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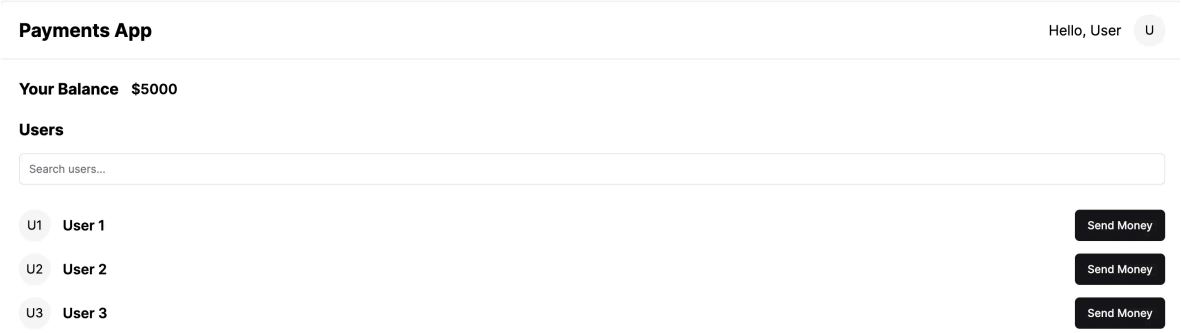
Step 1 - What are we building, Clone the starter repo

We're building a PayTM like application that let's users send money to each other given an initial dummy balance



Things to do

Clone the 8.2 repository from https://github.com/100xdevs-cohort-2/paytm

```
git clone https://github.com/100xdevs-cohort-2/paytm
```

💡 Please keep a MongoDB url handy before you proceed.
base for this assignment
ps://www.mongodb.com/

2. There is a Dockerfile in the codebase, you can run using it.

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Explore the repository

The repo is a basic **express + react + tailwind boilerplate**

Backend

1. Express - HTTP Server
2. mongoose - ODM to connect to MongoDB
3. zod - Input validation

```
const express = require("express");

const app = express();
```

index.js

Frontend

1. React - Frontend framework
2. Tailwind - Styling framework

```
function App() {

  return (
    <div>
      Hello world
    </div>
  )
}

export default App
```

App.jsx

Step 2 - User Mongoose schemas

We need to support 3 routes for user authentication

1. Allow user to sign up.
2. Allow user to sign in.
3. Allow user to update their information (firstName, lastName, password).

To start off, create the mongo schema for the users table

1. Create a new file (db.js) in the root folder
2. Import mongoose and connect to a database of your choice
3. Create the mongoose schema for the users table
4. Export the mongoose model from the file (call it User)

▼ Solution

Simple solution

```
// backend/db.js
const mongoose = require('mongoose');

// Create a Schema for Users
goose.Schema({

    password: String,
```

```
    firstName: String,
    ng
```



```
// Create a model from the schema
const User = mongoose.model('User', userSchema);

module.exports = {
    User
};
```

Elegant Solution

```
// backend/db.js
const mongoose = require('mongoose');

// Create a Schema for Users
const userSchema = new mongoose.Schema({
    username: {
        type: String,
        required: true,
        unique: true,
        trim: true,
        lowercase: true,
        minLength: 3,
        maxLength: 30
    },
    password: {
        type: String,
        required: true,
        minLength: 6
    },
    firstName: {
        type: String,
        required: true,
        trim: true,
        maxLength: 50
    },
    lastName: {
        type: String,
        required: true,
```

```
}
```



```
// Create a model from the schema
const User = mongoose.model('User', userSchema);

module.exports = {
    User
};
```

Step 3 - Create routing file structure

In the index.js file, route all the requests to `/api/v1` to a apiRouter defined in `backend/routes/index.js`

Step 1

Create a new file `backend/routes/index.js` that exports a new express router

(How to create a router - rgeeks.org/express-js-express-router-function/)

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▼ Solution

```
// backend/api/index.js
const express = require('express');

const router = express.Router();

module.exports = router;
```

Step 2

Import the router in index.js and route all requests from `/api/v1` to it

▼ Solution

```
// backend/index.js
const express = require("express");
const rootRouter = require("./routes/index");

const app = express();

app.use("/api/v1", rootRouter);
```

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Route user requests

1. Create a new user router

Define a new router in `backend/routes/user.js` and import it in the index router.

