DOMAINMODEL.STREAM()

Gilles DI GUGLIELMO - Julien BAUDRY

https://github.com/jubaudry/model-map

SPEAKERS

@GDIGUGLI – GILLES DI GUGLIELMO

Java Developer since 1999

Software Architect at LesFurets.com

@JUBAUDRY – JULIEN BAUDRY

Java Developer since 2007

Software Architect at LesFurets.com

LESFURETS.COM

22 Developers
2 Devops
3 Architect

LESFURETS.COM

1 website, 6 aggregators

400k line of code, 30k unit tests

150 selenium tests

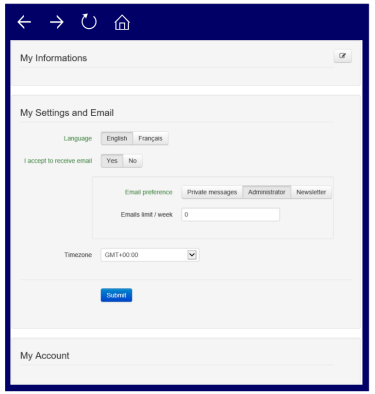
10+ servers

1 codebase

APPLICATIONS

CURRENT ARCHITECTURE

JavaScript Front App



Front WebApp

JSON RPC

Runtime DataBase

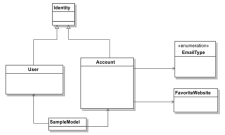
ORM or SQL

Batch ETL

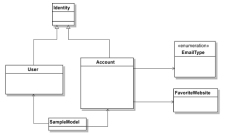
ORM or SQL

BackOffice DataBase

ORM or SQL

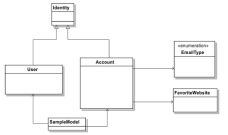


Domain Entities JSON



Domain Entities Java Beans

Domain Relational Entities

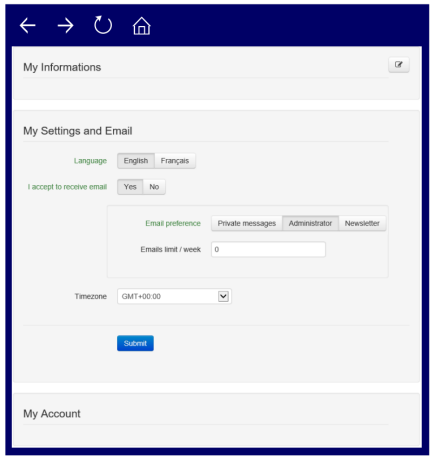


Analytics Entities Java Beans

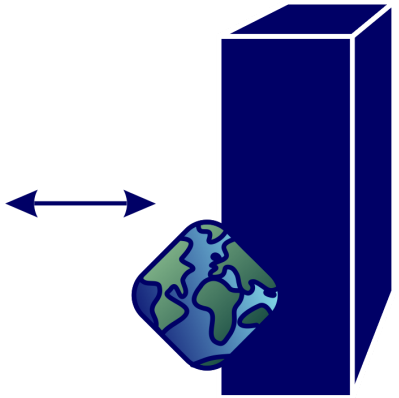
Analytics Relational Entities

TARGET ARCHITECTURE

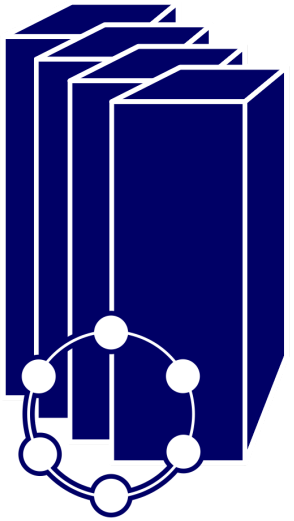
JavaScript
Front App



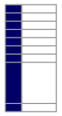
Front
WebApp



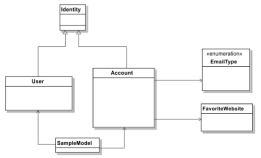
Cassandra
Cluster



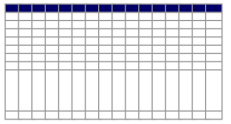
Data
Streaming
μ Batch



