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1. 개발 환경 및 기술 스택

- Backend
 - JAVA 17 (17.0.9 2023-10-17 LTS)
 - Spring boot 3.2.3
 - OAUTH 2.0
 - Spring Security 6.2.1
 - Spring Data JPA
 - Mysql 8.0.35
 - o Redis 5.0.7
- Frontend
 - o Node.js 20.10.0
 - o npm 10.2.3
 - o react 18.2.0
 - vite 5.1.6

Recommend

- o python 3.8
- o numpy 1.19.5
- o pandas 1.1.5

Infra

- Ubuntu 20.04.6 LTS
- o Nginx 1.18.0
- o Jenkins 2.444
- o docker 25.0.3

IDE

- IntelliJ Ultimate
- Vscode
- PyCharm

2. 설정 파일 및 환경 변수 정보

1. BackEnd

• application.yml (로컬용)

```
spring:
  datasource:
    driver-class-name: com.mysql.cj.jdbc.Driver # DB 드라이 url: jdbc:mysql://localhost:3306/perfectfit?useUnicode username : ssafy password : ssafy

jpa:
    open-in-view: false defer-datasource-initialization: true generate-ddl: true hibernate:
    ddl-auto: create-drop
```

```
properties:
      hibernate:
       format_sql: false
                                           # 하이버네이트가
       use_sql_comments: true
                                          # 하이버네이트가 실
       show_sql: true
       idbc:
          batch size: 100
                                          # insert/update
       default batch fetch size: 100
                                             # ddl 자동 작성
        ddl-auto: create-drop
 # data_테이블명.sql 관련 실행 setting
  sql:
    init:
      mode: always
     data-locations:
        - 'classpath:/data artist.sql'
        - 'classpath:/data genre.sgl'
        - 'classpath:/data_song.sql'
        - 'classpath:/data_member.sql'
        - 'classpath:/data_my_list.sql'
        - 'classpath:/data_song_count.sql'
        - 'classpath:/data_song_history.sql'
 # NoSQL setting
 data:
   # Redis setting
    redis:
      host: localhost
      port: 6379
# jwt setting
jwt:
 secret-key:
    access: 612834t213b497d23d94h2374693471269477h9qf87weo
    refresh: 612834t213b497d23d94h2374693471269477h9qf87we
 expired-min:
    access: 60 # 액세스 토큰 만료제한시간 60분 (1시간) (60)
    refresh: 10080 # 리프레쉬 토큰 만료제한시간 10080분 (7일) (:
```

```
oauth:
  kakao:
    client-id: df089f203219a3b6f8b59089d4381d02
    client-secret: w3dHiDuD0iluFi2vjWpzSo1BbBhTnvpu
    redirect-uri: http://localhost:5173/member/loading/kak
    scope:
      - profile_nickname
      profile_image
      - account email
  naver:
    client-id: tzXmova1GZfX43ujVeQU
    client-secret: 3BfuMlsrSV
    redirect_uri: http://localhost:5173/member/loading/nav
    scope:
      - nickname
      - email
      profile_image
youtube:
  api:
    key: AIzaSyDqnJkym60A2vJAasKGP8gjsP4s0wMZfxo
```