Route all requests that go to `/api/v1/user` to the user router.

▼ Solution

```
// backend/routes/user.js
const express = require('express');

const router = express.Router();

module.exports = router;
```

2. Create a new user router

Import the userRouter in `backend/routes/index.js` so all requests to `/api/v1/user` get routed to the userRouter.

▼ Solution

```
// backend/routes/index.js
const express = require('express');
const userRouter = require("./user");

const router = express.Router();
```

= router;

Step 5 - Add cors, body parser and jsonwebtoken

1. Add cors

Since our frontend and backend will be hosted on separate routes, add the `cors` middleware to `backend/index.js`

▼ Hint

Look at https://www.npmjs.com/package/cors

▼ Solution

```
// backend/index.js
const express = require('express');
const cors = require("cors");

app.use(cors());

const app = express();


module.exports = router;
```

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2. Add body parser

Since we have to support the JSON body in post requests, add the express body parser middleware to `backend/index.js`

You can use the `body-parser` npm library, or use express.json

▼ Hint

https://medium.com/@mmajdanski/express-body-parser-and-why-may-not-need-it-335803cd048c

▼ Solution

```
// backend/index.js
const express = require('express');
const cors = require("cors");
const rootRouter = require("./routes/index");

const app = express();

app.use(cors());
app.use(express.json());

app.use("/api/v1", rootRouter);
```

3. Add jsonwebtoken

We will be adding authentication soon to our application, so install jsonwebtoken library. It'll be useful in the next slide

```
npm install jsonwebtoken
```

4. Export JWT_SECRET

Create a file `backend/config.js`

```
//backend/config.js
module.exports = {
    JWT_SECRET: "your-jwt-secret"
}
```

5. Listen on port 3000

Make the express app listen on PORT 3000 of your machine

▼ Solution

```
// backend/index.js
... Existing code

app.listen(3000);
```

Step 6 - Add backend auth routes

In the user router (backend/routes/user), add 3 new routes.

This route needs to get user information, do input validation us he information in the database provided

1. Inputs are correct (validated via zod)
2. Database doesn't already contain another user

If all goes well, we need to return the user a jwt which has their user id encoded as follows -

```
{
    userId: "userId of newly added user"
}
```

💡 Note - We are not hashing passwords before putting them in the database. This is standard practise that should be done, you can find more details here - https://mojoauth.com/blog/hashing-passwords-in-nodejs/

Method: POST
Route: /api/v1/user/signup
Body:

```
{
    username: "name@gmail.com",
    firstName: "name",
    lastName: "name",
    password: "123456"
}
```

Response:

Status code - 200

```
{
                                    fully",
```

```
    token: "jwt"
```

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Status code - 411

```
{
  message: "Email already taken / Incorrect inputs"
}
```

▼ Solution

```
const zod = require("zod");
const { User } = require("../db");
const jwt = require("jsonwebtoken");
const { JWT_SECRET } = require("../config");

const signupBody = zod.object({
    username: zod.string().email(),
    firstName: zod.string(),
    lastName: zod.string(),
    password: zod.string()
})

router.post("/signup", async (req, res) => {
    const { success } = signupBody.safeParse(req.body)
    if (!success) {
        return res.status(411).json({
            message: "Email already taken / Incorrect inputs"
        })
    }

    const existingUser = await User.findOne({
        username: req.body.username
    })

    if (existingUser) {
        return res.status(411).json({
            message: "Email already taken/Incorrect inputs"
```

```
        const user = await User.create({
            username: req.body.username,
            password: req.body.password,
            firstName: req.body.firstName,
            lastName: req.body.lastName,
        })
        const userId = user._id;

        const token = jwt.sign({
            userId
        }, JWT_SECRET);

        res.json({
            message: "User created successfully",
            token: token
        })
    })
```

2. Route to sign in

Let's an existing user sign in to get back a token.

