Perfect, Nani! Let's replicate the **State Farm B2B Portal** as your own B2B Insurance Partner Portal project from scratch with a full technical setup—front end, back end, microservices, security, deployment, and cloud—all structured and detailed for implementation.

✅ Project Name: Smart B2B Partner Portal

🔧 1. Project Setup Overview

A. Tech Stack

Layer	Technology
Frontend	React.js (with JSX)
Backend	Spring Boot (Java 17)
Microservices	Spring Cloud + Eureka + Config Server
Database	MySQL
Auth & Security	Spring Security + LDAP + Vault
Secrets Mgmt	HashiCorp Vault
CI/CD	GitLab Pipelines
Containerization	Docker
Orchestration	Kubernetes (EKS or ROSA)
Cloud Platform	AWS

📁 2. Backend Microservices Structure

```
smart-b2b-portal/
 ├── config-server/
 ├── discovery-server/
 ├── api-gateway/
 ├── auth-service/
```

```
├── partner-service/       # Repair shops, hospitals, suppliers
├── billing-service/       # Medical/EFT billing
├── supplier-service/      # Coupa interactions
├── common-lib/            # DTOs, Utils, Enums
└── vault-config/
```

✅ 3. Key Microservices

🔐 auth-service

Handles LDAP login, TPAR checks, and JWT generation.

Classes / Interfaces:

- LdapAuthProvider.java
- TPARService.java (calls TPAR APIs)
- AuthController.java
- JwtUtil.java
- UserPrincipal.java

DTOs:

- LoginRequest, LoginResponse
- TPARRoleDto, UserDto

Functionality:

- Authenticates using LDAP
- Validates roles using TPAR
- Issues JWT on successful login

👥 partner-service

Manages role-based module access (Medical, EFT, SelectService, Supplier)

Entities:

- Partner
- PartnerRole
- AccessModule

DTOs:

- PartnerDto, ModuleDto

Services:

- PartnerAccessService
- ModuleService

Functionality:

- Get partner details by TIMS ID
- Map TPAR roles to modules
- Control UI visibility via API

📜 billing-service

Handles medical billing and EFT processing.

Entities:

- EFTDetails
- MedicalBill

DTOs:

- EFTDto, MedicalClaimDto

Functionality:

- Submit medical bills with claim IDs
- View EFT history, setup account

📦 supplier-service

Manages invoice and procurement via Coupa.

Entities:

- Supplier
- Invoice

Services:

- CoupaIntegrationService
- InvoiceService

Functionality:

- Submit & track invoices
- Fetch order status from Coupa

🔗 **Shared Lib: common-lib**

Includes:

- DTOs
- Constants
- Enums
- Feign clients (for inter-service communication)

🔐 **4. Spring Security Setup**

LDAP + Spring Security:

```
@Override
protected void configure(AuthenticationManagerBuilder auth) throws Exception {
   auth.ldapAuthentication()
      .userDnPatterns("uid={0},ou=people")
      .contextSource()
      .url("ldap://localhost:8389/dc=example,dc=com");
```

}

Vault Integration:

```
spring:
  cloud:
    vault:
      uri: http://localhost:8200
      authentication: TOKEN
      token: s.1234567890abcdef
```

Use @Value("${vault.key}") to fetch credentials at runtime.

🌐 5. React Frontend Structure (JSX)

```
src/
 ├── components/
|    ├── Login.jsx
|    ├── Dashboard.jsx
|    ├── MedicalBillingForm.jsx
|    ├── EFTSetup.jsx
|    └── SupplierModule.jsx
 ├── services/
|    ├── authService.js
|    ├── billingService.js
|    └── supplierService.js
 ├── routes/
|    └── AppRouter.jsx
└── App.jsx
```

Key Features:

- Role-based UI rendering
- Form validation
- Axios for backend calls
- Token stored in localStorage
- Private Routes (Guarded Routes)