• application.yml (배포용)

```
spring:
    datasource:
        driver-class-name: com.mysql.cj.jdbc.Driver # DB 드라이 url: jdbc:mysql://j10c205.p.ssafy.io:3306/perfectfit?u username : root password : c205c205

jpa:
    open-in-view: false defer-datasource-initialization: true generate-ddl: true
```

```
hibernate:
      ddl-auto: create-drop
    properties:
      hibernate:
        format sql: false
                                            # 하이버네이트가
        use_sql_comments: true
                                            # 하이버네이트가 실
        show sql: true
        jdbc:
          batch size: 100
                                            # insert/update
        default batch fetch size: 100
         ddl-auto: create-drop
                                               # ddl 자동 작성
  #
  # data_테이블명 sql 관련 실행 setting
  sql:
    init:
      mode: always
      data-locations:
        - 'classpath:/data_artist.sql'
        - 'classpath:/data_genre.sql'
        - 'classpath:/data_song.sql'
        - 'classpath:/data_member.sql'
        - 'classpath:/data my list.sql'
        - 'classpath:/data_song_count.sql'
        - 'classpath:/data_song_history.sql'
  # NoSQL setting
  data:
    # Redis setting
    redis:
      host: j10c205.p.ssafy.io
      port: 6379
# jwt setting
jwt:
  secret-key:
    access: 612834t213b497d23d94h2374693471269477h9qf87weo
    refresh: 612834t213b497d23d94h2374693471269477h9qf87we
  expired-min:
```

```
access: 60 # 액세스 토큰 만료제한시간 60분 (1시간) (60)
    refresh: 10080 # 리프레쉬 토큰 만료제한시간 10080분 (7일) (:
oauth:
  kakao:
   client-id: df089f203219a3b6f8b59089d4381d02
   client-secret: w3dHiDuD0iluFi2vjWpzSo1BbBhTnvpu
        redirect-uri: https://j10c205.p.ssafy.io/member/lo
   scope:

    profile nickname

      profile_image
      - account email
 naver:
    client-id: tzXmova1GZfX43ujVeQU
   client-secret: 3BfuMlsrSV
    redirect_uri: http://localhost:5173/member/loading/nav
   scope:

    nickname

      - email

    profile image

youtube:
  api:
    key: AIzaSyDqnJkym60A2vJAasKGP8gjsP4s0wMZfxo
```

2. FrontEnd

.env

```
VITE_BASE_URL = https://j10c205.p.ssafy.io/
VITE_REGION = ap-northeast-2
VITE_BUCKET = perfectfitssafy
VITE_ACCESS_KEY_ID = AKIAW3MECNPMTQY0QY6F
VITE_SECRET_ACCESS_KEY_ID = zZ0hTjnFHtpBpxPZnm1t065CVFePLjvVITE_MR_URL = https://perfectfitssafy.s3.ap-northeast-2.am.
```

package.json

```
{
    "name": "frontend",
    "private": true,
    "version": "0.0.0",
    "type": "module",
    "scripts": {
        "dev": "vite --host 0.0.0.0 --port 5173", // 이부분이 비
        "build": "tsc && vite build",
        "lint": "eslint . --ext ts,tsx --report-unused-disable
        "preview": "vite preview"
},
```

3. Recommend

• secrets.json

```
{
  "DB" : {
    "user" : "root",
    "password" : "c205c205",
    "host" : "j10c205.p.ssafy.io",
    "port" : 3306,
    "database" : "perfectfit"
  }
}
```

4. AI

settings.py

```
DATABASES = {
    "default": {
        'ENGINE': 'django.db.backends.mysql',
        'NAME': 'perfectfitAI',
        'USER': 'root',
        'PASSWORD': 'c205c205',
```

3. 빌드 및 배포

1) Docker 설치

```
# 1. Docker 엔진의 공식 버전을 설치하기 전 충돌하는 패키지를 제거해야 한[
for pkg in docker.io docker-doc docker-compose docker-compose
# 2. Docker apit 저장소 설정
# Add Docker's official GPG key:
sudo apt-get update
sudo apt-get install ca-certificates curl
sudo install -m 0755 -d /etc/apt/keyrings
sudo curl -fsSL https://download.docker.com/linux/ubuntu/gpg
sudo chmod a+r /etc/apt/keyrings/docker.asc
# Add the repository to Apt sources:
echo \
  "deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/
  $(. /etc/os-release && echo "$VERSION_CODENAME") stable" |
  sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
sudo apt-get update
# 3. Docker 패키지 설치
# 최신 버전 설치
sudo apt-get install docker-ce docker-ce-cli containerd.io do
# 4. hello-world 이미지를 실행하여 Docker 엔진 설치가 성공했는지 확인
sudo docker run hello-world
```

2) Docker compose 설치

```
# 설치
sudo apt update
sudo apt install docker.io
sudo apt install docker-compose

# 설치 확인
docker --version
docker-compose --version
```