Method: POST
Route: /api/v1/user/signin
Body:

```
{
    username: "name@gmail.com",
    password: "123456"
}
```

Response:

Status code - 200

```
    token: "jwt"
```

}

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```
{
    message: "Error while logging in"
}
```

▼ Solution

```
const signinBody = zod.object({
    username: zod.string().email(),
    password: zod.string()
})

router.post("/signin", async (req, res) => {
    const { success } = signinBody.safeParse(req.body)
    if (!success) {
        return res.status(411).json({
            message: "Incorrect inputs"
        })
    }

    const user = await User.findOne({
        username: req.body.username,
        password: req.body.password
    });

    if (user) {
        const token = jwt.sign({
            userId: user._id
        }, JWT_SECRET);

        res.json({
            token: token
        })
        return;
    }
```

```
        message: "Error while logging in"
```


By the end, `routes/user.js` should look like follows

▼ Solution

```
// backend/routes/user.js
const express = require('express');

const router = express.Router();
const zod = require("zod");
const { User } = require("../db");
const jwt = require("jsonwebtoken");
const { JWT_SECRET } = require("../config");

const signupBody = zod.object({
    username: zod.string().email(),
    firstName: zod.string(),
    lastName: zod.string(),
    password: zod.string()
})

router.post("/signup", async (req, res) => {
    const { success } = signupBody.safeParse(req.body)
    if (!success) {
        return res.status(411).json({
            message: "Email already taken / Incorrect inputs"
        })
    }

    const existingUser = await User.findOne({
        username: req.body.username
    })

    if (existingUser) {
        return res.status(411).json({
            taken/Incorrect inputs"
```

```
    }

    await User.create({
        username: req.body.username,
        password: req.body.password,
        firstName: req.body.firstName,
        lastName: req.body.lastName,
    })
    const userId = user._id;

    const token = jwt.sign({
        userId
    }, JWT_SECRET);

    res.json({
        message: "User created successfully",
        token: token
    })
})

const signinBody = zod.object({
    username: zod.string().email(),
    password: zod.string()
})

router.post("/signin", async (req, res) => {
    const { success } = signinBody.safeParse(req.body)
    if (!success) {
        return res.status(411).json({
            message: "Email already taken / Incorrect inputs"
        })
    }

    const user = await User.findOne({
        username: req.body.username,
        password: req.body.password
    });

    if (user) {
        const token = jwt.sign({
            userId: user._id
```

```
            res.json({
                token
            })
            return;
        }


        res.status(411).json({
            message: "Error while logging in"
        })
    })

    module.exports = router;
```

Step 7 - Middleware

Now that we have a user account, we need to `gate` routes which authenticated users can hit.

For this, we need to introduce an auth middleware

Create a `middleware.js` file that exports an `authMiddleware` function

1. Checks the headers for an Authorization header (Bearer <token>)
2. Verifies that the token is valid
3. Puts the `userId` in the request object if the token checks out.

4. If not, return a 403 status back to the user

Header -
Authorization: Bearer <actual token>

▼ Solution

```
const { JWT_SECRET } = require("./config");
const jwt = require("jsonwebtoken");

const authMiddleware = (req, res, next) => {
    const authHeader = req.headers.authorization;

    if (!authHeader || !authHeader.startsWith('Bearer ')) {
        return res.status(403).json({});
    }

    const token = authHeader.split(' ')[1];

    try {
        const decoded = jwt.verify(token, JWT_SECRET);

        req.userId = decoded.userId;

        next();
    } catch (err) {
        return res.status(403).json({});
    }
};

module.exports = {
    authMiddleware
}
```

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Step 8 - User routes

1. Route to update user information

User should be allowed to optionally send either or all of

1. password
2. firstName
3. lastName

Whatever they send, we need to update it in the database for the user.
Use the middleware we defined in the last section to authenticate the user

Method: PUT
Route: /api/v1/user
Body:

```
{
    password: "new_password",
    firstName: "updated_first_name",
    lastName: "updated_first_name",
}
```

Response:

Status code - 200

```
{
    message: "Updated successfully"
}
```

Status code - 411 (Password is too small...)

