# NestJS in a nutshell

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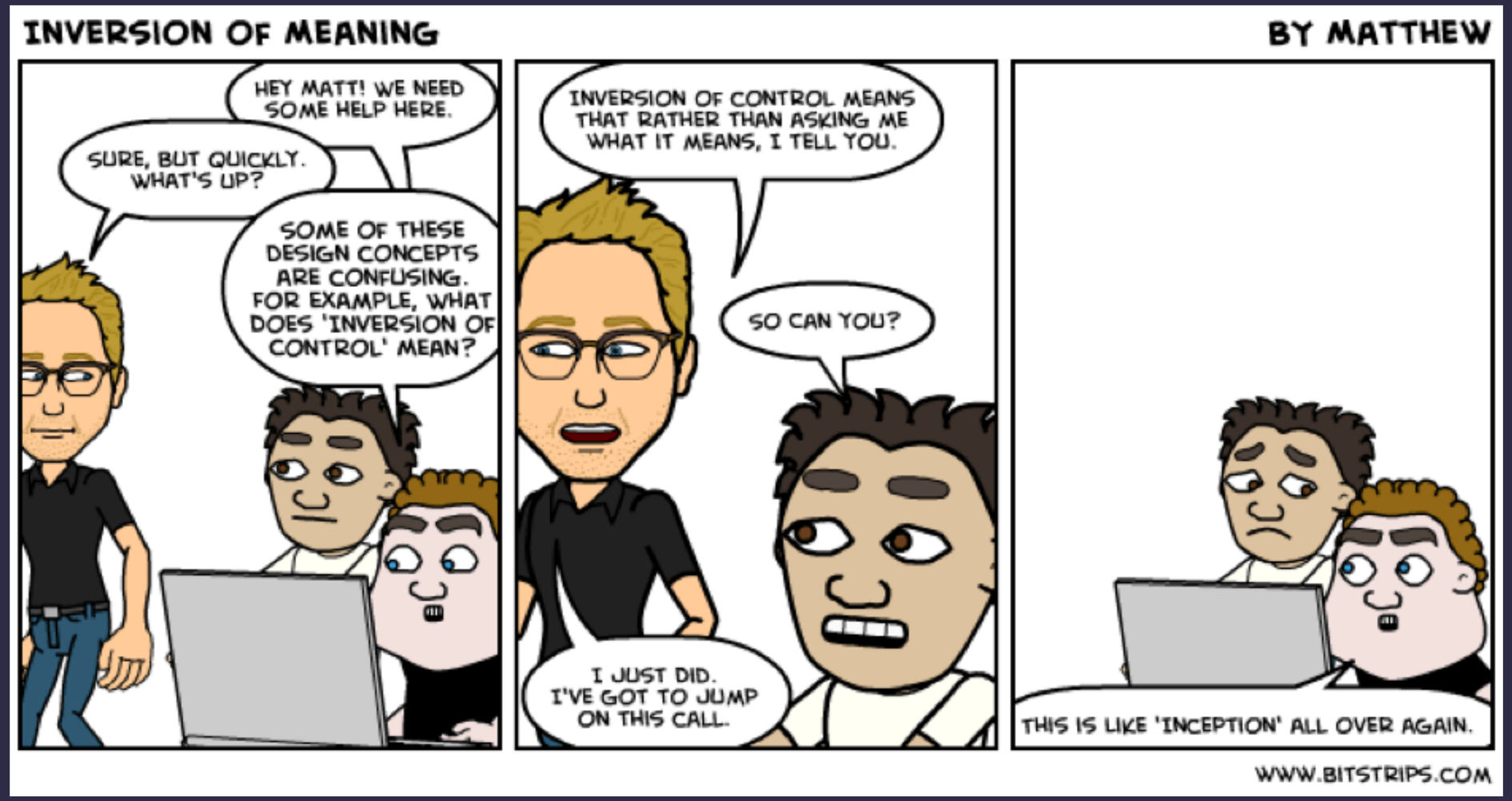
- Personal blog at utopiabeam.dev

# Inversion of Control (IoC)



# Dependency Injection (DI)

```
class Foo {
  private bar: Bar
  private baz: Baz

  constructor() {
    this.bar = new Bar()
    this.baz = new Baz()
  }
}
```

```
class Foo {
  private bar: Bar
  private baz: Baz

  constructor(bar: Bar, baz: Baz) {
    this.bar = bar
    this.baz = baz
  }
}
```

# Why DI?

```
class Foo {
  private bar: Bar
  private baz: Baz

  constructor(bar: Bar, baz: Baz) {
    this.bar = bar
    this.baz = baz
  }
}
```

Foo doesn't care how to create a Bar and Baz object.

Loose coupling!

# Let's make an online shopping API project.

# Quick start

1. Install CLI

```
$ npm i -g @nestjs/cli
or
$ yarn global add @nestjs/cli
```

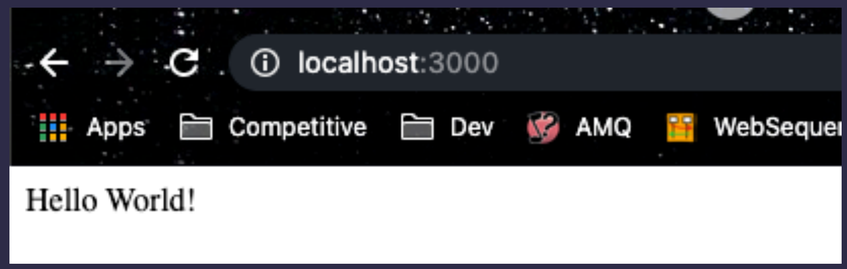
2. Create a project

```
$ nest new shoper-spi
```