3) Docker로 젠킨스 컨테이너 설치

```
# docker container에 마운트할 볼륨 디렉토리 생성
cd /home/ubuntu && mkdir jenkins-data
# 외부에서 접속할 포트를 오픈하고 상태 확인
# 8080은 주로 쓰이는 포트라 다른 포트로 실행
sudo ufw allow 9001
sudo ufw reload
sudo ufw status
# docker 명령어로 jenkins container 생성 및 구동
sudo docker run -d -p 9001:8080 -v /home/ubuntu/jenkins-data:
sudo docker run -d \
-p 9001:8080 \
-p 50000:50000 \
-v /home/ubuntu/jenkins:/var/jenkins_home \
-v /usr/bin/docker:/usr/bin/docker \
-v /var/run/docker.sock:/var/run/docker.sock \
-u root \
--name jenkins \
jenkins/jenkins:2.444
# 초기 설정에 필요함 비밀번호 확인
sudo docker logs jenkins
```

4) docker compose를 통한 실행

• Jenkins를 통해 docker-compose.yml파일의 구성을 실행시킨다.

docker-compose.yml

```
version: '3.8'
services:
  backend:
    image: kimhyeokil/back:latest
    container_name: back
    build:
      context: ./BackEnd
      dockerfile: Dockerfile
    ports:
      - "9002:8080"
    networks:
      - jenkins-network
# Docker volume 정의
networks:
  jenkins-network:
    external: true
```

BE Jenkinsfile

```
pipeline {
   agent any
   environment {
```

```
REPO = "s10-ai-speech-sub2/S10P22C205"
    DOCKERHUB_REGISTRY = "kimhyeokil/back"
    DOCKERHUB_CREDENTIALS = credentials('Docker-hub')
}
stages {
    stage('Checkout') {
        steps {
            checkout scm
        }
    }
    stage('Setup Environment') {
        steps {
            dir("${env.WORKSPACE}/BackEnd"){
                script {
                    sh "ls -al"
                    sh "chmod +x ./gradlew"
                }
            }
        }
    }
    stage("Build") {
        steps {
            script {
                sh "docker build -t ${DOCKERHUB_REGISTRY}
            }
        }
    }
    stage("Login") {
        steps {
             sh "echo \${DOCKERHUB_CREDENTIALS_PSW} | doc
        }
    }
    stage("Tag and Push") {
        steps {
            script {
                withCredentials([[$class: 'UsernamePasswo
                    sh "docker push ${DOCKERHUB_REGISTRY}
                }
```

```
}
    }
}
stage('Prune old images'){
    steps{
        script{
            sh "docker ps"
        }
    }
}
stage('Pull') {
    steps {
        script {
            withCredentials([[$class: 'UsernamePasswo
                sh "docker stop back || true" // Ign
                sh "docker rm back || true"
                                                // Ign
                sh "docker rmi ${DOCKERHUB_REGISTRY}|
                sh "docker pull ${DOCKERHUB_REGISTRY}
            }
        }
    }
}
stage('Up') {
    steps {
        script {
            withCredentials([[$class: 'UsernamePasswo
                try {
                    sh "docker-compose -f ${env.WORKS
                } catch(Exception e) {
                    sh "docker restart back || true"
                }
            }
        }
    }
}
```

```
}
```

BE Dockerfile

```
# 빌드 스테이지
FROM amazoncorretto:17.0.7-alpine AS builder
USER root
WORKDIR /back
COPY gradlew .
COPY gradle gradle
COPY build.gradle .
COPY settings.gradle .
COPY src src
# gradlew 실행 권한 부여
RUN chmod +x ./gradlew
RUN ./gradlew bootJar
# 실행 스테이지
FROM openjdk:17
WORKDIR /back
COPY --from=builder /back/build/libs/*.jar app.jar
ENTRYPOINT ["java", "-jar", "app.jar"]
VOLUME /tmp
```