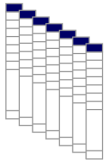
Key/Value
JSON
Dictionary



Domain Entities
Java Beans

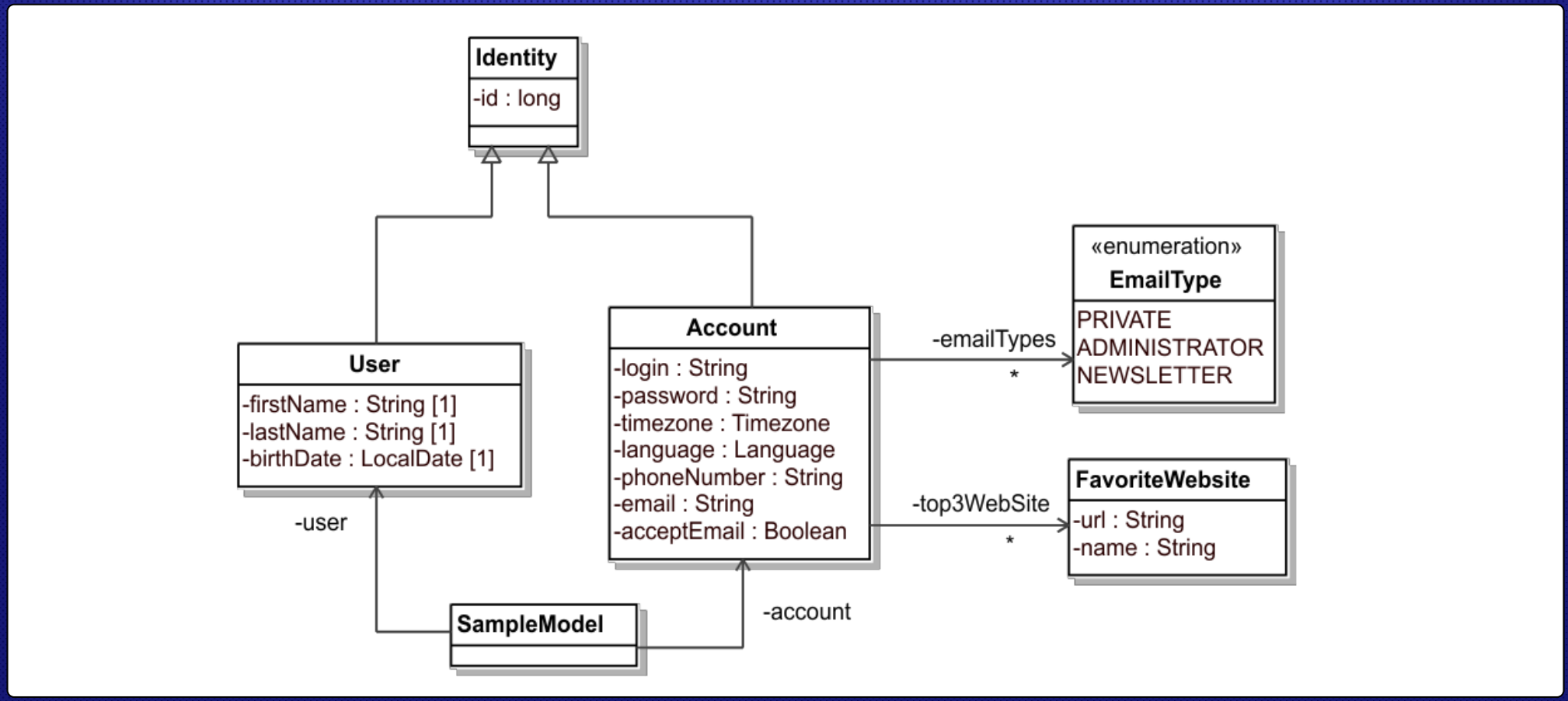


Wide Columns
Model



Analytics
Data Vector

DOMAIN MODEL MIGRATION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User
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-lastName : String [1]
-birthDate : LocalDate [1]
Account
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-password : String
-timezone : Timezone
-language : Language
-phoneNumber : String
-email : String
-acceptEmail : Boolean
«enumeration»
EmailType
PRIVATE
ADMINISTRATOR
NEWSLETTER
-emailTypes
*
FavoriteWebsite
-url : String
-name : String
-top3WebSite
*
SampleModel
-user
-account

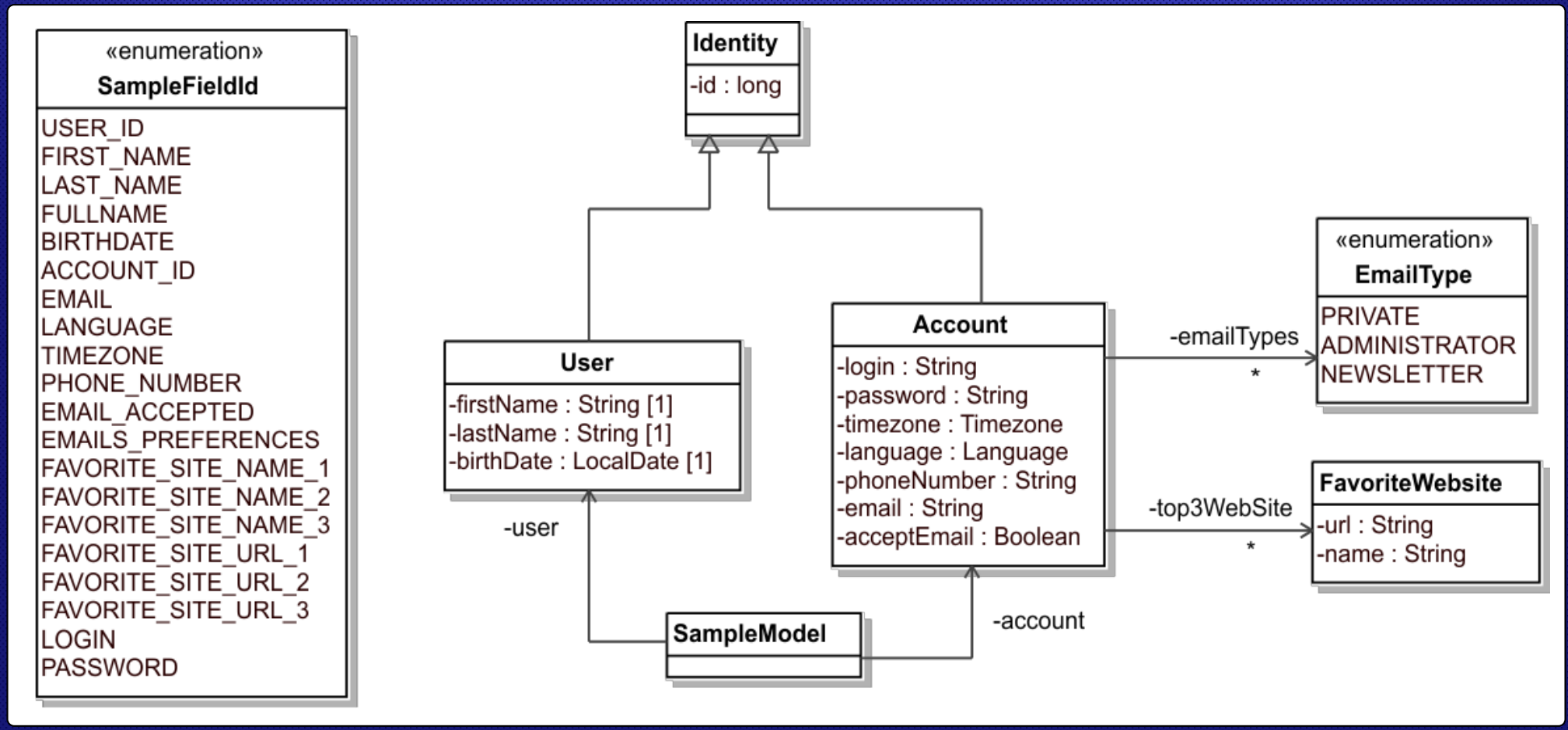
SOME COMMON ISSUES

Repetitive pattern : not very readable

Check for null reference, collection size : error-prone

```
public String readSomeStuff(SampleModel model) {
    if (model == null)
        return null;
    if (model.getAccount() == null)
        return null;
    if (model.getAccount().getTop3WebSite() == null)
        return null;
    if (model.getAccount().getTop3WebSite().size() < 3)
        return null;
    FavoriteWebsite website = model.getAccount().getTop3WebSite().get(2);
    return website != null ? website.getUrl() : null;
}
```