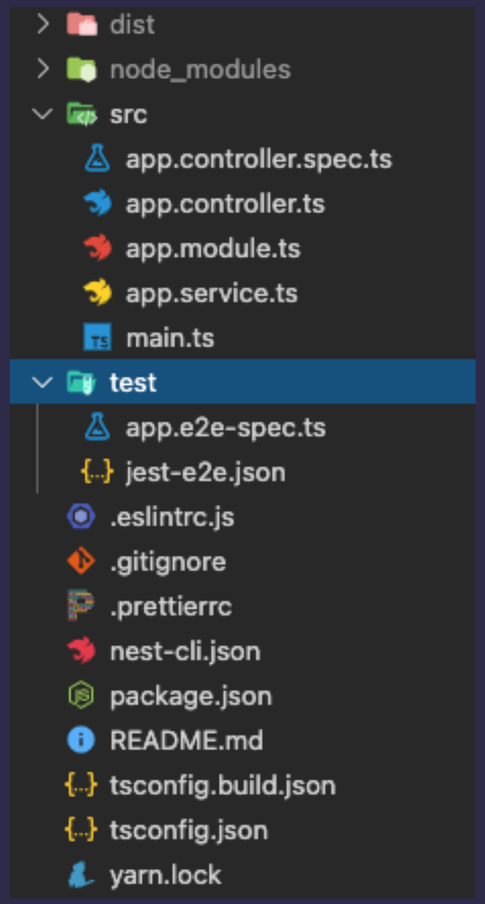
3. Run

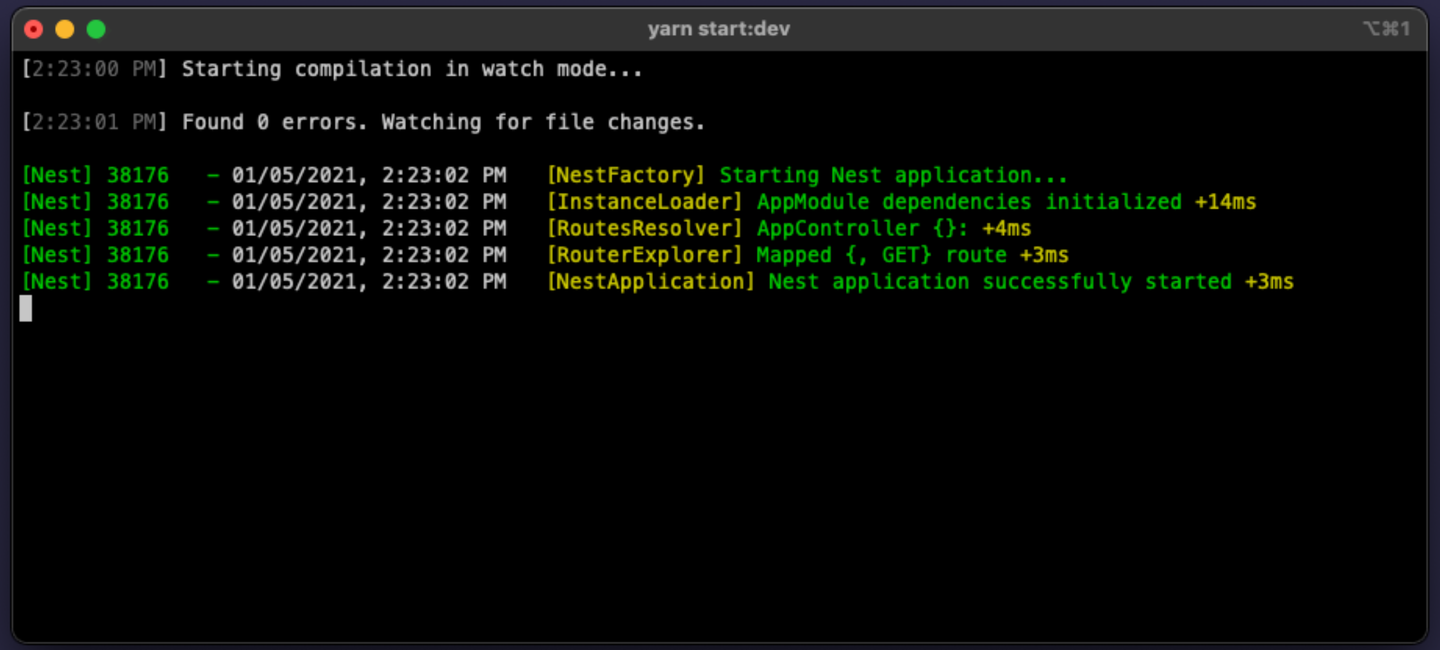
```
$ cd shoper-api
$ npm run start:dev
or
$ yarn start:dev
```

4. Go to http://localhost:3000



# Quick start


dist
node_modules
src
app.controller.spec.ts
app.controller.ts
app.module.ts
app.service.ts
main.ts
test
app.e2e-spec.ts
jest-e2e.json
.eslintrc.js
.gitignore
.prettierrc
nest-cli.json
package.json
README.md
tsconfig.build.json
tsconfig.json
yarn.lock


yarn start:dev
⌥⌘1
[2:23:00 PM] Starting compilation in watch mode...
[2:23:01 PM] Found 0 errors. Watching for file changes.
[Nest] 38176 - 01/05/2021, 2:23:02 PM [NestFactory] Starting Nest application...
[Nest] 38176 - 01/05/2021, 2:23:02 PM [InstanceLoader] AppModule dependencies initialized +14ms
[Nest] 38176 - 01/05/2021, 2:23:02 PM [RoutesResolver] AppController {}: +4ms
[Nest] 38176 - 01/05/2021, 2:23:02 PM [RouterExplorer] Mapped {, GET} route +3ms
[Nest] 38176 - 01/05/2021, 2:23:02 PM [NestApplication] Nest application successfully started +3ms

# main.ts

```ts
import { NestFactory } from '@nestjs/core';
import { AppModule } from './app.module';

async function bootstrap() {
  const app = await NestFactory.create(AppModule);
  await app.listen(3000);
}
bootstrap();
```

```ts
import express from 'express'

const app = express()
app.use(express.json())
app.listen(3000)
```

# app.controller.ts

```ts
import { Controller, Get } from '@nestjs/common';
import { AppService } from './app.service';

@Controller()
export class AppController {
  constructor(private readonly appService: AppService) {}

  @Get()
  getHello(): string {
    return this.appService.getHello();
  }
}
```

```ts
app.get('/', (_, res: Response) => {
  res.send(getHello())
})
```

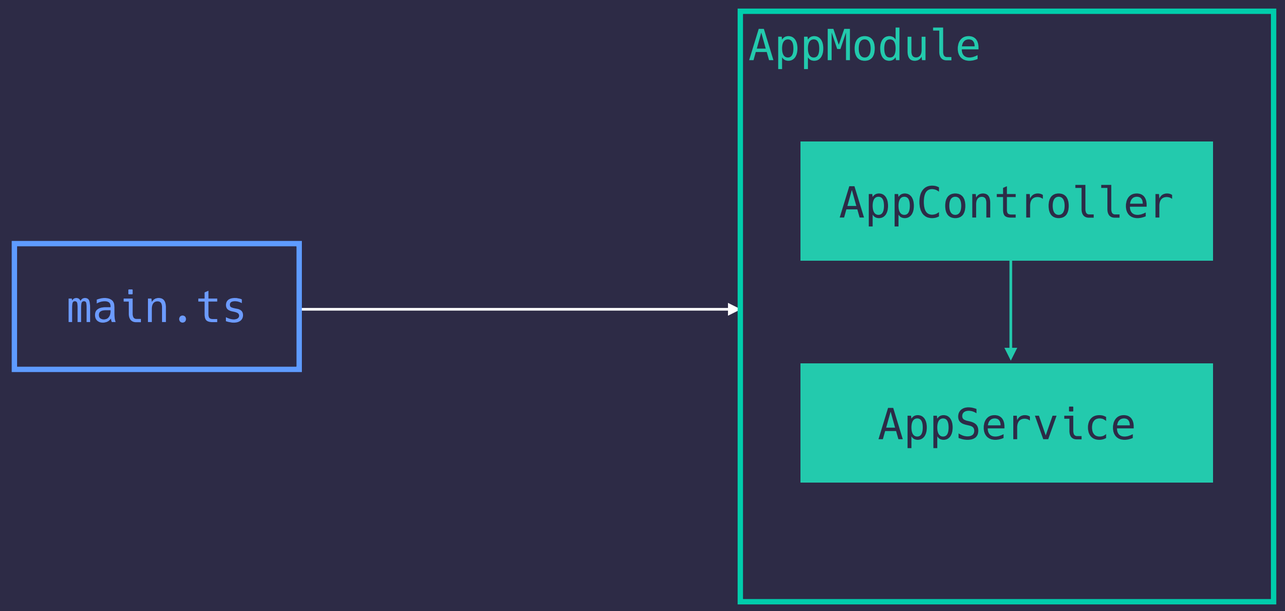
# app.service.ts

```ts
import { Injectable } from '@nestjs/common';

@Injectable()
export class AppService {
  getHello(): string {
    return 'Hello World!';
  }
}
```