FE Jenkinsfile

```
pipeline {
   agent any
   environment {
     REPO = "s10-ai-speech-sub2/S10P22C205"
     DOCKERHUB_REGISTRY = "kimhyeokil/front"
     DOCKERHUB_CREDENTIALS = credentials('Docker-hub')
}
```

```
stages {
    stage('Checkout') {
        steps {
            checkout scm
        }
    }
    stage("Build") {
        steps {
            script {
                sh "ls -al"
                sh "docker build -t ${DOCKERHUB_REGISTRY}
            }
        }
    }
    stage("Login") {
        steps {
            sh "echo \${DOCKERHUB_CREDENTIALS_PSW} | dock
        }
    }
    stage("Tag and Push") {
        steps {
            script {
                withCredentials([usernamePassword(credent]
                    sh "docker push ${DOCKERHUB_REGISTRY}
                }
            }
        }
    }
    stage('Prune old images') {
        steps {
            script {
                sh "docker ps"
                // sh "docker system prune --filter until:
```

```
}
            }
        }
        stage('Pull') {
            steps {
                script {
                    withCredentials([usernamePassword(credent.
                         sh "docker stop front || true"
                         sh "docker rm front || true"
                         sh "docker rmi ${DOCKERHUB_REGISTRY}|
                         sh "docker pull ${DOCKERHUB_REGISTRY}
                    }
                }
            }
        }
        stage('Up') {
            steps {
                script {
                    withCredentials([usernamePassword(credent.
                         try{
                             sh "docker run -d --name front -p
                             ${DOCKERHUB_REGISTRY}"
                             // sh "docker-compose -f ${env.WO
                         } catch (Exception e){
                             sh "docker restart front || true"
                         }
                    }
                }
            }
        }
    }
}
```

FE Dockerfile

```
# 1단계: 빌드 단계
FROM node:latest as build

# 작업 디렉토리 설정
WORKDIR /app

# 의존성 설치
COPY package*.json ./
RUN npm install --force

# 앱 소스 코드 복사
COPY . .

# 포트 노출
EXPOSE 5173

# 컨테이너 시작 시 실행할 명령
CMD ["npm", "run", "dev"]
```

Recommend Jenkinsfile

```
script {
            sh "docker build -t ${DOCKERHUB_REGISTRY}
        }
    }
}
stage("Login") {
    steps {
         sh "echo \${DOCKERHUB_CREDENTIALS_PSW} | doc
    }
}
stage("Tag and Push") {
    steps {
        script {
            withCredentials([[$class: 'UsernamePasswo
                sh "docker push ${DOCKERHUB_REGISTRY}
            }
        }
    }
}
stage('Prune old images'){
    steps{
        script{
            sh "docker ps"
        }
    }
}
stage('Pull') {
    steps {
        script {
            withCredentials([[$class: 'UsernamePasswo
                sh "docker stop recommend || true"
                sh "docker rm recommend || true"
                sh "docker rmi ${DOCKERHUB_REGISTRY}|
                sh "docker pull ${DOCKERHUB_REGISTRY}
            }
        }
    }
}
```

```
stage('Up') {
            steps {
                script {
                    withCredentials([[$class: 'UsernamePasswo
                         try {
                             // sh "docker-compose -f ${env.WO}
                             sh "docker run -d --name recommen
                             ${DOCKERHUB_REGISTRY}"
                        } catch(Exception e) {
                             sh "docker restart recommend || t
                        }
                    }
                }
            }
        }
    }
}
```

Recommend Dockerfile

```
# 기본 이미지 설정
FROM tiangolo/uvicorn-gunicorn-fastapi:python3.8

# 작업 디렉토리 설정
WORKDIR /app

# 호스트의 모든 파일을 컨테이너의 /app 디렉토리로 복사
COPY . /app

# 필요한 패키지 설치
RUN pip install --no-cache-dir -r requirements.txt
```

```
# FastAPI 애플리케이션을 실행
CMD ["uvicorn", "recommend.main:app", "--host", "0.0.0.0", "-
```

Al Jenkinsfile

```
pipeline {
    agent any
    environment {
        REPO = "s10-ai-speech-sub2/S10P22C205"
        DOCKERHUB_REGISTRY = "kimhyeokil/ai"
        DOCKERHUB_CREDENTIALS = credentials('Docker-hub')
    }
    stages {
        stage('Checkout') {
            steps {
                checkout scm
            }
        }
        stage("Build") {
            steps {
                script {
                     sh "docker build -t ${DOCKERHUB_REGISTRY}
                }
            }
        }
        stage("Login") {
            steps {
                 sh "echo \${DOCKERHUB_CREDENTIALS_PSW} | doc
            }
        }
        stage("Tag and Push") {
            steps {
                script {
                    withCredentials([[$class: 'UsernamePasswo
                         sh "docker push ${DOCKERHUB_REGISTRY}
                    }
                }
```

```
}
}
stage('Prune old images'){
    steps{
        script{
            sh "docker ps"
        }
    }
}
stage('Pull') {
    steps {
        script {
            withCredentials([[$class: 'UsernamePasswo
                sh "docker stop ai || true" // Ignor
                sh "docker rm ai || true"
                                             // Ignor
                sh "docker rmi ${DOCKERHUB_REGISTRY}|
                sh "docker pull ${DOCKERHUB_REGISTRY}
            }
        }
    }
}
stage('Up') {
    steps {
        script {
            withCredentials([[$class: 'UsernamePasswo
                try {
                    // sh "docker-compose -f ${env.WO}
                    sh "docker run -d --name ai -p 90
                    ${DOCKERHUB_REGISTRY}"
                } catch(Exception e) {
                    sh "docker restart ai || true" /
                }
            }
        }
   }
}
```

```
}
```