DOMAIN MODEL AS KEY-VALUE MODEL



STEP 1 : ONE FIELDID ENUMERATION

one literal for each class property/key
use tag to add meta-information (optionnal)

```java
package org.modelmap.sample.field;

import ...

public enum SampleFieldId implements FieldId {

    USER_ID(USER),
    ACCOUNT_ID(ACCOUNT),

    FIRST_NAME(USER),
    LAST_NAME(USER),
    FULLNAME(USER, READ_ONLY),
    BIRTHDATE(USER),

    EMAIL(ACCOUNT),
    LANGUAGE(ACCOUNT),
    TIMEZONE(ACCOUNT),
```

STEP 2 : ONE REPEATABLE ANNOTATION

one method to retrieve the FieldId
one method to retrieve the Contraint

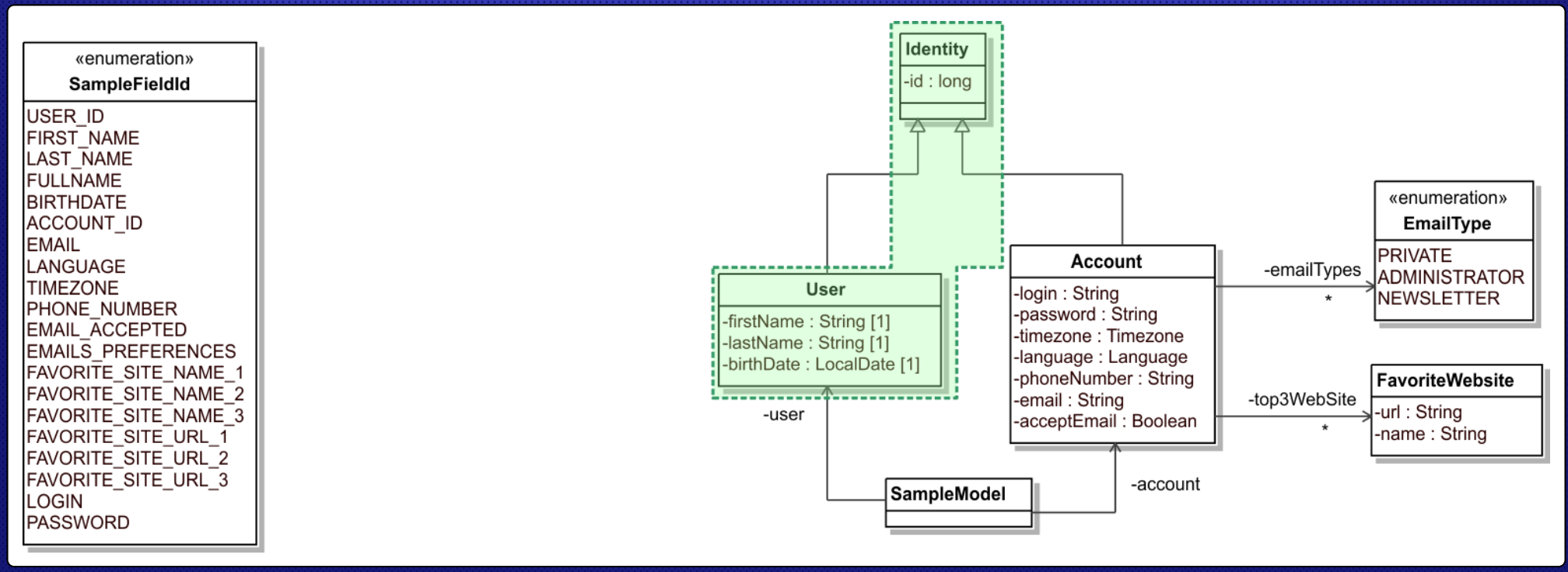
```java
@Path
@Repeatable(SamplePaths.class)
@Retention(RetentionPolicy.RUNTIME)
public @interface SamplePath {

    SampleFieldId field();

    SampleConstraint constraint() default NONE;
}
```

STEP 3 : ANNOTATE YOUR DOMAIN MODEL

attribute, getter or setter can be annotated
getter and setter must follow Java naming conventions

```java
@SamplePath(field = SampleFieldId.FIRST_NAME)
private String firstName;

@SamplePath(field = SampleFieldId.LAST_NAME)
private String lastName;

@SamplePath(field = SampleFieldId.BIRTHDATE)
private LocalDate birthDate;

public User() {
}

@SamplePath(field = SampleFieldId.FULLNAME)
public String getFullName() {
    return firstName != null && lastName != null ? firstName + " " + lastName : null;
}
```