🔁 6. CI/CD with GitLab

```
stages:
  - build
  - test
  - deploy

build-job:
  script:
    - ./mvnw clean package -DskipTests

docker-build:
  script:
    - docker build -t registry/b2b-portal:latest .

deploy-prod:
  script:
    - kubectl apply -f k8s/deployment.yaml
```

🐬 7. Docker Setup

Dockerfile (backend):

```
FROM openjdk:17
COPY target/*.jar app.jar
ENTRYPOINT ["java", "-jar", "/app.jar"]
```

Docker Compose (local dev):

```
version: "3"
services:
  auth-service:
    image: auth-service:latest
    ports:
      - "8081:8081"
  partner-service:
    ...
```

☸ 8. Kubernetes Setup

deployment.yaml

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: auth-service
spec:
  replicas: 2
  template:
    spec:
      containers:
      - name: auth-service
```

```
image: registry/auth-service:latest
env:
- name: VAULT_TOKEN
  valueFrom:
    secretKeyRef:
      name: vault-token
      key: token
```

☁️ 9. AWS Deployment (EKS or ROSA)

- Use **EKS** (Elastic Kubernetes Service) or **ROSA**
- Store secrets in **AWS Secrets Manager or Vault**
- Use **Route53** for DNS
- Load balancer via **Ingress Controller**
- Logs shipped to **CloudWatch/Splunk**

🛠️ 10. Functional Workflow

Login Flow

1. User logs in with TIMS ID → Authenticated via LDAP
2. JWT token generated → Frontend stores it
3. Calls /getUserModules → TPAR validated → Modules fetched
4. UI shows only allowed modules (Medical, EFT, etc.)

Billing Flow

1. Medical Provider submits form → Validated
2. Backend checks TPAR access → Encrypts data using Vault key
3. Sends data to claims-api → Claim stored

```
/*
 * SMART B2B PARTNER PORTAL – CLASS STRUCTURE WITH TABLE DATA
 */

// 1. USER ENTITY
@Entity
@Table(name = "users")
public class User {
    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    private Long id;

    private String username;
    private String password;
    private String email;

    @Enumerated(EnumType.STRING)
    private Role role; // SUPPLIER, REPAIR_SHOP, MEDICAL_PROVIDER, LENDER

    @OneToMany(mappedBy = "user")
    private List<ModuleAccess> accesses;
}

// 2. MODULE ACCESS ENTITY
@Entity
@Table(name = "module_access")
```

```
public class ModuleAccess {
    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    private Long id;

    private String moduleName; // MEDICAL_BILLING, EFT, SUPPLIER_CENTER, etc.

    @ManyToOne
    @JoinColumn(name = "user_id")
    private User user;
}

// 3. MEDICAL BILL ENTITY
@Entity
@Table(name = "medical_bills")
public class MedicalBill {
    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    private Long id;

    private String claimNumber;
    private String patientName;
    private Double amount;
    private LocalDate serviceDate;

    @ManyToOne
```

```
    @JoinColumn(name = "user_id")
    private User submittedBy;
}

// 4. EFT SETUP ENTITY
@Entity
@Table(name = "eft_setups")
public class EFTSetup {
    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    private Long id;

    private String bankName;
    private String accountNumber;
    private String routingNumber;

    @OneToOne
    @JoinColumn(name = "user_id")
    private User user;
}

// 5. SUPPLIER ENTITY
@Entity
@Table(name = "suppliers")
public class Supplier {
    @Id
```

```
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    private Long id;

    private String supplierName;
    private String contactPerson;
    private String contactEmail;
    private String status;
}

// 6. CLAIM LOOKUP ENTITY
@Entity
@Table(name = "claims")
public class Claim {
    @Id
    private String claimNumber;

    private String policyHolderName;
    private String status;
    private LocalDate incidentDate;
    private Double estimatedCost;
}