Al Dockerfile

```
# 베이스 이미지 설정
FROM python:3.10

# 작업 디렉토리 설정
WORKDIR /app

# 필요한 파일 복사
COPY requirements.txt /app/

# 의존성 설치
RUN pip install --no-cache-dir -r requirements.txt
RUN apt update
RUN apt install ffmpeg -y

# 소스 코드 복사
COPY . /app/

# 컨테이너 실행시 실행할 명령어
CMD ["python", "manage.py", "runserver", "0.0.0.0:8000"]
```

5) NGINX 설정

default

```
##
# You should look at the following URL's in order to grasp a
# of Nginx configuration files in order to fully unleash the
# https://www.nginx.com/resources/wiki/start/
# https://www.nginx.com/resources/wiki/start/topics/tutorials.
```

```
# https://wiki.debian.org/Nginx/DirectoryStructure
#
# In most cases, administrators will remove this file from si
# leave it as reference inside of sites-available where it wi
# updated by the nginx packaging team.
#
# This file will automatically load configuration files provi
# applications, such as Drupal or Wordpress. These applicatio
# available underneath a path with that package name, such as
# Please see /usr/share/doc/nginx-doc/examples/ for more deta
##
# Default server configuration
#server {
        listen 80 default server;
        listen [::]:80 default_server;
#
        # SSL configuration
        # listen 443 ssl default server;
        # listen [::]:443 ssl default server;
        #
        # Note: You should disable gzip for SSL traffic.
        # See: https://bugs.debian.org/773332
        #
        # Read up on ssl_ciphers to ensure a secure configura
        # See: https://bugs.debian.org/765782
        # Self signed certs generated by the ssl-cert package
        # Don't use them in a production server!
        # include snippets/snakeoil.conf;
        root /var/www/html;
#
        # Add index.php to the list if you are using PHP
```

```
index index.html index.htm index.nginx-debian.html;
#
#
        server_name _;
#
        location / {
#
                proxy_pass http://j10c205.p.ssafy.io:9003;
                proxy set header Host $host;
#
#
                proxy_set_header X-Real-IP $remote_addr;
#
        }
        location /api/v1 {
#
                proxy_pass http://j10c205.p.ssafy.io:9002;
#
#
                proxy_set_header Host $host;
                proxy_set_header X-Real-IP $remote_addr;
#
        }
#
        location /decommendations {
#
#
                proxy_pass http://j10c205.p.ssafy.io:9005;
                 proxy_set_header Host $host;
#
#
                 proxy set header X-Real-IP $remote addr;
        }
#
        location /ai {
#
                 proxy_pass http://j10c205.p.ssafy.io:9006;
#
                 proxy_set_header Host $host;
#
#
                 proxy_set_header X-Real-IP $remote_addr;
#
         }
        # pass PHP scripts to FastCGI server
        #
        #location ~ \.php$ {
                include snippets/fastcgi-php.conf;
        #
        #
        #
                # With php-fpm (or other unix sockets):
                fastcgi_pass unix:/var/run/php/php7.4-fpm.soc
        #
        #
                # With php-cgi (or other tcp sockets):
        #
                fastcgi_pass 127.0.0.1:9000;
```

```
#}
        # deny access to .htaccess files, if Apache's documen
        # concurs with nginx's one
        #location ~ /\.ht {
                deny all;
        #}
#}
server {
        listen 9004 ssl;
        server_name j10c205.p.ssafy.io;
        ssl_certificate /etc/letsencrypt/live/j10c205.p.ssafy
        ssl_certificate_key /etc/letsencrypt/live/j10c205.p.s
        location / {
                proxy_pass http://localhost:9001;