USER MODEL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LAST_NAME
FULLNAME
BIRTHDATE
ACCOUNT_ID
EMAIL
LANGUAGE
TIMEZONE
PHONE_NUMBER
EMAIL_ACCEPTED
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FAVORITE_SITE_URL_2
FAVORITE_SITE_URL_3
LOGIN
PASSWORD
Identity
-id : long
User
-firstName : String [1]
-lastName : String [1]
-birthDate : LocalDate [1]
-user
Account
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-password : String
-timezone : Timezone
-language : Language
-phoneNumber : String
-email : String
-acceptEmail : Boolean
-emailTypes
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EmailType
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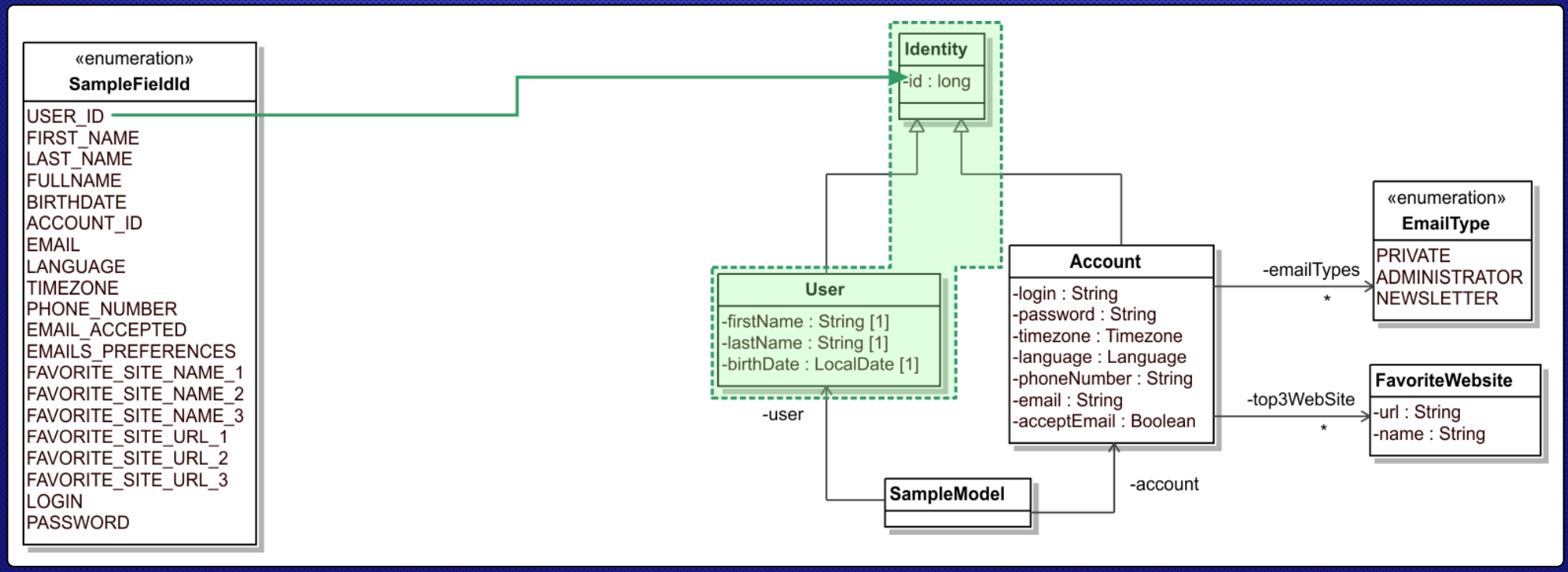
ADMINISTRATOR
NEWSLETTER
-top3WebSite