```
message: "Error while updating information"
```

```
}
```

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▼ Solution

```
const  { authMiddleware } = require("../middleware");


// other auth routes

const updateBody = zod.object({
    password: zod.string().optional(),
    firstName: zod.string().optional(),
    lastName: zod.string().optional(),
})

router.put("/", authMiddleware, async (req, res) => {
    const { success } = updateBody.safeParse(req.body)
    if (!success) {
        res.status(411).json({
            message: "Error while updating information"
        })
    }

        await User.updateOne({ _id: req.userId }, req.body);

    res.json({
        message: "Updated successfully"
    })
})
```

2. Route to get users from the backend, filterable via firstName/lastName

for their friends and send

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Route: /api/v1/user/bulk

Query Parameter: ?filter=harkirat

Response:

Status code - 200

```
{
    users: [{
        firstName: "",
        lastName: "",
        _id: "id of the user"
    }]
}
```

▼ Hints

https://stackoverflow.com/questions/7382207/mongooses-find-method-with-or-condition-does-not-work-properly

https://stackoverflow.com/questions/3305561/how-to-query-mongodb-with-like

▼ Solution

```
router.get("/bulk", async (req, res) => {
    const filter = req.query.filter || "";

    const users = await User.find({
        $or: [{
            firstName: {
                "$regex": filter
            }
        }, {
            lastName: {
                "$regex": filter
            }
        }]
```

```
            res.json({
                nap(user => ({
                    : user.username,
                    firstName: user.firstName,
                    lastName: user.lastName,
                    _id: user._id
                }))
            })
        })
```

Step 9 - Create Bank related Schema

Update the `db.js` file to add one new schemas and export the respective models

Accounts table

The `Accounts` table will store the INR balances of a user.

The schema should look something like this -

```
{
    userId: ObjectId (or string),
    balance: float/number
}
```

In the real world, you shouldn't store `floats` for balances in the da
n integer which represents the INR value with decimal places (for eg, if someone has 33.33 rs in their account, you store 3333 in the database).

There is a certain precision that you need to support (which for inc
2/4 decimal places) and this allows you to get rid of precision errors by storing integers in your DB

You should reference the users table in the schema (Hint - https://medium.com/@mendes.develop/joining-tables-in-mongodb-with-mongoose-489d72c84b60)

▼ Solution

```
const accountSchema = new mongoose.Schema({
    userId: {
        type: mongoose.Schema.Types.ObjectId, // Reference to Us
        ref: 'User',
        required: true
    },
    balance: {
        type: Number,
        required: true
    }
});

const Account = mongoose.model('Account', accountSchema)

module.exports = {
    Account
}
```

By the end of it, db.js should look like this

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```
// backend/db.js
const mongoose = require('mongoose');

mongoose.connect("mongodb://localhost:27017/paytm")

// Create a Schema for Users
const userSchema = new mongoose.Schema({
    username: {
        type: String,
        required: true,
        unique: true,
        trim: true,
        lowercase: true,
        minLength: 3,
        maxLength: 30
    },
    password: {
        type: String,
        required: true,
        minLength: 6
    },
    firstName: {
        type: String,
        required: true,
        trim: true,
        maxLength: 50
    },
    lastName: {
        type: String,
        required: true,
        trim: true,
        maxLength: 50
    }
});

const accountSchema = new mongoose.Schema({
    userId: {
        type: mongoose.Schema.Types.ObjectId, // Reference to Us
        ref: 'User',
        required: true
    },
    balance: {
        type: Number,
```

```
    required: true
```



```
const Account = mongoose.model('Account', accountSchema)
const User = mongoose.model('User', userSchema);

module.exports = {
    User,
  Account,
};
```