        }
}
# Virtual Host configuration for example.com
# You can move that to a different file under sites-available.
# to sites-enabled/ to enable it.
#
#server {
        listen 80;
        listen [::]:80;
#
#
#
        server_name example.com;
#
#
        root /var/www/example.com;
        index index.html;
#
#
        location / {
#
```

```
#
                try_files $uri $uri/ =404;
#
        }
#}
server {
        # SSL configuration
        #
        # listen 443 ssl default_server;
        # listen [::]:443 ssl default_server;
        #
        # Note: You should disable gzip for SSL traffic.
        # See: https://bugs.debian.org/773332
        #
        # Read up on ssl_ciphers to ensure a secure configura
        # See: https://bugs.debian.org/765782
        #
        # Self signed certs generated by the ssl-cert package
        # Don't use them in a production server!
        # include snippets/snakeoil.conf;
        #root /var/www/html;
        # Add index.php to the list if you are using PHP
        #index index.html index.htm index.nginx-debian.html;
    server_name j10c205.p.ssafy.io; # managed by Certbot
        location / {
                proxy_pass http://localhost:9003;
                proxy_set_header Host $host;
                proxy_set_header X-Real-IP $remote_addr;
                proxy_http_version 1.1;
                proxy_set_header Upgrade $http_upgrade;
                proxy_set_header Connection "upgrade";
        }
```

```
location /api/v1 {
        proxy_pass http://localhost:9002;
        proxy_set_header Host $host;
        proxy_set_header X-Real-IP $remote_addr;
}
location /recommendations {
        proxy_pass http://localhost:9005;
        proxy_set_header Host $host;
        proxy_set_header X-Real-IP $remote_addr;
}
location /ai {
        proxy_pass http://localhost:9006;
        proxy_set_header Host $host;
        proxy_set_header X-Real-IP $remote_addr;
}
# pass PHP scripts to FastCGI server
#
#location ~ \.php$ {
        include snippets/fastcgi-php.conf;
#
#
        # With php-fpm (or other unix sockets):
        fastcgi_pass unix:/var/run/php/php7.4-fpm.soc
#
#
        # With php-cgi (or other tcp sockets):
#
        fastcgi_pass 127.0.0.1:9000;
#}
# deny access to .htaccess files, if Apache's documen
# concurs with nginx's one
#location ~ /\.ht {
        deny all;
#}
```

```
listen [::]:443 ssl ipv6only=on; # managed by Certbot
    listen 443 ssl; # managed by Certbot
    ssl_certificate /etc/letsencrypt/live/j10c205.p.ssafy.io/
    ssl_certificate_key /etc/letsencrypt/live/j10c205.p.ssafy
    include /etc/letsencrypt/options-ssl-nginx.conf; # manage
    ssl_dhparam /etc/letsencrypt/ssl-dhparams.pem; # managed
}
server {
    if ($host = j10c205.p.ssafy.io) {
        return 301 https://$host$request_uri;
    } # managed by Certbot
        listen 80 ;
        listen [::]:80 ;
    server_name j10c205.p.ssafy.io;
    return 404; # managed by Certbot
}
```

4. 외부 서비스 및 정보

• 카카오 소셜 로그인 정보

게인정보

항목이름	ID	상태	
닉네임	profile_nickname	● 필수 동의	설정
프로필 사진	profile_image	● 필수 동의	설정
카카오계정(이메일)	account_email	● 필수 동의 [수집]	설정

• 네이버 소셜 로그인 정보



5. DB dump 설명

테이블들은 JPA로 자동으로 DB와 매핑하여 Spring boot 서버 내에서 자동으로 생성되게 끔 설정하였습니다.

해당 db dump 데이터는 perfectfit\BackEnd\src\main\resources 폴더내에 저장되어 있습니다.

- data_member.sql (회원 데이터)
- data_artist,sql (가수 데이터)
- data_genre.sql (장르 데이터)
- data_my_list.sql (찜 목록 데이터)
- data_song_count.sql (노래당 불러진 횟수 데이터)
- data_song_history.sql (누가 어떤 노래를 불렀는 지에 대한 히스토리 데이터)
- data_song.sgl (노래 데이터)

• data_lyrics.sql(가사 데이터)