// 7. ENUM ROLE
public enum Role {
    SUPPLIER,
    REPAIR_SHOP,
```

```
    MEDICAL_PROVIDER,
    LENDER
}

/*
 * EXAMPLE TABLE RECORDS (SIMPLIFIED VIEW)
 */
-- users
INSERT INTO users (id, username, password, email, role) VALUES
(1, 'repair_john', 'pass123', 'john@autofix.com', 'REPAIR_SHOP'),
(2, 'clinic_mary', 'secure456', 'mary@clinic.com', 'MEDICAL_PROVIDER'),
(3, 'bank_tim', 'banking789', 'tim@lender.com', 'LENDER'),
(4, 'vendor_amy', 'supplyme', 'amy@supplier.com', 'SUPPLIER'),
(5, 'repair_mike', 'fixit', 'mike@fixcars.com', 'REPAIR_SHOP'),
(6, 'dr_sam', 'doctor1', 'sam@med.com', 'MEDICAL_PROVIDER'),
(7, 'loan_joe', 'escrow99', 'joe@loanbank.com', 'LENDER'),
(8, 'supplier_kim', 'goods88', 'kim@vendors.com', 'SUPPLIER'),
(9, 'repair_raj', 'garage123', 'raj@repairs.in', 'REPAIR_SHOP'),
(10, 'clinic_lisa', 'med101', 'lisa@clinicplus.com', 'MEDICAL_PROVIDER');

-- module_access
INSERT INTO module_access (id, module_name, user_id) VALUES
(1, 'MEDICAL_BILLING', 2),
(2, 'EFT', 2),
(3, 'SUPPLIER_CENTER', 4),
(4, 'CLAIMS_MANAGEMENT', 1),
```

(5, 'MORTGAGE_TOOLS', 3),

(6, 'EFT', 6),

(7, 'CLAIMS_MANAGEMENT', 5),

(8, 'SUPPLIER_CENTER', 8),

(9, 'CLAIMS_MANAGEMENT', 9),

(10, 'MEDICAL_BILLING', 10);

-- medical_bills

INSERT INTO medical_bills (id, claim_number, patient_name, amount, service_date, user_id) VALUES

(1, 'CLM001', 'John Smith', 3000.00, '2024-11-01', 2),

(2, 'CLM002', 'Linda Bell', 1800.00, '2024-11-15', 6),

(3, 'CLM003', 'Mark Lee', 2200.00, '2024-12-05', 10),

(4, 'CLM004', 'Sophia Gomez', 2600.00, '2024-12-18', 2),

(5, 'CLM005', 'Tom Hardy', 3100.00, '2025-01-08', 6),

(6, 'CLM006', 'Emma Watson', 1750.00, '2025-01-20', 10),

(7, 'CLM007', 'Bruce Wayne', 1900.00, '2025-02-10', 2),

(8, 'CLM008', 'Clark Kent', 2800.00, '2025-02-25', 6),

(9, 'CLM009', 'Diana Prince', 3300.00, '2025-03-03', 10),

(10, 'CLM010', 'Peter Parker', 2400.00, '2025-03-12', 2);

-- eft_setups

INSERT INTO eft_setups (id, bank_name, account_number, routing_number, user_id) VALUES

(1, 'Bank of America', '123456789', '00112233', 2),

(2, 'Chase', '234567890', '00112234', 6),

(3, 'Citi Bank', '345678901', '00112235', 10);

```
-- suppliers
INSERT INTO suppliers (id, supplier_name, contact_person, contact_email, status) VALUES
(1, 'ABC Supplies', 'Amy Lee', 'amy@abc.com', 'Active'),
(2, 'FastParts', 'Kim Rios', 'kim@fastparts.com', 'Pending'),
(3, 'AutoDepot', 'Jake White', 'jake@autodepot.com', 'Active'),
(4, 'RepairKing', 'Mike Jet', 'mike@repairking.com', 'Inactive'),
(5, 'VendorX', 'Nina Ray', 'nina@vendorx.com', 'Active'),
(6, 'ToolHub', 'Chris Blue', 'chris@toolhub.com', 'Active'),
(7, 'FixMart', 'David Fox', 'david@fixmart.com', 'Pending'),
(8, 'PartsExpress', 'Sam Green', 'sam@partsx.com', 'Active'),
(9, 'EquipZone', 'Olga Brown', 'olga@equipzone.com', 'Active'),
(10, 'MotorParts', 'Liam Cross', 'liam@motorparts.com', 'Inactive');

