)` },
          ml: { sm: `${drawerWidth}px` },
          background: "#f5f5f5",
          color: "#616161",
        }}
        elevation={1}
      >
        <Toolbar sx={{ display: "flex", justifyContent: "space-between" }}>
          <IconButton
            color="inherit"
            aria-label="open drawer"
            edge="start"
            onClick={handleDrawerToggle}
            sx={{ mr: 2, display: { sm: "none" } }}
          >
            <MenuIcon sx={{ flexGrow: 1 }} />
          </IconButton>
        </Toolbar>
      </AppBar>
    </nav>
  );
};
```

```

<Typography
  variant="h6"
  sx={{ flexGrow: 1, textTransform: "capitalize", fontSize: "14px" }}
>
  IOT Water Monitoring System
</Typography>
<HelpOutlineIcon />

<Link
  to="/about"
  style={{
    textDecoration: "none",
    color: "black",
  }}
>
  <Button
    color="inherit"
    variant="text"
    sx={{ textTransform: "capitalize" }}
  >
    Help
  </Button>
</Link>
</Toolbar>
</AppBar>
</nav>
);
};
export default Navbar;

```

## Sidebar.js

```
import { useContext } from "react";
import {
  Toolbar,
  List,
  ListItem,
  ListItemIcon,
  ListItemText,
  Drawer,
  Divider,
  Icon,
  Box,
} from "@mui/material";
import DashboardIcon from "@mui/icons-material/Dashboard";
import BackpackIcon from "@mui/icons-material/Backpack";
import AnalyticsIcon from "@mui/icons-material/Analytics";
import InfoIcon from "@mui/icons-material/Info";
import logo from "../Assets/images/logo.svg";
import { Link } from "react-router-dom";
import { useStyles } from "../Assets/styles";
import { navContext } from "../NavContext";

export const drawerWidth = 240;
const Sidebar = () => {
  const classes = useStyles();
  const { mobileOpen, handleDrawerToggle } = useContext(navContext);
  const drawerMenu = [
    {
      label: "Overview",
      icon: <DashboardIcon />,
      color: "white",
      path: "/",
    },
    {
      label: "Tanks",
```



```

    icon: <BackpackIcon />,
    color: "primary",
    path: "/tanks",
  },
  {
    label: "Analytics",
    icon: <AnalyticsIcon />,
    color: "success",
    path: "/analytics",
  },
  { label: "About", icon: <InfoIcon />, color: "warning", path: "/about" },
];
const drawer = (
  <div>
    <Toolbar>
      <img
        src={logo}
        alt="logo"
        width="100"
        height="100"
        className={classes.logo}
      />
    </Toolbar>
    <Box className={classes.divider}>
      <Divider />
    </Box>
    <List>
      {drawerMenu.map(({ label, icon, color, path }, index) => (
        <Link
          to={path}
          style={{
            textDecoration: "none",
          }}
          key={index}
        >

```

```

      <ListItem
        button
        key={label}
        sx={{ "&:hover": { background: "#f5f5f5" } }}
      >
        <ListItemIcon>
          <Icon color={color}>{icon}</Icon>
        </ListItemIcon>
        <ListItemText
          primary={label}
          sx={{ "&:hover": { color: "#616161" }, color: "#fcfcfc" }}
        />
      </ListItem>
    </Link>
  )))
</List>
</div>
);
return (
  <div>
    <Box
      component="nav"
      sx={{ width: { sm: drawerWidth }, flexShrink: { sm: 0 } }}
    >
      <Drawer
        variant="temporary"
        open={mobileOpen}
        onClose={handleDrawerToggle}
        ModalProps={{
          keepMounted: true,
        }}
        sx={{
          display: { xs: "block", sm: "none" },
          "& .MuiDrawer-paper": {
            boxSizing: "border-box",

```

```

        width: drawerWidth,
        background: "#424242",
      },
    }}
  >
    {drawer}
  </Drawer>
  <Drawer
    variant="permanent"
    sx={{
      display: { xs: "none", sm: "block" },
      "& .MuiDrawer-paper": {
        boxSizing: "border-box",
        width: drawerWidth,
        background: "#424242",
      },
    }}
    open
  >
    {drawer}
  </Drawer>
</Box>
</div>
);
};

```

```
export default Sidebar;
```

## LineChart.js

```

import { useState, useEffect, useRef, useMemo } from "react";
import {
  Chart as ChartJS,
  ArcElement,

```

```
LineElement,  
BarElement,  
PointElement,  
BarController,  
BubbleController,  
DoughnutController,  
LineController,  
PieController,  
PolarAreaController,  
RadarController,  
ScatterController,  
CategoryScale,  
LinearScale,  
LogarithmicScale,  
RadialLinearScale,  
TimeScale,  
TimeSeriesScale,  
Decimation,  
Filler,  
Legend,  
Title,  
Tooltip,  
SubTitle,  
} from "chart.js";  
import { Chart } from "react-chartjs-2";  
import "chartjs-adapter-date-fns";  
import { db, ref, onValue } from "../../firebase-config";
```

```
ChartJS.register(  
  ArcElement,  
  LineElement,  
  BarElement,  
  PointElement,  
  BarController,  
  BubbleController,
```

```

DoughnutController,
LineController,
PieController,
PolarAreaController,
RadarController,
ScatterController,
CategoryScale,
LinearScale,
LogarithmicScale,
RadialLinearScale,
TimeScale,
TimeSeriesScale,
Decimation,
Filler,
Legend,
Title,
Tooltip,
SubTitle
);

const LineChart = () => {
  const [data, setData] = useState({ labels: [], datasets: [] });
  const [chartData, setChartData] = useState({});

  useEffect(() => {
    let dataArr = [];
    onValue(ref(db, "graph"), (snapshot) => {
      snapshot.forEach((childSnapshot) => {
        let xVal = snapshot.val()[childSnapshot.key].timestamp;
        let yVal = snapshot.val()[childSnapshot.key].level;
        dataArr.push({ x: xVal, y: yVal });
      });
      setChartData(dataArr);
    });
  }, []);

```

```
const myChartRef = useRef();
```

```
const config = useMemo(  
  () => ({  
    datasets: [  
      {  
        label: "Water Level",  
        barThickness: 7,  
        maxBarThickness: 10,  
        minBarLength: 5,  
        data: chartData,  
        borderColor: "rgb(53, 162, 235)",  
        backgroundColor: "rgba(53, 162, 235, 0.5)",  
      },  
    ],  
  })),  
  [chartData]  
);
```

```
useEffect(() => {  
  setData(config);  
}, [config]);
```

```
const options = {  
  responsive: true,  
  plugins: {  
    title: {  
      display: true,  
      text: "Daily Water Consumption",  
      fontSize: 25,  
    },  
  },  
  scales: {  
    x: {
```

```

    type: "time",
    time: {
      unit: "minute",
    },
  },
  y: {
    beginAtZero: true,
  },
},
};

return (
  <>
    <Chart type="bar" data={data} options={options} ref={myChartRef} />
  </>
);
};
export default LineChart;

```

## Style.js

```

import { makeStyles } from "@mui/styles";
export const useStyles = makeStyles({
  logo: {
    margin: "0 auto",
  },
  container: {

    margin: "5% 18%",
    "@media(max-width: 800px)": {
      margin: "15% auto",
      width: "100%",
    },
  },

```

```
},  
divider: {  
  background: "#f5f5f5",  
  width: "90%",  
  margin: "0 auto",  
},  
});
```