# app.module.ts

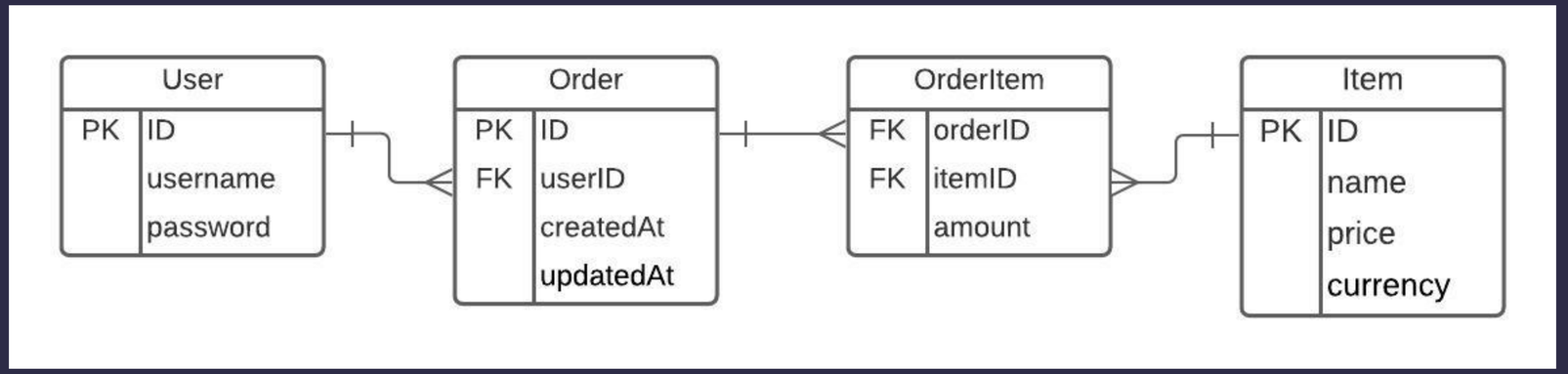
```ts
import { Module } from '@nestjs/common';
import { AppController } from './app.controller';
import { AppService } from './app.service';

@Module({
  imports: [],
  controllers: [AppController],
  providers: [AppService],
})
export class AppModule {}
```

# Overview



Let's work on the database.

# ER diagram


User
PK ID
username
password
Order
PK ID
FK userID
createdAt
updatedAt
OrderItem
FK orderID
FK itemID
amount
Item
PK ID
name
price
currency

# Setup DB

1. Create docker-compose.yml
2. Start it

```
$ docker-compose up -d
```

3. Check if it's running or not

```
~/Projects/nestjs-in-a-nutshell-talk  master
❯ docker-compose ps
                Name                              Command             State                  Ports
-------------------------------------------------------------------------------------------------------------
nestjs-in-a-nutshell-talk_mysql_1   docker-entrypoint.sh mysqld   Up      0.0.0.0:3306->3306/tcp, 33060/tcp
```

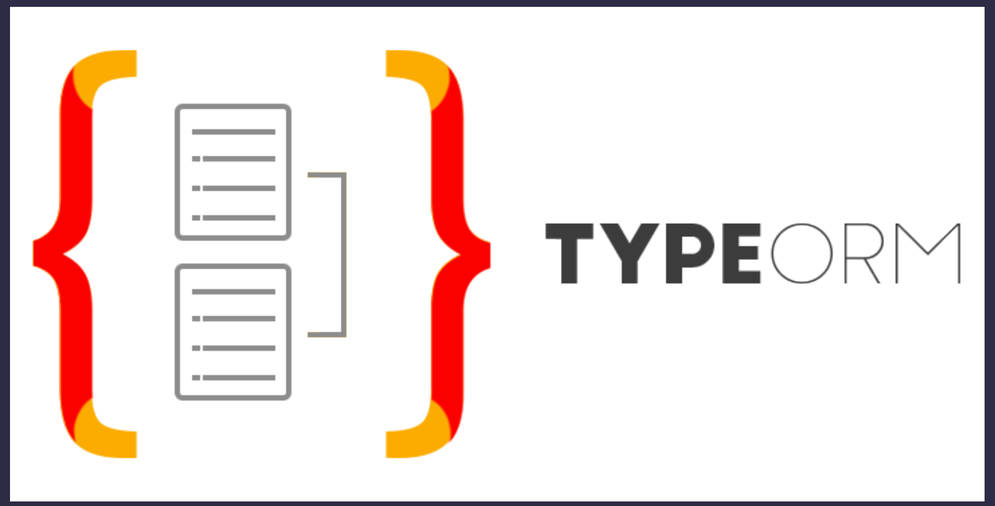
```yaml
version: '3.7'

services:
  mysql:
    image: mysql:5.7
    volumes:
      - mysql_data:/var/lib/mysql
    environment:
      MYSQL_ROOT_PASSWORD: password
      MYSQL_DATABASE: shoper
      MYSQL_USER: user
      MYSQL_PASSWORD: password
    ports:
      - '3306:3306'

volumes:
  mysql_data:
```

docker-compose.yml

# Connect DB

1. Install dependencies

```
$ yarn add @nestjs/typeorm typeorm mysql
```




2. Add TypeOrmModule

```
import { Module } from '@nestjs/common';
import { TypeOrmModule } from '@nestjs/typeorm';

@Module({
  imports: [
    TypeOrmModule.forRoot({
      type: 'mysql',
      host: 'localhost',
      port: 3306,
      username: 'user',
      password: 'password',
      database: 'shoper',
      entities: [],
      synchronize: true,
    }),
  ],
})
export class AppModule {}
```

Database config

# Entities

1. Create entities directory
2. Create user.entity.ts inside it
3. Write schema

```ts
import { Column, Entity, PrimaryGeneratedColumn } from 'typeorm';

@Entity()
export class User {
  @PrimaryGeneratedColumn()
  id: number;

  @Column()
  username: string;

  @Column()
  password: string;
}
```