-- claims
INSERT INTO claims (claim_number, policy_holder_name, status, incident_date, estimated_cost)
VALUES
('CLM001', 'John Smith', 'Open', '2024-10-15', 3200.00),
('CLM002', 'Linda Bell', 'Approved', '2024-10-20', 1800.00),
('CLM003', 'Mark Lee', 'Under Review', '2024-11-01', 2000.00),
('CLM004', 'Sophia Gomez', 'Denied', '2024-11-10', 2500.00),
('CLM005', 'Tom Hardy', 'Approved', '2024-12-01', 3000.00),
('CLM006', 'Emma Watson', 'Open', '2024-12-10', 1700.00),
('CLM007', 'Bruce Wayne', 'Approved', '2024-12-15', 1900.00),
('CLM008', 'Clark Kent', 'Under Review', '2025-01-01', 2800.00),
('CLM009', 'Diana Prince', 'Denied', '2025-01-15', 3300.00),
```

('CLM010', 'Peter Parker', 'Open', '2025-02-01', 2400.00);

- Users – with roles like Repair Shop, Medical Provider, Supplier, Lender
- Claims – associated with users
- MedicalBills – linked to medical provider users
- EFTPayments – linked to supplier users
- SupplierInvoices – from suppliers to State Farm

Great! You're working with a **modular microservices architecture** for the State Farm-style B2B Portal. Let's walk through **how each service communicates and what their responsibilities are**—especially when a **partner (like a repair shop or hospital) submits a claim**, and how the system processes that claim.

🔁 **High-Level Use Case: Claim Submission & Processing**

Example:
A repair shop or hospital (partner) logs in and submits a claim for a policyholder.
The claim goes through various states: **Pending → Approved/Denied**, depending on claim type, policy rules, and internal review.

🔧 **What Each Service Does and How They Interact**

✅ **auth-service**

- **Handles:** Authentication (e.g., TIMS login), LDAP-based user validation, role-based access via TPAR.
- **Works with:**
    - All services (for verifying tokens, roles).
    - Pulls user metadata (role: Repair Shop, Hospital, Supplier).
- **Responsibilities:**
    - Validate incoming request using JWT or session tokens.

- Identify partner type and access level.

✅ **partner-service**

- **Handles:** Partner profiles like Repair Shops, Hospitals, Suppliers.
- **Works with:**
  - auth-service → Gets authenticated user role.
  - billing-service, supplier-service → Routes tasks like EFT/billing.
- **Responsibilities:**
  - Store/Fetch partner data (name, contact, TPAR id, permissions).
  - Provide dashboard-level data for partners.
  - Show available modules (Medical Billing, EFT, etc.) based on partner type.

✅ **billing-service**

- **Handles:** Claims and EFT billing data.
- **Works with:**
  - partner-service → Gets info on submitting partner.
  - common-lib → Uses shared DTOs like ClaimDTO, BillDTO.
  - vault-config → Fetches secure credentials for internal API calls.
- **Responsibilities:**
  - Accept claim submissions (e.g., accident report, hospital bill).
  - Validate policy type via external API (via api-gateway).
  - Set status: PENDING, then APPROVED, DENIED.
  - Assign reviewers from internal claims team.
  - Provide API for claim review UI (internal or via SFNet).

✅ **supplier-service**

- **Handles:** Interactions with external Coupa procurement system.
- **Works with:**
    - vault-config → Pull Coupa API credentials.