Step 10 - Transactions in databases

A lot of times, you want multiple databases transactions to be atomic

Either all of them should update, or none should

This is super important in the case of a bank

Can you guess what's wrong with the following code -

```
const mongoose = require('mongoose');
quire('./path-to-your-account-model');

const transferFunds = async (fromAccountId, toAccountId, amour
  // Decrement the balance of the fromAccount
   await Account.findByIdAndUpdate(fromAccountId, { $inc: { bal

  // Increment the balance of the toAccount
  await Account.findByIdAndUpdate(toAccountId, { $inc: { balanc
}

// Example usage
transferFunds('fromAccountID', 'toAccountID', 100);
```

▼ Answer

1. What if the database crashes right after the first request (only the balance is decreased for one user, and not for the second user)
2. What if the Node.js crashes after the first update?

   It would lead to a database inconsistency . Amount would get debited from the first user, and not credited into the other users account.

   If a failure ever happens, the first txn should rollback.

   This is what is called a transaction in a database. We need to implement a transaction on the next set of endpoints that allow users to transfer INR

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Step 11 - Initialize balances on signup

Update the `signup` endpoint to give the user a random balance between 1 and 10000.

This is so we don't have to integrate with banks and give them random balances to start with.

▼ Solution

```
router.post("/signup", async (req, res) => {
    const { success } = signupBody.safeParse(req.body)
    if (!success) {
        return res.status(411).json({
            message: "Email already taken / Incorrect inputs"
        })
    }

    const existingUser = await User.findOne({
        username: req.body.username
    })

    if (existingUser) {
        return res.status(411).json({
            message: "Email already taken/Incorrect inputs"
        })
    }

    const user = await User.create({
        username: req.body.username,
        password: req.body.password,
        firstName: req.body.firstName,
        lastName: req.body.lastName,
    })
    const userId = user._id;

    ------ Create new account ------
```

```
t.create({
        balance: 1 + Math.random() * 10000
    })

    /// -----  ------

    const token = jwt.sign({
        userId
    }, JWT_SECRET);

    res.json({
        message: "User created successfully",
        token: token
    })
})
```

Step 12 - Create a new router for accounts

1. Create a new router

All user balances should go to a different express router (that handles all requests on `/api/v1/account`).

`unt.js` and add export it

```
// backend/routes/account.js
const express = require('express');

const router = express.Router();

module.exports = router;
```

2. Route requests to it

Send all requests from `/api/v1/account/*` in `routes/index.js` to the router created in step 1.

▼ Solution

```
// backend/user/index.js
const express = require('express');
const userRouter = require("./user");
const accountRouter = require("./account");

const router = express.Router();

router.use("/user", userRouter);
router.use("/account", accountRouter);

module.exports = router;
```

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Step 13 - Balance and transfer Endpoints

Here, you'll be writing a bunch of APIs for the core user balances.

s that we need to implement

1. An endpoint for user to get their balance.

Method: GET

Route: /api/v1/account/balance

Response:

Status code - 200

```
{
    balance: 100
}
```

▼ Solution

```
router.get("/balance", authMiddleware, async (req, res) => {
    const account = await Account.findOne({
        userId: req.userId
    });

    res.json({
        balance: account.balance
    })
});
```

2. An endpoint for user to transfer money to another account

Method: POST

Route: /api/v1/account/transfer

```
{
    amount: number
}
```

Response:

Status code - 200

```
{
    message: "Transfer successful"
}
```

Status code - 400

```
{
    message: "Insufficient balance"
}
```

Status code - 400

```
{
    message: "Invalid account"
}
```

▼ Bad Solution (doesn't use transactions)

```
router.post("/transfer", authMiddleware, async (req, res) => {
    const { amount, to } = req.body;

    const account = await Account.findOne({
        userId: req.userId
    });

    if (account.balance < amount) {
```

```
            return res.status(400).json({
                message: "Insufficient balance"
            })
        }

        const toAccount = await Account.findOne({
            userId: to
        });

        if (!toAccount) {
            return res.status(400).json({
                message: "Invalid account"
            })
        }

        await Account.updateOne({
            userId: req.userId
        }, {
            $inc: {
                balance: -amount
            }
        })

        await Account.updateOne({
            userId: to
        }, {
            $inc: {
                balance: amount
            }
        })

        res.json({
            message: "Transfer successful"
        })
    });
```