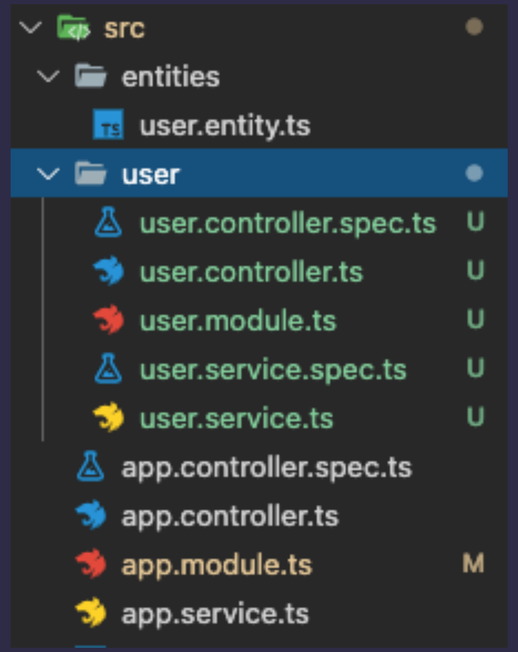
user.entity.ts

# Create user module

1. Create user module
2. Create user controller
3. Create user service

```
$ nest g module user
$ nest g controller user
$ nest g service user
```

```
~/Projects/nestjs-in-a-nutshell-talk  master ?1
❯ nest g mo user
CREATE src/user/user.module.ts (81 bytes)
UPDATE src/app.module.ts (656 bytes)

~/Projects/nestjs-in-a-nutshell-talk  master !1 ?1
❯ nest g co user
CREATE src/user/user.controller.spec.ts (478 bytes)
CREATE src/user/user.controller.ts (97 bytes)
UPDATE src/user/user.module.ts (166 bytes)

~/Projects/nestjs-in-a-nutshell-talk  master !1 ?1
❯ nest g s user
CREATE src/user/user.service.spec.ts (446 bytes)
CREATE src/user/user.service.ts (88 bytes)
UPDATE src/user/user.module.ts (240 bytes)
```



# Implement user service

Inject repository

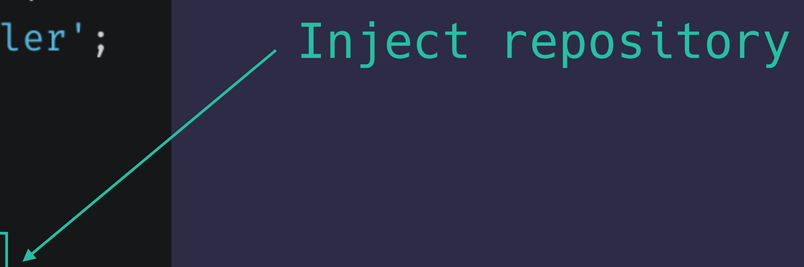
CRUD operations
using repository

```
[Nest] 54130   - 01/06/2021, 10:48:31 AM   [ExceptionHandler] Nest can't resolve dependencies of the UserServic
e (?). Please make sure that the argument UserRepository at index [0] is available in the UserModule context.

Potential solutions:
- If UserRepository is a provider, is it part of the current UserModule?
- If UserRepository is exported from a separate @Module, is that module imported within UserModule?
  @Module({
    imports: [ /* the Module containing UserRepository */ ]
  })
 +0ms
```

```ts
import { Injectable } from '@nestjs/common';
import { InjectRepository } from '@nestjs/typeorm';
import { User } from 'src/entities/user.entity';
import { Repository } from 'typeorm';

@Injectable()
export class UserService {
  constructor(
    @InjectRepository(User) private readonly repo: Repository<User>,
  ) {}

  findById(id: number): Promise<User> {
    return this.repo.findOne(id);
  }

  create(dto: Omit<User, 'id'>): Promise<User> {
    const user = { ...new User(), ...dto };
    return this.repo.save(user);
  }

  async update(id: number, dto: Partial<Omit<User, 'id'>>): Promise<User> {
    const user = { ...(await this.findById(id)), ...dto };
    return this.repo.save(user);
  }

  async delete(id: number) {
    const user = await this.findById(id);
    await this.repo.remove(user);
    return user;
  }
}
```

# Inject repository

```ts
import { Module } from '@nestjs/common';
import { TypeOrmModule } from '@nestjs/typeorm';
import { User } from 'src/entities/user.entity';
import { UserController } from './user.controller';
import { UserService } from './user.service';

@Module({
  imports: [TypeOrmModule.forFeature([User])],
  controllers: [UserController],
  providers: [UserService],
})
export class UserModule {}
```



```
[Nest] 54283   - 01/06/2021, 10:51:57 AM   [ExceptionHandler] No repository for "User" was found. Looks like th
is entity is not registered in current "default" connection? +1ms
```


# Register entities

Register every entities in *.entity.ts or *.entity.js files.

```ts
import { Module } from '@nestjs/common';
import { TypeOrmModule } from '@nestjs/typeorm';
import { join } from 'path';
import { AppController } from './app.controller';
import { AppService } from './app.service';
import { UserModule } from './user/user.module';

@Module({
  imports: [
    TypeOrmModule.forRoot({
      type: 'mysql',
      host: 'localhost',
      port: 3306,
      username: 'user',
      password: 'password',
      database: 'shoper',
      entities: [join(__dirname, '**/*.entity.{ts,js}')],
      synchronize: true,
    }),
    UserModule,
  ],
  controllers: [AppController],
  providers: [AppService],
})
export class AppModule {}
```

# Implement controller

Inject UserService

GET /user/:id

POST /user

PATCH /user/:id

DELETE /user/:id

```ts
import {
  Body,
  Controller,
  Delete,
  Get,
  Param,
  ParseIntPipe,
  Patch,
  Post,
} from '@nestjs/common';
import { User } from 'src/entities/user.entity';
import { UserService } from './user.service';

@Controller('user')
export class UserController {
  constructor(private readonly service: UserService) {}

  @Get(':id')
  findById(@Param('id', new ParseIntPipe()) id: number): Promise<User> {
    return this.service.findById(id);
  }

  @Post()
  create(@Body() dto: Omit<User, 'id'>): Promise<User> {
    return this.service.create(dto);
  }

  @Patch(':id')
  update(
    @Param('id', new ParseIntPipe()) id: number,
    @Body() dto: Partial<Omit<User, 'id'>>,
  ): Promise<User> {
    return this.service.update(id, dto);
  }

  @Delete(':id')
  delete(@Param('id', new ParseIntPipe()) id: number): Promise<User> {
    return this.service.delete(id);
  }
}
```