*
FavoriteWebsite
-url : String
-name : String
SampleModel
-account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FAVORITE_SITE_URL_2
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LOGIN
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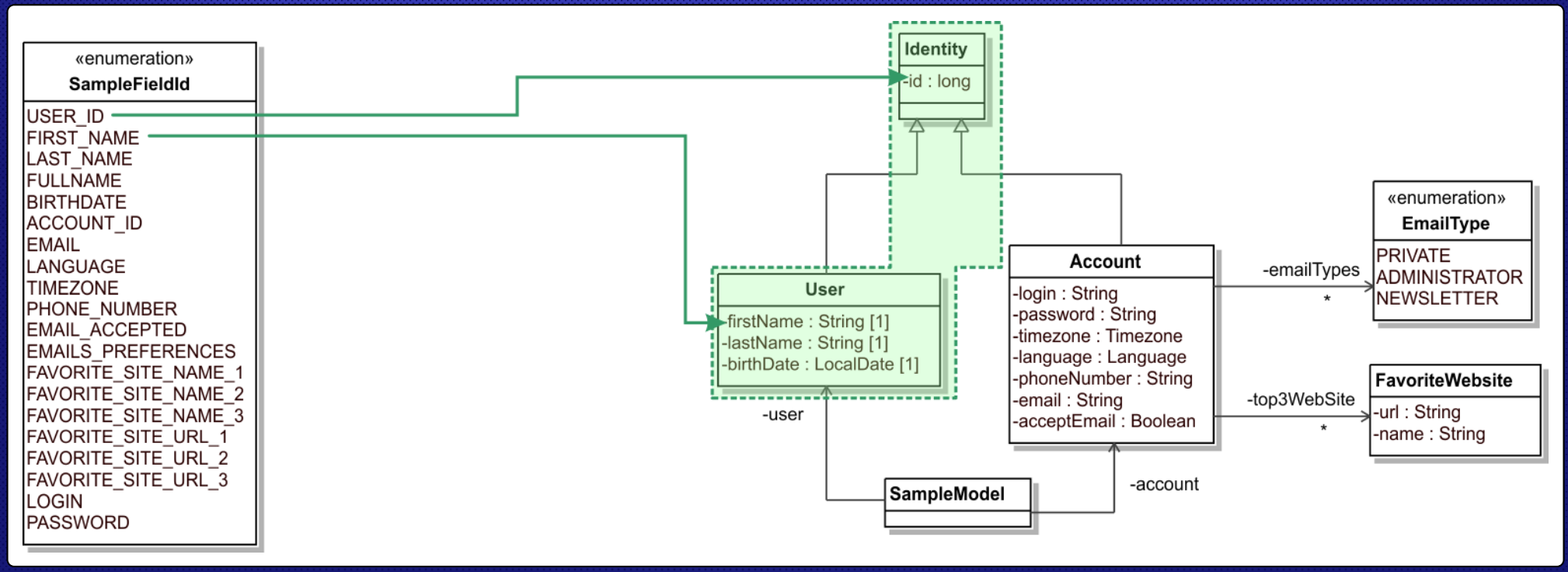
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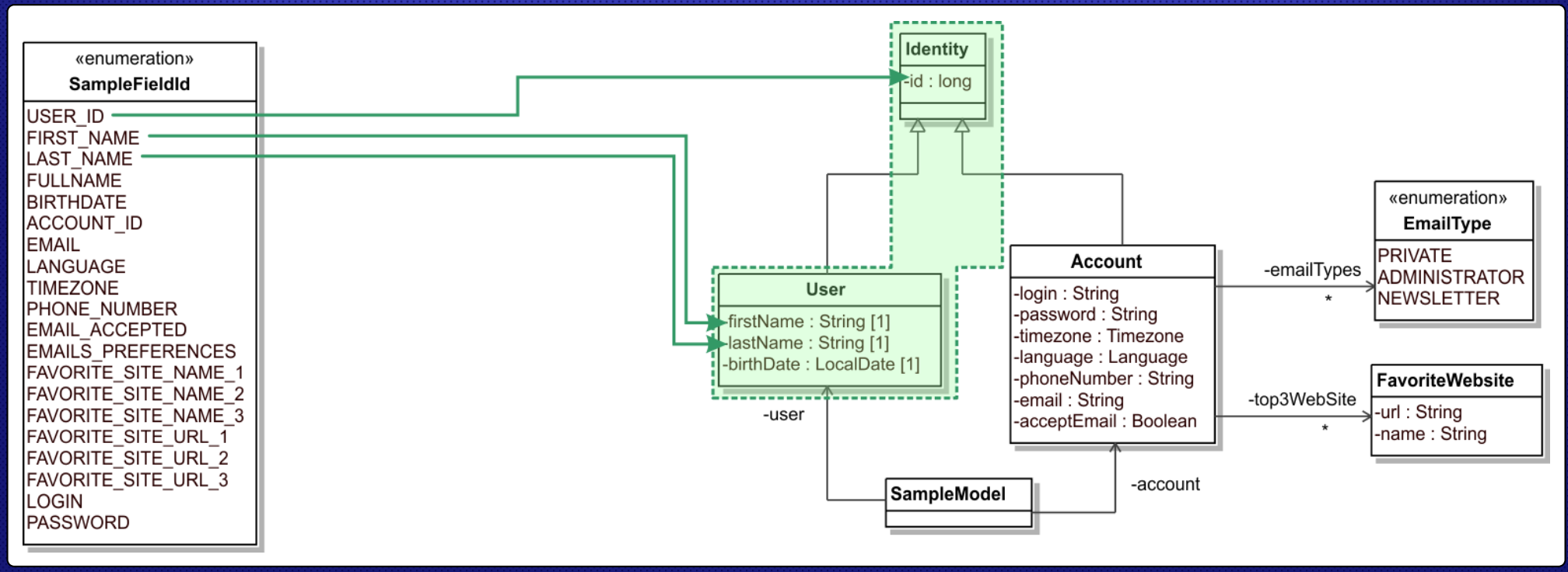
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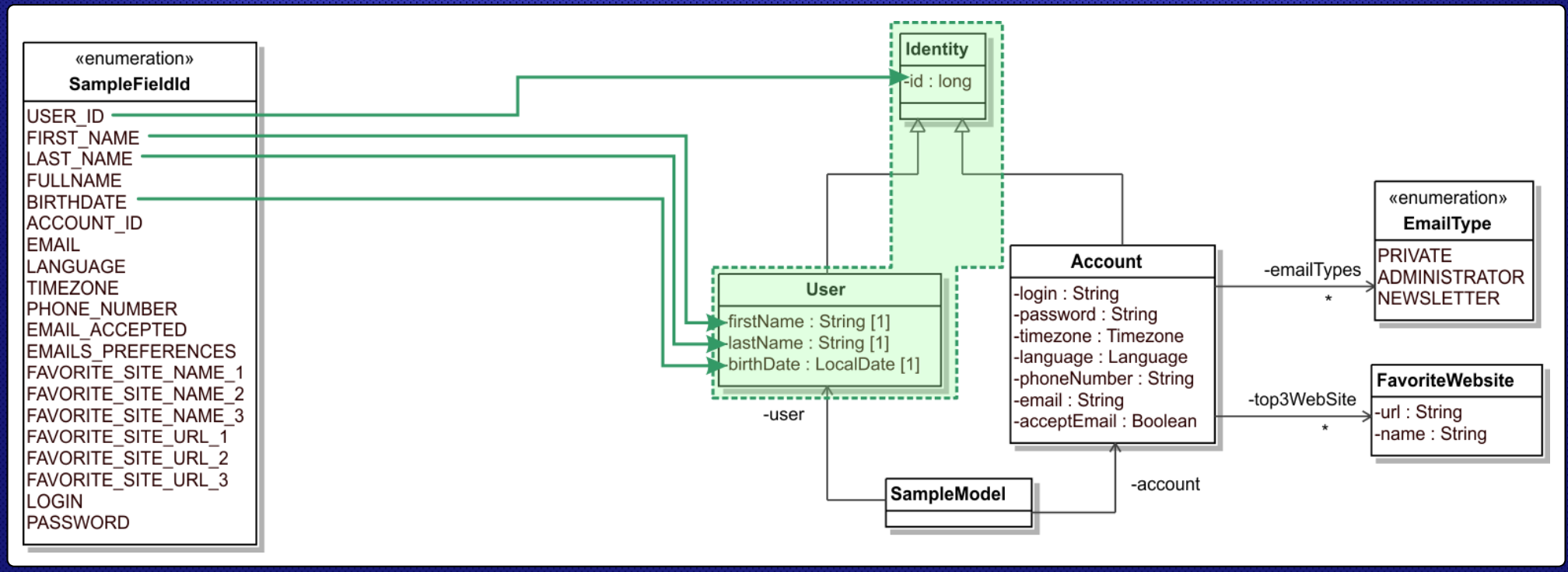
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EmailType
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FavoriteWebsite
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-name : String
SampleModel
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EXAMPLE