▼ Good solution (uses txns in db

```
router.post("/transfer", authMiddleware, async (req, res) => {
    const session = await mongoose.startSession();
```

```
    const { amount, to } = req.body;

    // Fetch the accounts within the transaction
    const account = await Account.findOne({ userId: req.userId }

    if (!account || account.balance < amount) {
      await session.abortTransaction();
      return res.status(400).json({
        message: "Insufficient balance"
      });
    }

    const toAccount = await Account.findOne({ userId: to }).sessi

    if (!toAccount) {
      await session.abortTransaction();
      return res.status(400).json({
        message: "Invalid account"
      });
    }

    // Perform the transfer
    await Account.updateOne({ userId: req.userId }, { $inc: { bala
    await Account.updateOne({ userId: to }, { $inc: { balance: am

    // Commit the transaction
    await session.commitTransaction();
    res.json({
      message: "Transfer successful"
    });
  });
```

▼ Problems you might run into

https://stackoverflow.com/questions/51461952/mongodb-v4-0-transaction-mongoerror-transaction-numbers-are-only-allowed-on-a

ned above, feel free to

proceed with the bad solution. Although, the answer to the
s ggle above

Final Solution

▼ Finally, the account.js file should look like this

```
// backend/routes/account.js
const express = require('express');
const { authMiddleware } = require('../middleware');
const { Account } = require('../db');

const router = express.Router();

router.get("/balance", authMiddleware, async (req, res) => {
    const account = await Account.findOne({
        userId: req.userId
    });

    res.json({
        balance: account.balance
    })
});

router.post("/transfer", authMiddleware, async (req, res) => {
    const session = await mongoose.startSession();

    session.startTransaction();
    const { amount, to } = req.body;

    // Fetch the accounts within the transaction
    const account = await Account.findOne({ userId: req.userId }

    if (!account || account.balance < amount) {
        await session.abortTransaction();
        return res.status(400).json({
            message: "Insufficient balance"
        });
    }
```

```
ount.findOne({ userId: to }).sessi
```

```
        if (!toAccount) {
            session.abortTransaction();
            return res.status(400).json({
                message: "Invalid account"
            });
        }

        // Perform the transfer
        await Account.updateOne({ userId: req.userId }, { $inc: { bala
        await Account.updateOne({ userId: to }, { $inc: { balance: am

        // Commit the transaction
        await session.commitTransaction();

        res.json({
            message: "Transfer successful"
        });
    });

    module.exports = router;
```

Experiment to ensure transactions are working as expected -

Try running this code locally. It calls transfer twice on the same account ~almost concurrently

▼ Code

```
// backend/routes/account.js
const express = require('express');
const { authMiddleware } = require('../middleware');
const { Account } = require('../db');
const { default: mongoose } = require('mongoose');

const router = express.Router();
```

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```
ance", authMiddleware, async (req, res) => {
    t = await Account.findOne({
        userId: req.userId
    });

    res.json({
        balance: account.balance
    })
});

async function transfer(req) {
    const session = await mongoose.startSession();

    session.startTransaction();
    const { amount, to } = req.body;

    // Fetch the accounts within the transaction
    const account = await Account.findOne({ userId: req.userId }

    if (!account || account.balance < amount) {
        await session.abortTransaction();
        console.log("Insufficient balance")
        return;
    }

    const toAccount = await Account.findOne({ userId: to }).sessi

    if (!toAccount) {
        await session.abortTransaction();
        console.log("Invalid account")
        return;
    }

    // Perform the transfer
    await Account.updateOne({ userId: req.userId }, { $inc: { bala
    await Account.updateOne({ userId: to }, { $inc: { balance: am

    // Commit the transaction
    await session.commitTransaction();
    console.log("done")
```