# Implement entities

```ts
import { Column, Entity, OneToMany, PrimaryGeneratedColumn } from 'typeorm';
import { Order } from './order.entity';

@Entity()
export class User {
  @PrimaryGeneratedColumn()
  id: number;

  @Column()
  username: string;

  @Column()
  password: string;

  @OneToMany(
    () => Order,
    order => order.user,
  )
  orders: Order[];
}
```

user.entity.ts

```ts
import {
  Column,
  CreateDateColumn,
  Entity,
  JoinColumn,
  ManyToOne,
  OneToMany,
  PrimaryGeneratedColumn,
  UpdateDateColumn,
} from 'typeorm';
import { OrderItem } from './order-item.entity';
import { User } from './user.entity';

@Entity()
export class Order {
  @PrimaryGeneratedColumn()
  id: number;

  @Column('int')
  userId: number;

  @CreateDateColumn()
  createdAt: Date;

  @UpdateDateColumn()
  updatedAt: Date;

  @ManyToOne(
    () => User,
    user => user.orders,
  )
  user: User;

  @OneToMany(
    () => OrderItem,
    orderItem => orderItem.order,
  )
  orderItems: OrderItem[];
}
```

order.entity.ts

# Implement entities

```ts
import { Column, Entity, ManyToOne, PrimaryColumn } from 'typeorm';
import { Item } from './item.entity';
import { Order } from './order.entity';

@Entity()
export class OrderItem {
  @PrimaryColumn()
  orderId: number;

  @PrimaryColumn()
  itemId: number;

  @Column('int')
  amount: number;

  @ManyToOne(
    () => Order,
    order => order.orderItems,
  )
  order: Order;

  @ManyToOne(() => Item)
  item: Item;
}
```

order-item.entity.ts

```ts
import { Column, Entity, PrimaryGeneratedColumn } from 'typeorm';

export enum Currency {
  BHT = 'BHT',
  USD = 'USD',
}

@Entity()
export class Item {
  @PrimaryGeneratedColumn()
  id: number;

  @Column()
  name: string;

  @Column('float')
  price: number;

  @Column('enum', { enum: Currency })
  currency: Currency;
}
```

item.entity.ts

# Implement item module

```
import { Module } from '@nestjs/common';
import { TypeOrmModule } from '@nestjs/typeorm';
import { Item } from 'src/entities/item.entity';
import { ItemController } from './item.controller';
import { ItemService } from './item.service';

@Module({
  imports: [TypeOrmModule.forFeature([Item])],
  controllers: [ItemController],
  providers: [ItemService],
})
export class ItemModule {}
```

```ts
import {
  Body,
  Controller,
  Delete,
  Get,
  Param,
  ParseIntPipe,
  Patch,
  Post,
} from '@nestjs/common';
import { Item } from 'src/entities/item.entity';
import { ItemService } from './item.service';

@Controller('item')
export class ItemController {
  constructor(private readonly service: ItemService) {}

  @Get(':id')
  findById(@Param('id', new ParseIntPipe()) id: number): Promise<Item> {
    return this.service.findById(id);
  }

  @Post()
  create(@Body() dto: Omit<Item, 'id'>): Promise<Item> {
    return this.service.create(dto);
  }

  @Patch(':id')
  update(
    @Param('id', new ParseIntPipe()) id: number,
    @Body() dto: Partial<Omit<Item, 'id'>>,
  ): Promise<Item> {
    return this.service.update(id, dto);
  }

  @Delete(':id')
  delete(@Param('id', new ParseIntPipe()) id: number): Promise<Item> {
    return this.service.delete(id);
  }
}
```

item.controller.ts

```ts
import { Injectable } from '@nestjs/common';
import { InjectRepository } from '@nestjs/typeorm';
import { Item } from 'src/entities/item.entity';
import { Repository } from 'typeorm';

@Injectable()
export class ItemService {
  constructor(
    @InjectRepository(Item) private readonly repo: Repository<Item>,
  ) {}

  find(): Promise<Item[]> {
    return this.repo.find();
  }

  findById(id: number): Promise<Item> {
    return this.repo.findOne(id);
  }

  create(dto: Omit<Item, 'id'>): Promise<Item> {
    const item = { ...new Item(), ...dto };
    return this.repo.save(item);
  }

  async update(id: number, dto: Partial<Omit<Item, 'id'>>): Promise<Item> {
    const item = { ...(await this.findById(id)), ...dto };
    return this.repo.save(item);
  }

  async delete(id: number): Promise<Item> {
    const item = await this.findById(id);
    await this.repo.remove(item);
    return item;
  }
}
```

item.service.ts

# Implement order module

```ts
import { Module } from '@nestjs/common';
import { TypeOrmModule } from '@nestjs/typeorm';
import { Order } from 'src/entities/order.entity';
import { OrderController } from './order.controller';
import { OrderService } from './order.service';

@Module({
  imports: [TypeOrmModule.forFeature([Order])],
  controllers: [OrderController],
  providers: [OrderService],
})
export class OrderModule {}
```

```ts
import {
  Body,
  Controller,
  Delete,
  Get,
  Param,
  ParseIntPipe,
  Patch,
  Post,
} from '@nestjs/common';
import { Order } from 'src/entities/order.entity';
import { OrderService } from './order.service';

@Controller('order')
export class OrderController {
  constructor(private readonly service: OrderService) {}

  @Get(':id')
  findById(@Param('id', new ParseIntPipe()) id: number): Promise<Order> {
    return this.service.findById(id);
  }

  @Post()
  create(@Body() dto: Omit<Order, 'id'>): Promise<Order> {
    return this.service.create(dto);
  }

  @Patch(':id')
  update(
    @Param('id', new ParseIntPipe()) id: number,
    @Body() dto: Partial<Omit<Order, 'id'>>,
  ): Promise<Order> {
    return this.service.update(id, dto);
  }

  @Delete(':id')
  delete(@Param('id', new ParseIntPipe()) id: number): Promise<Order> {
    return this.service.delete(id);
  }
}
```