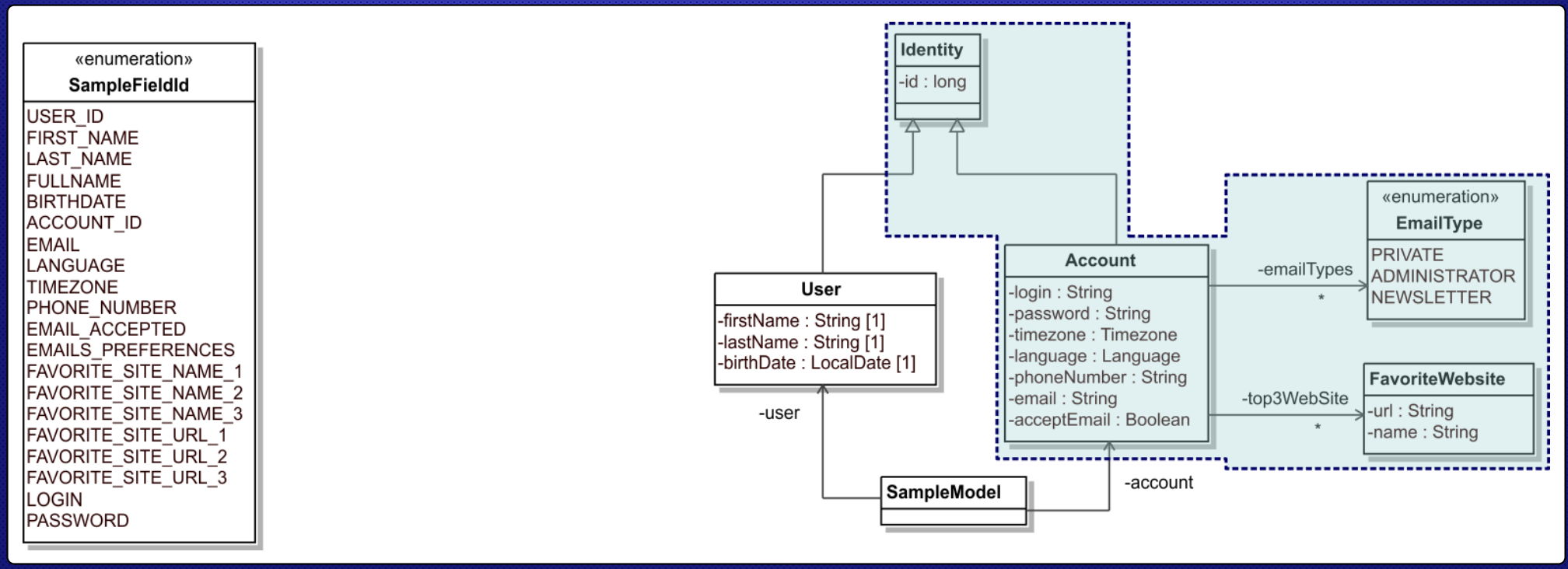
```java
public LocalDate readSomeStuff(SampleModel model) {
    if (model == null)
        return null;
    if (model.getUser() == null)
        return null;
    return model.getUser().getBirthDate();
}

public void updateSomeStuff(SampleModel model, LocalDate birthDate) {
    if (model == null)
        return;
    if (model.getUser() == null)
        return;
    model.getUser().setBirthDate(birthDate);
}
```

```java
public LocalDate readSomeStuff(FieldModel model) {
    return model.get(SampleFieldId.BIRTHDATE);
}

public void updateSomeStuff(FieldModel model, LocalDate birthDate) {
    model.set(SampleFieldId.BIRTHDATE, birthDate);
}
```