```
transfer({
                                    4e10ab2ec750ca666a5",
    to: "65ac44e40ab2ec750ca666aa",
    amount: 100
  }
})

transfer({
  userId: "65ac44e10ab2ec750ca666a5",
  body: {
    to: "65ac44e40ab2ec750ca666aa",
    amount: 100
  }
})
module.exports = router;
```

▼ Error

Step 14 - Checkpoint your solution

A completely working backend can be found here - https://github.com/100xdevs-cohort-2/paytm/tree/backend-solution

Try to send a few calls via postman to ensure you are able to sign up/sign in/get balance

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Make transfer

Get balance again (notice it went down)

Mongo should look something like this -

Step 1 - Add routing to the react app

Import `react-router-dom` into your project and add the following routes -

2. /signin - The signin page
3. /dashboard - Balances and see other users on the platform.
4. /send - Send money to other users

▼ Solution

```
function App() {
 return (
  <>
   <BrowserRouter>
    <Routes>
     <Route path="/signup" element={<Signup />} />
     <Route path="/signin" element={<Signin />} />
     <Route path="/dashboard" element={<Dashboard />} />
     <Route path="/send" element={<SendMoney />} />
    </Routes>
   </BrowserRouter>
  </>
 )
}
```

Step 2 - Create and hook up Signup page

If the user signup is successful, take the user to /dashboard

If error message

Step 3 - Create the signin page

If the signin in successful, take the user to /dashboard

Step 4 - Dashboard page

Show the user their balance, and a list of users that exist in the d

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Clicking on Send money should open a modal that lets the user send money

Step 5 - Auth Components

You can break down the app into a bunch of components. The c[illegible]e styles of the component, not any onclick functionality.

1. Heading component

▼ Code

```
export function Heading({label}) {
   return <div className="font-bold text-4xl pt-6">
    {label}
   </div>
}
```

2. Sub Heading component

▼ Code

```
export function SubHeading({label}) {
  return <div className="text-slate-500 text-md pt-1 px-4 pb-
    {label}
  </div>
}
```

3. InputBox component

▼ Code

```
export function InputBox({label, placeholder}) {
   return <div>
    <div className="text-sm font-medium text-left py-2">
     {label}
```

older} className="w-full px-2 |

```
</div>
```

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4. Button Component

▼ Code

```
export function Button({label, onClick}) {
  return <button onClick={onClick} type="button" class=" w-ful
}
```

This section was blindly copied from https://flowbite.com/docs/components/buttons/

5. BottomWarning

▼ Code

```
import { Link } from "react-router-dom"

export function BottomWarning({label, buttonText, to}) {
  return <div className="py-2 text-sm flex justify-center">
    <div>
      {label}
    </div>
    <Link className="pointer underline pl-1 cursor-pointer" to=
      {buttonText}
    </Link>
  </div>
}
```

Full Signup component

```
import { BottomWarning } from "../components/BottomWarnin
} from "../components/Button"
import { Heading } from "../components/Heading"
import { InputBox } from "../components/InputBox"
import { SubHeading } from "../components/SubHeading"

export const Signup = () => {
  return <div className="bg-slate-300 h-screen flex justify-ce
  <div className="flex flex-col justify-center">
   <div className="rounded-lg bg-white w-80 text-center p-
    <Heading label={"Sign up"} />
    <SubHeading label={"Enter your infromation to create an a
    <InputBox placeholder="John" label={"First Name"} />
    <InputBox placeholder="Doe" label={"Last Name"} />
    <InputBox placeholder="harkirat@gmail.com" label={"Emai
    <InputBox placeholder="123456" label={"Password"} />
    <div className="pt-4">
     <Button label={"Sign up"} />
    </div>
    <BottomWarning label={"Already have an account?"} butto
   </div>
  </div>
}
```

Full Signin component

▼ Code

```
import { BottomWarning } from "../components/BottomWarnin
import { Button } from "../components/Button"
import { Heading } from "../components/Heading"
import { InputBox } from "../components/InputBox"
import { SubHeading } from "../components/SubHeading"

export const Signin = () => {
  return <div className="bg-slate-300 h-screen flex justify-ce
    <div className="flex flex-col justify-center">
```