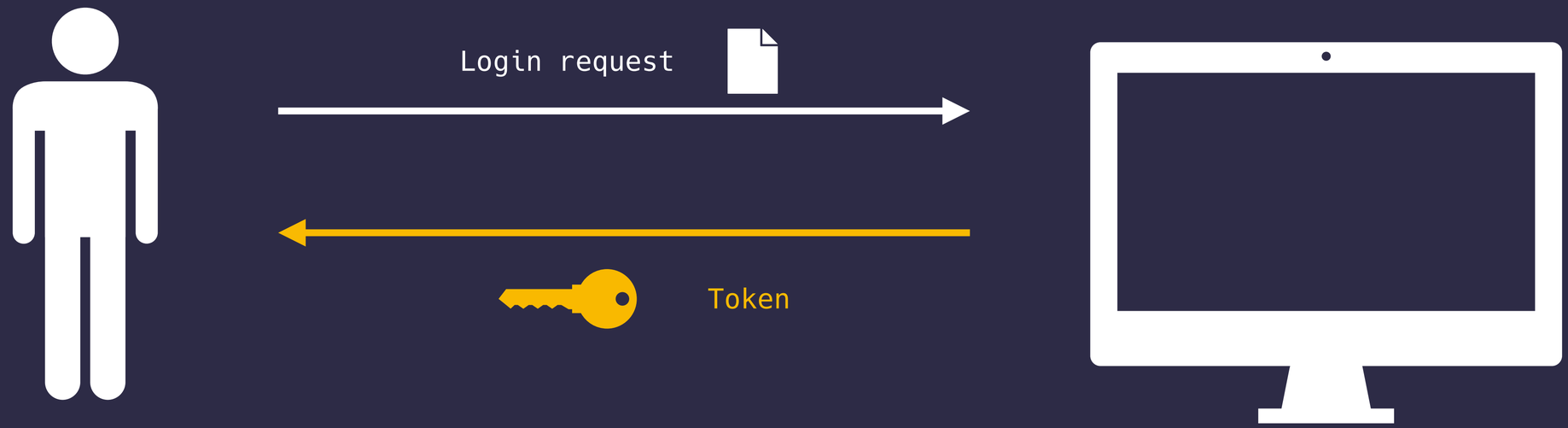
order.controller.ts

```ts
import { Injectable } from '@nestjs/common';
import { InjectRepository } from '@nestjs/typeorm';
import { Order } from 'src/entities/order.entity';
import { Repository } from 'typeorm';

@Injectable()
export class OrderService {
  constructor(
    @InjectRepository(Order) private readonly repo: Repository<Order>,
  ) {}

  find(): Promise<Order[]> {
    return this.repo.find();
  }

  findById(id: number): Promise<Order> {
    return this.repo.findOne(id);
  }

  create(dto: Omit<Order, 'id'>): Promise<Order> {
    const order = { ...new Order(), ...dto };
    return this.repo.save(order);
  }

  async update(id: number, dto: Partial<Omit<Order, 'id'>>): Promise<Order> {
    const Order = { ...(await this.findById(id)), ...dto };
    return this.repo.save(Order);
  }

  async delete(id: number): Promise<Order> {
    const order = await this.findById(id);
    await this.repo.remove(order);
    return order;
  }
}
```