ACCOUNT MODEL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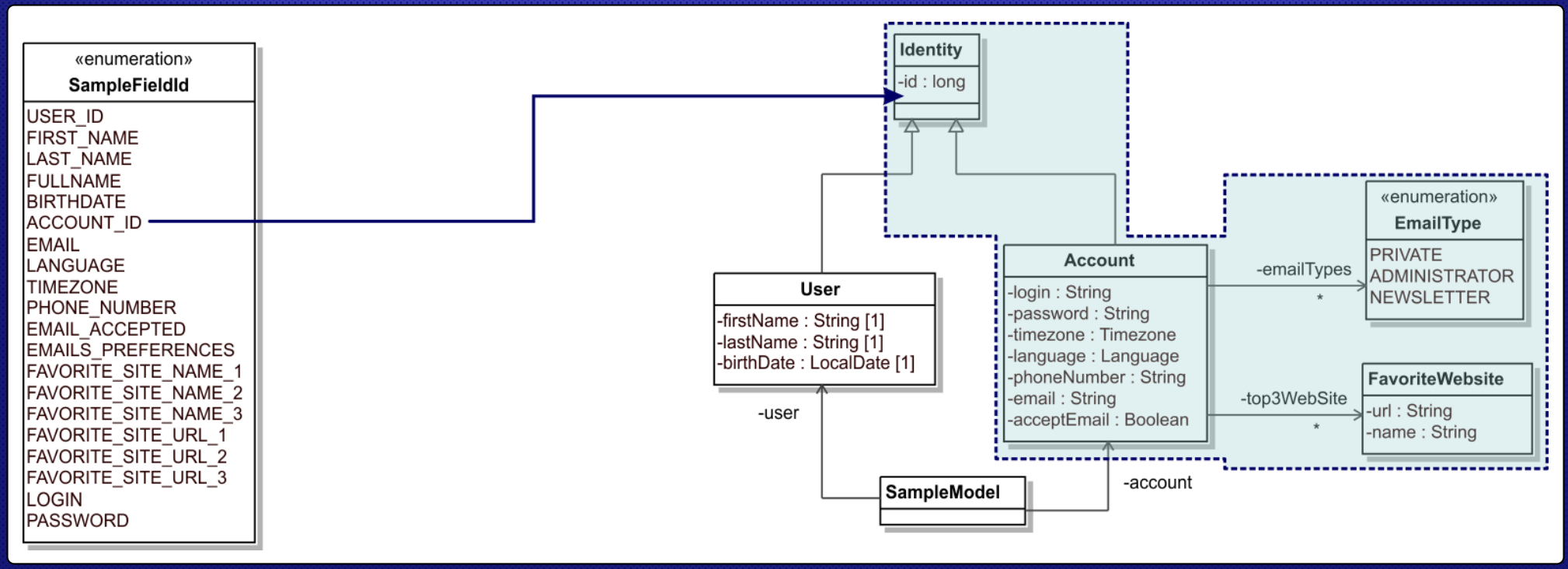
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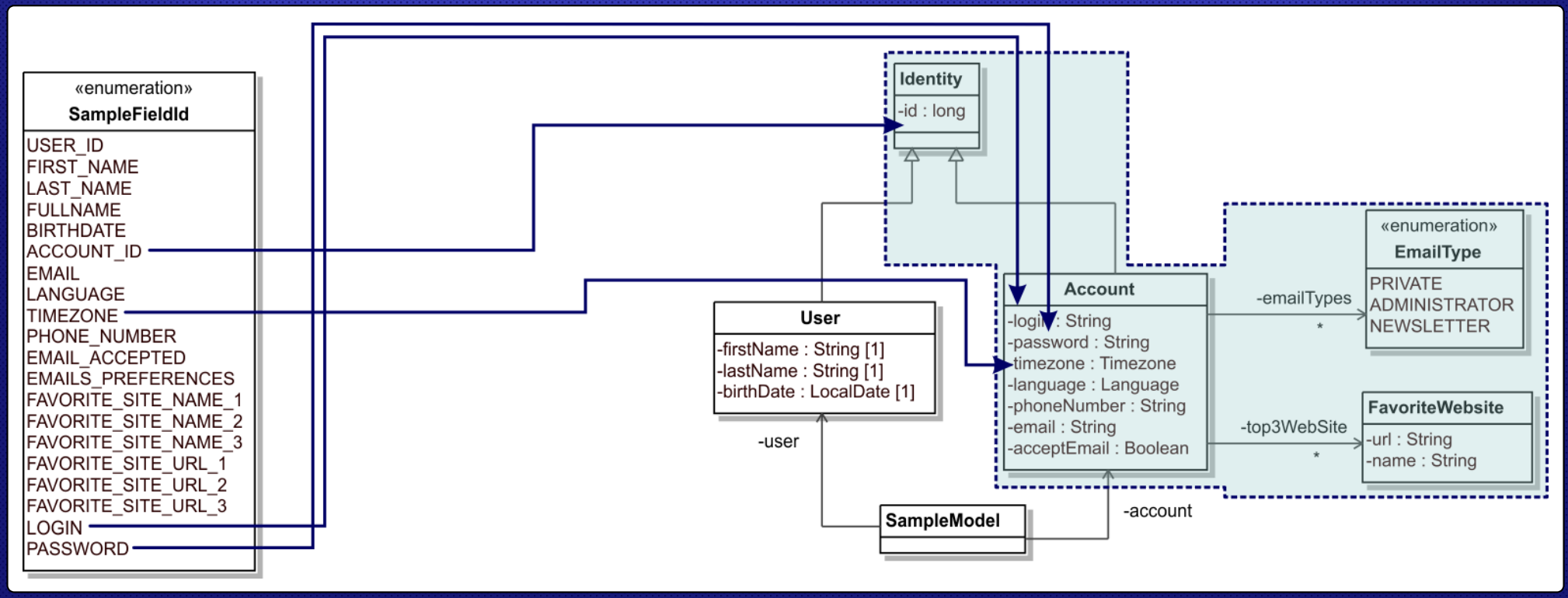
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LOGIN
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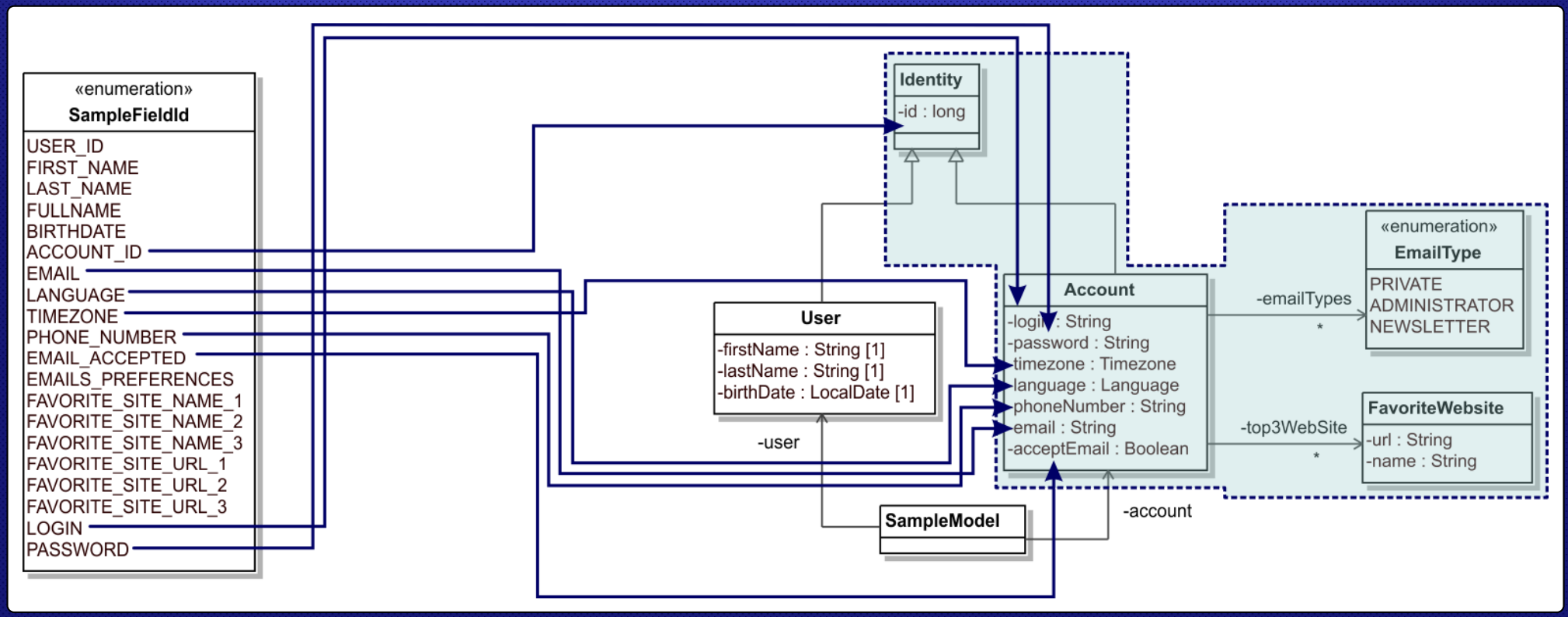
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FAVORITE_SITE_URL_3
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-birthDate : LocalDate [1]
-user
Account
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timezone : Timezone