    - partner-service → Verify if current user is a supplier.
- **Responsibilities:**
    - Allow uploading invoices.
    - Track purchase orders & payments via Coupa API.

✅ **common-lib**

- **Handles:** Shared code: DTOs, Enums, Constants, Utils.
- **Used by:** Every other service.
- **Contains:**
    - ClaimDTO, PartnerDTO, EftDTO, ClaimStatus, PartnerType enums.
    - Date utils, file size validation, response wrapper classes.

✅ **api-gateway**

- **Handles:** Central routing of all external/internal API requests.
- **Responsibilities:**
    - Secure endpoints using Spring Cloud Gateway + JWT filter.
    - Route /claims/** → billing-service.
    - Route /partners/** → partner-service.

✅ **discovery-server**

- **Handles:** Service registration (Eureka).
- **Used by:** All services.
- **Responsibilities:**

- Allow services to discover each other without hardcoded URLs.

✅ **config-server**

- **Handles:** Central config using Spring Cloud Config.
- **Responsibilities:**
  - Store all .yml configs (including Vault, DB, service ports).
  - Refresh service configs via /actuator/refresh.

✅ **vault-config**

- **Handles:** Secure secrets management via HashiCorp Vault.
- **Used by:** All services that call external/internal systems securely.
- **Responsibilities:**
  - Securely fetch DB creds, API keys.
  - Rotate secrets when needed.
  - Provide encryption/decryption for sensitive data (EFT, PII).

💡 **Example Flow: Repair Shop Submits Auto Repair Claim**

1. 🔐 **Login (via auth-service)**
   - User logs in via TIMS/LDAP
   - Token issued, role: REPAIR_SHOP
2. 📋 **Partner Dashboard (partner-service)**
   - Fetch partner details from DB.
   - UI shows relevant modules based on partner type (e.g., “Select Service” claim submission).
3. 📝 **Submit Claim (billing-service)**
   - Repair shop submits damage report + cost estimate.

- Claim is saved with status = PENDING
- Partner info (TPAR ID, repair shop name) is stored.

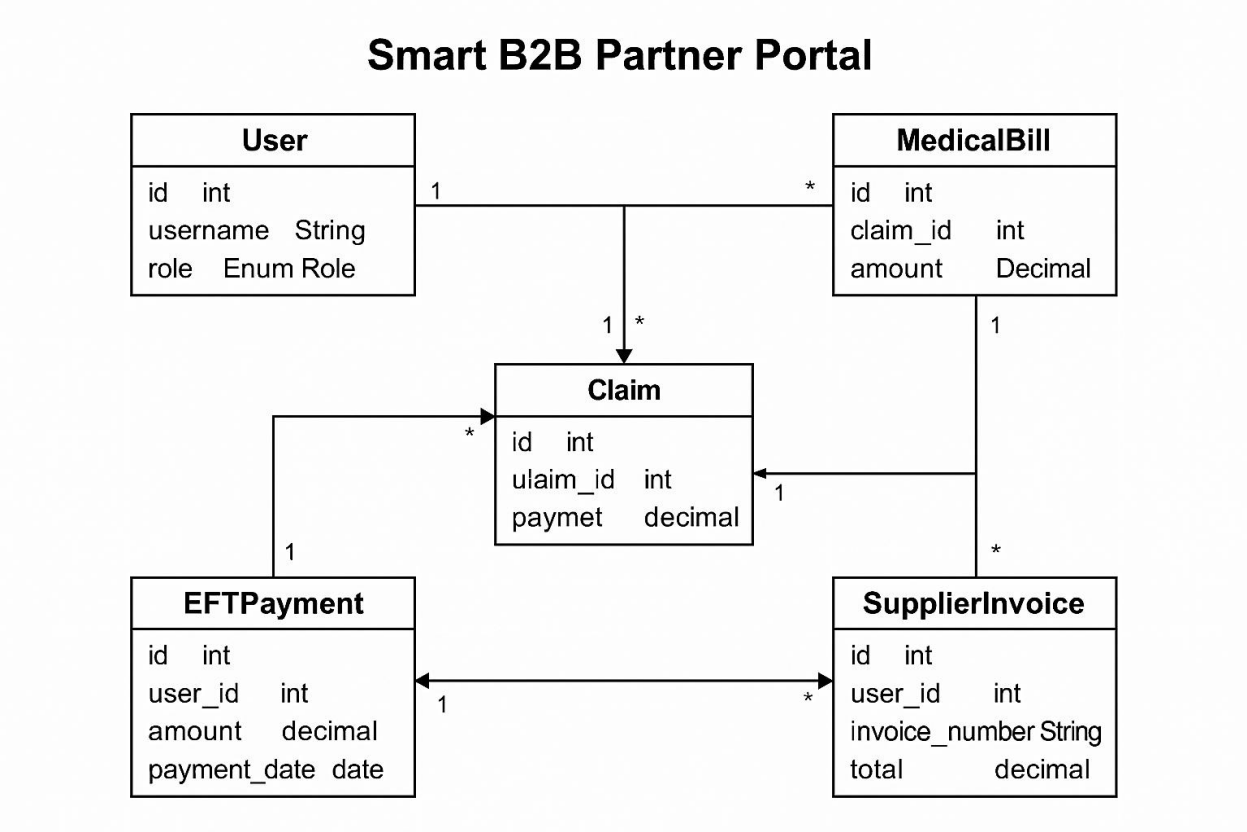
4. 📡 **Backend Workflow**
   - Claim validated: VIN number, Policy type (auto/home), etc.
   - billing-service checks via API (e.g., claims API) if the policy is valid and active.
5. 👨‍💼 **Claims Team Review**
   - Internal user sees the claim via reviewer dashboard.
   - Updates status to APPROVED or DENIED with reason.
6. 📩 **Notification**
   - Email or portal notification sent to partner.
   - Payment triggered via finance system (not part of this app).

🧱 **Policy Type Examples**

- **Auto Policy** → VIN must match repair report.
- **Health Policy** → Injury details must match medical billing.
- **Home Policy** → Only suppliers (roofing, electrical) can file this.

🚀 **Deployment Flow**

- Each service has a Dockerfile.
- Helm charts for each microservice.
- Deployed to Kubernetes (EKS or ROSA).
- Secrets mounted using Vault agents.
- CI/CD using GitLab pipelines:
  - Build → Test → Dockerize → Deploy to K8s



// Smart B2B Partner Portal - Backend Full Setup

// ——————————————————————————————

// COMMON MODULE: common-lib (DTOs, Enums, Utils)

// ——————————————————————————————

// 1. Enums

public enum ClaimStatus {

PENDING, APPROVED, DENIED;

}