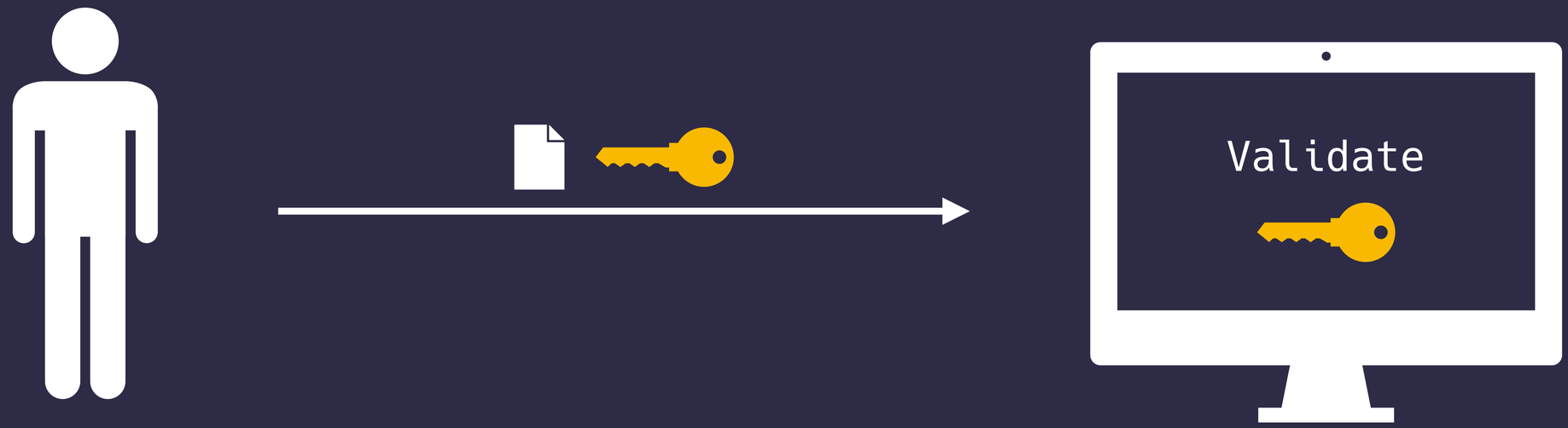
order.service.ts

# What about security?

# Authentication

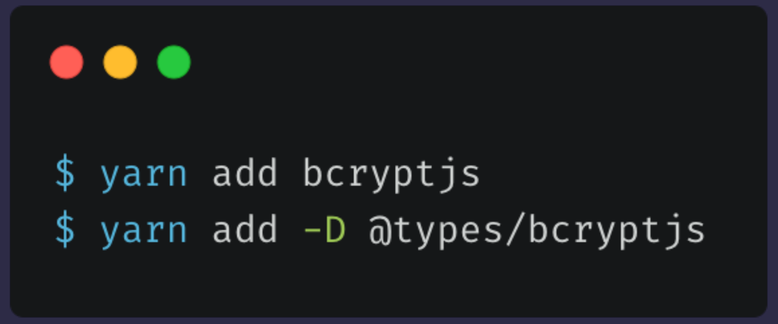


# Authentication



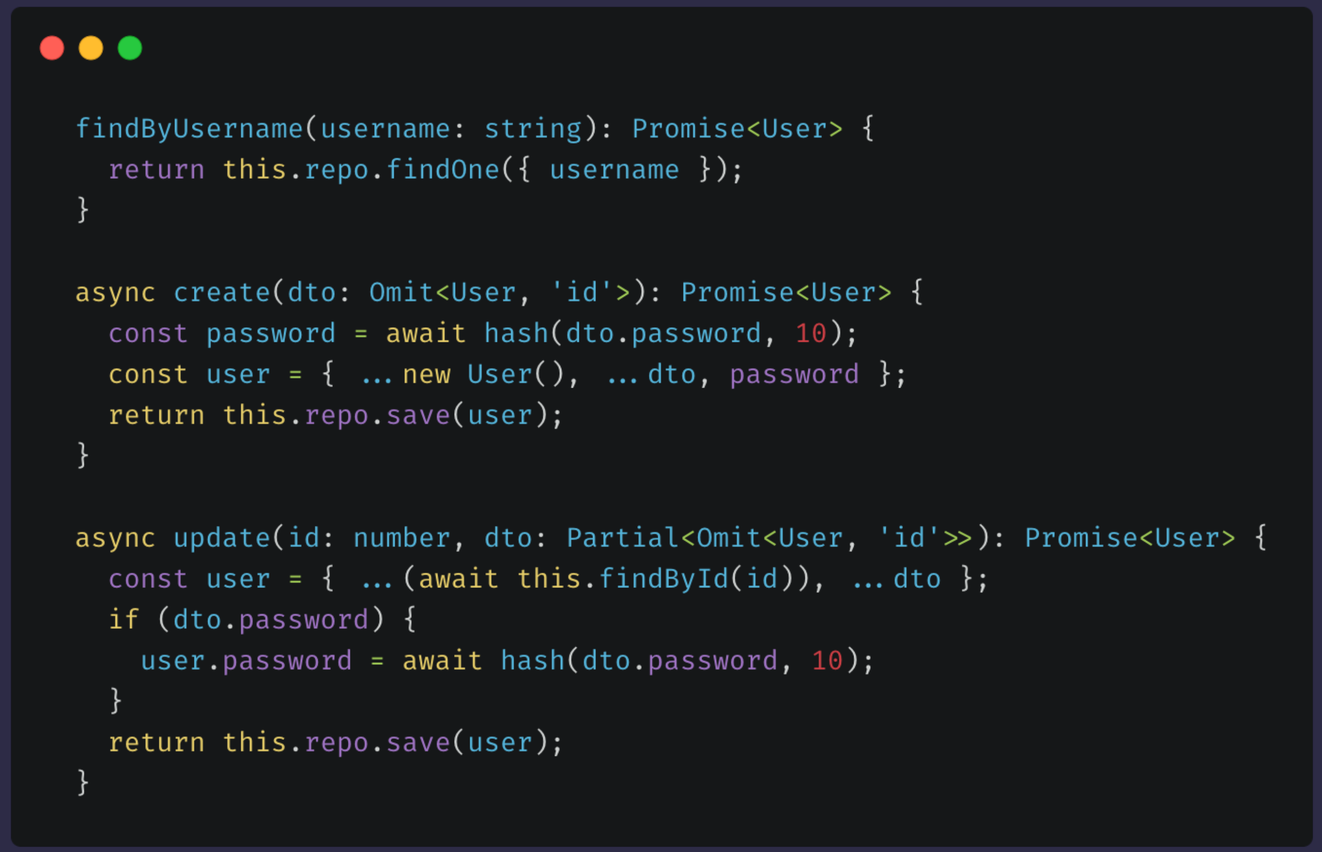
# Edit user service

1. Add brcyptjs



```
$ yarn add bcryptjs
$ yarn add -D @types/bcryptjs
```

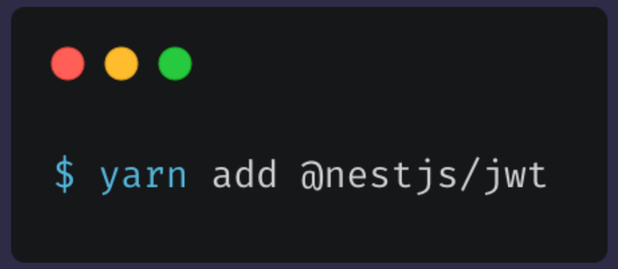
2. Modify service



```
findByUsername(username: string): Promise<User> {
  return this.repo.findOne({ username });
}

async create(dto: Omit<User, 'id'>): Promise<User> {
  const password = await hash(dto.password, 10);
  const user = { ...new User(), ...dto, password };
  return this.repo.save(user);
}

async update(id: number, dto: Partial<Omit<User, 'id'>>): Promise<User> {
  const user = { ...(await this.findById(id)), ...dto };
  if (dto.password) {
    user.password = await hash(dto.password, 10);
  }
  return this.repo.save(user);
}
```

# Create auth service

1. Install @nestjs/jwt



```
$ yarn add @nestjs/jwt
```

2. Export UserService from UserModule

```
import { Module } from '@nestjs/common';
import { TypeOrmModule } from '@nestjs/typeorm';
import { User } from 'src/entities/user.entity';
import { UserController } from './user.controller';
import { UserService } from './user.service';

@Module({
  imports: [TypeOrmModule.forFeature([User])],
  controllers: [UserController],
  providers: [UserService],
  exports: [UserService],
})
export class UserModule {}
```

# 3. Inject UserModule and JwtModule in AuthModule

```ts
import { Module } from '@nestjs/common';
import { AuthService } from './auth.service';
import { AuthController } from './auth.controller';
import { UserModule } from 'src/user/user.module';
import { JwtModule } from '@nestjs/jwt';

@Module({
  imports: [
    JwtModule.register({
      secret: 'secret',
      signOptions: { expiresIn: '100d' },
    }),
    UserModule,
  ],
  providers: [AuthService],
  controllers: [AuthController],
  exports: [AuthService],
})
export class AuthModule {}
```

Register JwtModule (secret and signOptions can be varied)

Inject UserModule to use UserService

Export AuthService

# 4. Implement AuthService

Inject services

If wrong username and/or password then throws error, otherwise return a JWT token

Verify JWT token

```ts
import { BadRequestException, Injectable } from '@nestjs/common';
import { JwtService } from '@nestjs/jwt';
import { compare } from 'bcryptjs';
import { User } from 'src/entities/user.entity';
import { UserService } from 'src/user/user.service';

@Injectable()
export class AuthService {
  constructor(
    private readonly userService: UserService,
    private readonly jwtService: JwtService,
  ) {}

  async login({ username, password }: Omit<User, 'id'>) {
    const user = await this.userService.findByUsername(username);
    if (!user) {
      throw new BadRequestException('Invalid username/password');
    }
    const isValid = await compare(password, user.password);
    if (!isValid) {
      throw new BadRequestException('Invalid username/password');
    }
    return this.jwtService.sign({ uid: user.id });
  }

  verifyToken(token: string): { uid: number } {
    const res = this.jwtService.verify<{ uid: number }>(token);
    return res;
  }
}
```

More about JWT at https://jwt.io/

# 5. Implement AuthController

```ts
import { Body, Controller, Post } from '@nestjs/common';
import { User } from 'src/entities/user.entity';
import { AuthService } from './auth.service';

@Controller('auth')
export class AuthController {
  constructor(private readonly service: AuthService) {}

  @Post('login')
  login(@Body() dto: Omit<User, 'id'>) {
    return this.service.login(dto);
  }
}
```

Let's see how to validate token

# Overview

# Middleware

1. Run command

```
$ nest g middleware auth
```

2. Implement auth.middleware.ts

Inject AuthService

Get Bearer token from headers

Set user ID (uid) from token to the request

```ts
import { Injectable, NestMiddleware } from '@nestjs/common';
import { Request, Response } from 'express';
import { AuthService } from 'src/auth/auth.service';

@Injectable()
export class AuthMiddleware implements NestMiddleware {
  constructor(private readonly authService: AuthService) {}

  use(req: Request, _: Response, next: () => void) {
    const token = (req.headers.authorization ?? '').split('Bearer ')[1];
    try {
      const { uid } = this.authService.verifyToken(token);
      if (uid) {
        req.uid = uid;
      }
    } catch (err) {
      req.uid = undefined;
      console.log(err);
    }
    next();
  }
}
```

3. Create request.d.ts at the root of project

```
declare namespace Express {
  interface Request {
    uid?: number;
  }
}
```

Normally, Express.Request doesn't have uid. So we need to extend it.