```
          <div className="rounded-lg bg-white w-80 text-center p-
                bel={"Sign in"} />
              g label={"Enter your credentials to access your
              <InputBox placeholder="harkirat@gmail.com" label={"Emai
              <InputBox placeholder="123456" label={"Password"} />
              <div className="pt-4">
                <Button label={"Sign in"} />
              </div>
              <BottomWarning label={"Don't have an account?"} buttonT
            </div>
          </div>
        </div>
      }
```

Step 6 - Signin-ed Comonents

1. Appbar

▼ Code

```
export const Appbar = () => {
  return <div className="shadow h-14 flex justify-between">
    <div className="flex flex-col justify-center h-full ml-4">
      PayTM App
    </div>
    <div className="flex">
                -col justify-center h-full mr-4">
      </div>
```

```
                <div className="rounded-full h-12 w-12 bg-slate-200 fl
                                ssName="flex flex-col justify-center h-full text-
                    </div>
                </div>
            </div>
        </div>
    }
```

2. Balance

▼ Code

```
export const Balance = ({ value }) => {
    return <div className="flex">
        <div className="font-bold text-lg">
            Your balance
        </div>
        <div className="font-semibold ml-4 text-lg">
            Rs {value}
        </div>
    </div>
}
```

3. Users component

▼ Code

```
import { useState } from "react"
import { Button } from "./Button"

export const Users = () => {
                                    tate([{
```

```
        firstName: "Harkirat",
        Singh",
    }]);

    return <>
      <div className="font-bold mt-6 text-lg">
        Users
      </div>
      <div className="my-2">
        <input type="text" placeholder="Search users..." classNan
      </div>
      <div>
        {users.map(user => <User user={user} />)}
      </div>
    </>
}

function User({user}) {
    return <div className="flex justify-between">
      <div className="flex">
        <div className="rounded-full h-12 w-12 bg-slate-200 fl
          <div className="flex flex-col justify-center h-full text-
            {user.firstName[0]}
          </div>
        </div>
        <div className="flex flex-col justify-center h-ful">
          <div>
            {user.firstName} {user.lastName}
          </div>
        </div>
      </div>

      <div className="flex flex-col justify-center h-ful">
        <Button label={"Send Money"} />
      </div>
    </div>
}
```

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▼ Code

```
export const SendMoney = () => {
  return <div class="flex justify-center h-screen bg-gray-100">
    <div className="h-full flex flex-col justify-center">
      <div
        class="border h-min text-card-foreground max-w-m
      >
        <div class="flex flex-col space-y-1.5 p-6">
        <h2 class="text-3xl font-bold text-center">Send Money
        </div>
        <div class="p-6">
        <div class="flex items-center space-x-4">
          <div class="w-12 h-12 rounded-full bg-green-500 fle
          <span class="text-2xl text-white">A</span>
          </div>
          <h3 class="text-2xl font-semibold">Friend's Name</h
        </div>
        <div class="space-y-4">
          <div class="space-y-2">
          <label
            class="text-sm font-medium leading-none peer-
            for="amount"
          >
            Amount (in Rs)
          </label>
          <input
            type="number"
            class="flex h-10 w-full rounded-md border border
            id="amount"
            placeholder="Enter amount"
          />
          </div>
          <button class="justify-center rounded-md text-sm f
            Initiate Transfer
          </button>
        </div>
```

```
      </div>
```

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Step 7 - Wiring up the backend calls

You can use

1. fetch or
2. axios

to wire up calls to the backend server.

The final code looks something like this -

https://github.com/100xdevs-cohort-2/paytm/tree/complete-solution (complete-solution branch on the repo)

The important bits here are -

1. Signup call - https://github.com/100xdevs-cohort-2/paytm/blob/complete-solution/frontend/src/pages/Signup.jsx#L36
2. Call to get all the users given the filter - https://github.com/100xdevs-cohort-2/paytm/blob/complete-solution/frontend/src/components/Users.jsx#L13
3. Call to transfer money b/w accounts - https://github.com/100xdevs-cohort-2/paytm/blob/complete-[illegible]oney.jsx#L45

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