```
public enum PolicyType {
    HEALTH, AUTO, PROPERTY;
}

// 2. DTOs
public class PartnerDTO {
    private Long id;
    private String name;
    private String type; // Hospital, Repair Shop, Supplier
    private String email;
    private String address;
}

public class ClaimDTO {
    private Long id;
    private Long policyId;
    private String partnerName;
    private ClaimStatus status;
    private String reason;
}

// ————————————————————————————————————————————————————————
// AUTH SERVICE: auth-service
// ————————————————————————————————————————————————————————
```

```
@Entity
public class User {
   @Id @GeneratedValue
   private Long id;
   private String username;
   private String password;
   private String role; // ADMIN, PARTNER, REVIEWER
}

@Repository
public interface UserRepository extends JpaRepository<User, Long> {
   Optional<User> findByUsername(String username);
}

@Service
public class AuthServiceImpl implements AuthService {
   @Autowired private UserRepository userRepository;

   public UserDetails loadUserByUsername(String username) throws
UsernameNotFoundException {
      return userRepository.findByUsername(username)
         .orElseThrow(() -> new UsernameNotFoundException("User not found"));
   }
}

// ————————————————————————————————————————————————
```

```
// PARTNER SERVICE: partner-service
// ————————————————————————————————————————————————

@Entity
public class Partner {
   @Id @GeneratedValue
   private Long id;
   private String name;
   private String type; // Hospital, Repair Shop, Supplier
   private String email;
   private String address;

   @OneToMany(mappedBy = "partner")
   private List<Claim> claims;
}

@Repository
public interface PartnerRepository extends JpaRepository<Partner, Long> {
   List<Partner> findByType(String type);
}