# 4. Apply middleware in AppModule

```
import ...

@Module({
  ...
})
export class AppModule {
  configure(consumer: MiddlewareConsumer) {
    consumer.apply(AuthMiddleware).forRoutes('*');
  }
}
```

Use AuthMiddleware for every routes

# Guard

1. Run command

```
$ nest g guard auth
```

2. Implement auth.guard.ts

```ts
import { CanActivate, ExecutionContext, Injectable } from '@nestjs/common';
import { Request } from 'express';

@Injectable()
export class AuthGuard implements CanActivate {
  canActivate(context: ExecutionContext): boolean {
    const req = context.switchToHttp().getRequest<Request>();
    return req.uid !== undefined;
  }
}
```

Pass guard if req.uid is defined from middleware

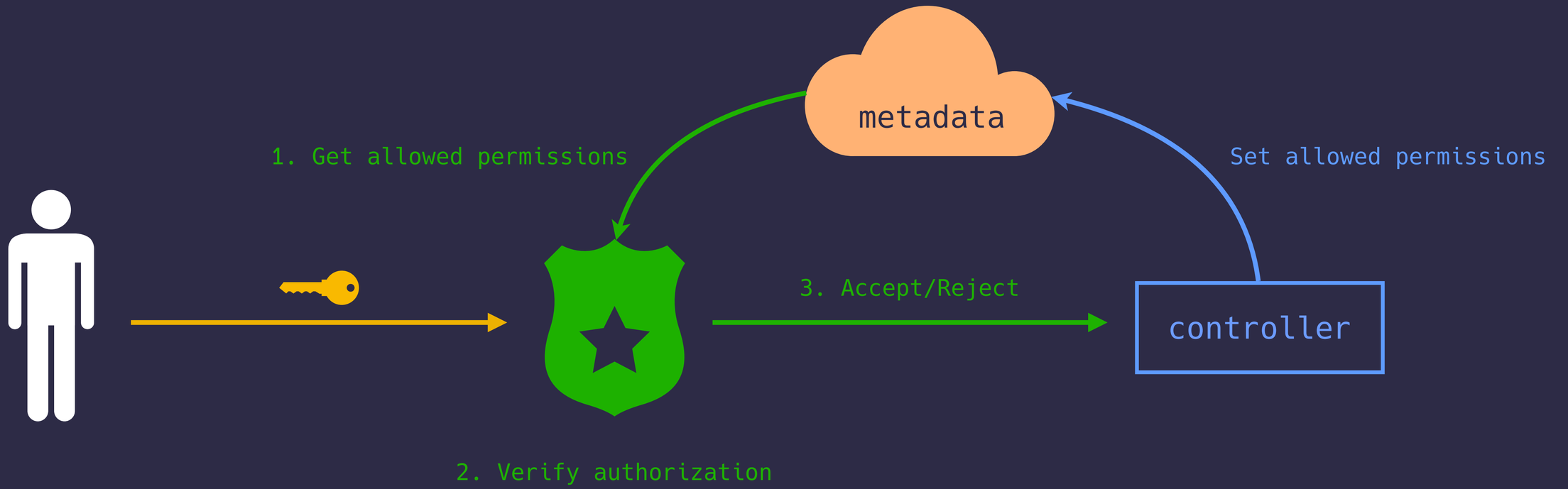
# 3. Try use it with a controller

Apply here

```ts
import {
  Body,
  Controller,
  Delete,
  Get,
  Param,
  ParseIntPipe,
  Patch,
  Post,
  UseGuards,
} from '@nestjs/common';
import { User } from 'src/entities/user.entity';
import { AuthGuard } from 'src/guards/auth.guard';
import { UserService } from './user.service';

@Controller('user')
export class UserController {
  constructor(private readonly service: UserService) {}

  @UseGuards(AuthGuard)
  @Get(':id')
  findById(@Param('id', new ParseIntPipe()) id: number): Promise<User> {
    return this.service.findById(id);
  }

  ...
}
```

But do you have permissions?

# Overview


metadata
1. Get allowed permissions
Set allowed permissions
3. Accept/Reject
controller
2. Verify authorization

# Edit user schema

Role enum

Role column with default value 'MEMBER'

```ts
import { Column, Entity, OneToMany, PrimaryGeneratedColumn } from 'typeorm';
import { Order } from './order.entity';

export enum UserRole {
  ADMIN = 'ADMIN',
  MEMBER = 'MEMBER',
}

@Entity()
export class User {
  @PrimaryGeneratedColumn()
  id: number;

  @Column()
  username: string;

  @Column()
  password: string;

  @Column('enum', { enum: UserRole, default: UserRole.MEMBER })
  role: UserRole;

  @OneToMany(
    () => Order,
    order => order.user,
  )
  orders: Order[];
}
```

# Set metadata

1. Create decorator

```
$ nest g decorator roles
```

2. Implement roles.decorator.ts

```ts
import { SetMetadata } from '@nestjs/common';
import { UserRole } from 'src/entities/user.entity';

export const Roles = (...args: UserRole[]) => SetMetadata('roles', args);
```

# 3. Try use in user controller

```
...
@Controller('user')
export class UserController {
  constructor(private readonly service: UserService) {}

  @UseGuards(AuthGuard)
  @Roles(UserRole.ADMIN)
  @Get(':id')
  findById(@Param('id', new ParseIntPipe()) id: number): Promise<User> {
    return this.service.findById(id);
  }
  ...
}
```

Only allow admin

# Roles guard

Reflect is a helper to get metadata.

Inject UserService

Get required roles from metadata set on different levels.

- getHandler() is for controller-level
- getClass() is for class-level

Pass if no required roles

```ts
import {
  CanActivate,
  ExecutionContext,
  Inject,
  Injectable,
} from '@nestjs/common';
import { Reflector } from '@nestjs/core';
import { Request } from 'express';
import { UserRole } from 'src/entities/user.entity';
import { UserService } from 'src/user/user.service';

@Injectable()
export class RolesGuard implements CanActivate {
  constructor(
    private readonly reflector: Reflector,
    @Inject('UserService') private readonly userService: UserService,
  ) {}

  async canActivate(context: ExecutionContext): Promise<boolean> {
    const requiredRoles = this.reflector.getAllAndOverride<UserRole[]>(
      'roles',
      [context.getHandler(), context.getClass()],
    );

    if (requiredRoles.length === 0) {
      return true;
    }

    const req: Request = context.switchToHttp().getRequest();
    if (!req.uid) {
      return false;
    }

    const user = await this.userService.findById(req.uid);
    if (!user) {
      return false;
    }
    return requiredRoles.includes(user.role);
  }
}
```

# 3. Try use in user controller

```
...
@Controller('user')
export class UserController {
  constructor(private readonly service: UserService) {}

  @UseGuards(AuthGuard, RolesGuard)
  @Roles(UserRole.ADMIN)
  @Get(':id')
  findById(@Param('id', new ParseIntPipe()) id: number): Promise<User> {
    return this.service.findById(id);
  }
  ...
}
```

# Congratulations!



Code and materials available at https://github.com/UtopiaBeam/nestjs-in-a-nutshell-talk