@Service
public class PartnerServiceImpl implements PartnerService {
   @Autowired private PartnerRepository partnerRepository;

   public Partner createPartner(Partner partner) {
```

```
        return partnerRepository.save(partner);
    }

    public List<Partner> getAllHospitals() {
        return partnerRepository.findByType("Hospital");
    }

    public List<Partner> getAllPartners() {
        return partnerRepository.findAll();
    }
}

// ————————————————————————————————————————————————————————————
// CLAIM SERVICE: billing-service
// ————————————————————————————————————————————————————————————

@Entity
public class Claim {
    @Id @GeneratedValue
    private Long id;

    @ManyToOne(fetch = FetchType.LAZY)
    private Partner partner;

    private Long policyId;
    private ClaimStatus status;
```

```
    private String reason;
}

@Repository
public interface ClaimRepository extends JpaRepository<Claim, Long> {
    List<Claim> findByStatus(ClaimStatus status);
    List<Claim> findByPartner_Id(Long partnerId);
}

@Service
public class ClaimServiceImpl implements ClaimService {
    @Autowired private ClaimRepository claimRepository;
    @Autowired private PartnerRepository partnerRepository;

    public Claim submitClaim(Long partnerId, Long policyId, String reason) {
        Partner partner = partnerRepository.findById(partnerId)
            .orElseThrow(() -> new RuntimeException("Partner not found"));

        Claim claim = new Claim();
        claim.setPartner(partner);
        claim.setPolicyId(policyId);
        claim.setReason(reason);
        claim.setStatus(ClaimStatus.PENDING);

        return claimRepository.save(claim);
    }
```

```
    public Claim approveClaim(Long claimId) {
        Claim claim = claimRepository.findById(claimId)
            .orElseThrow(() -> new RuntimeException("Claim not found"));
        claim.setStatus(ClaimStatus.APPROVED);
        return claimRepository.save(claim);
    }

    public List<Claim> getClaimsByPartner(Long partnerId) {
        return claimRepository.findByPartner_Id(partnerId);
    }

    public List<Claim> getPendingClaims() {
        return claimRepository.findByStatus(ClaimStatus.PENDING);
    }

    public Map<String, Long> getClaimSummaryByPartner() {
        return claimRepository.findAll().stream()
            .collect(Collectors.groupingBy(
                c -> c.getPartner().getName(),
                Collectors.counting()
            ));
    }
}

// ————————————————————————————————————————————————————————
```

```
// SUPPLIER SERVICE: supplier-service
// ————————————————————————————————————————
// Coupa or 3rd party data integration (mocked in code or via RestTemplate)

@Service
public class SupplierService {
    public List<String> fetchApprovedSuppliers() {
        return List.of("Supplier A", "Supplier B", "Supplier C");
    }
}

// ————————————————————————————————————————
// GLOBAL EXCEPTION HANDLING
// ————————————————————————————————————————

@ControllerAdvice
public class GlobalExceptionHandler {
    @ExceptionHandler(RuntimeException.class)
    public ResponseEntity<String> handleRuntimeException(RuntimeException ex) {
        return ResponseEntity.status(HttpStatus.BAD_REQUEST).body(ex.getMessage());
    }

    @ExceptionHandler(Exception.class)
    public ResponseEntity<String> handleGenericException(Exception ex) {
        return ResponseEntity.status(HttpStatus.INTERNAL_SERVER_ERROR).body("Something
went wrong");
```

```
    }
}

// ————————————————————————————————————————————————
// STORED PROCEDURE (MYSQL EXAMPLE)
// ————————————————————————————————————————————————
-- Procedure: Fetch claims by status
DELIMITER //
CREATE PROCEDURE GetClaimsByStatus(IN status VARCHAR(20))
BEGIN
    SELECT * FROM claim WHERE status = status;
END //
DELIMITER ;

// Use it from JPA
public interface ClaimRepository extends JpaRepository<Claim, Long> {
    @Procedure(name = "GetClaimsByStatus")
    List<Claim> getClaimsByStatus(@Param("status") String status);
}

// Remaining services (API Gateway, Discovery, Config, Vault, React UI, Docker, K8s, Swagger) next...
```