language : Language
phoneNumber : String
email : String
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FavoriteWebsite
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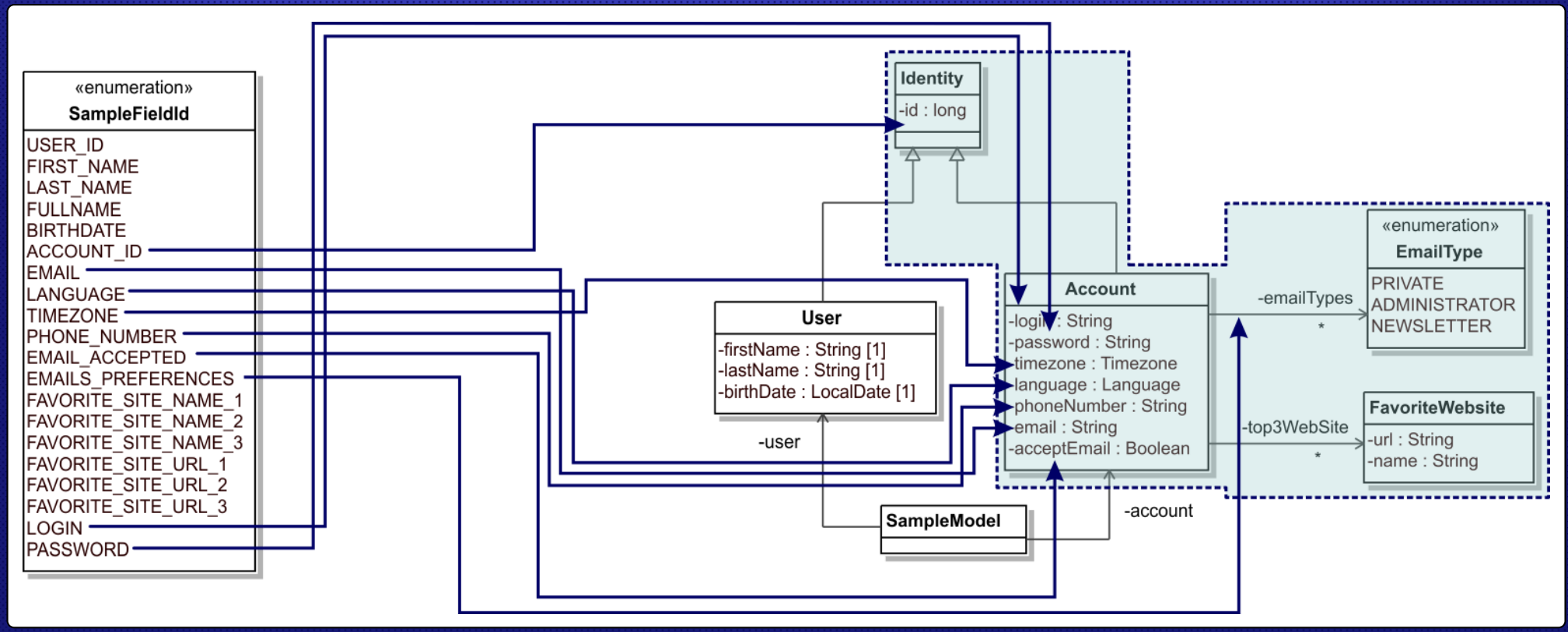
SampleModel
-account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TIMEZONE
PHONE_NUMBER
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LOGIN
PASSWORD
Identity
-id : long
User
-firstName : String [1]
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-user
Account
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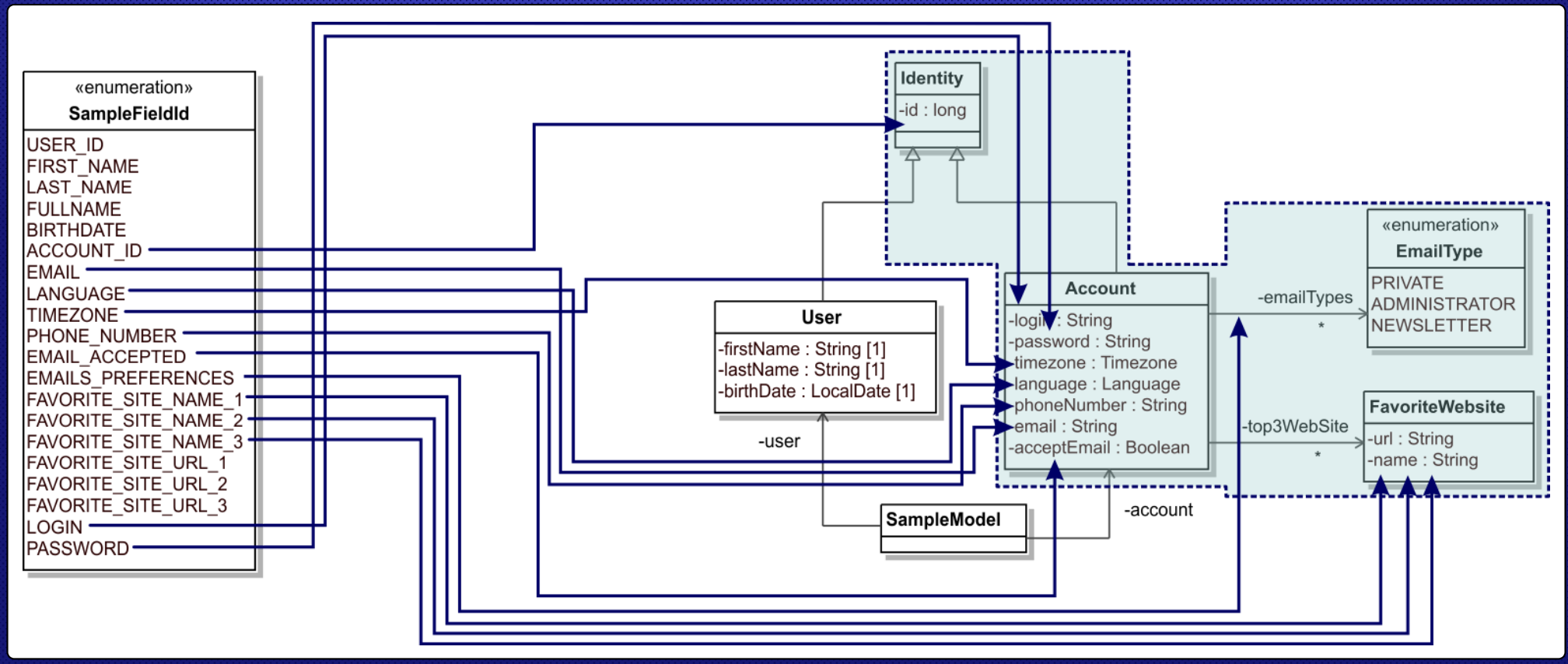
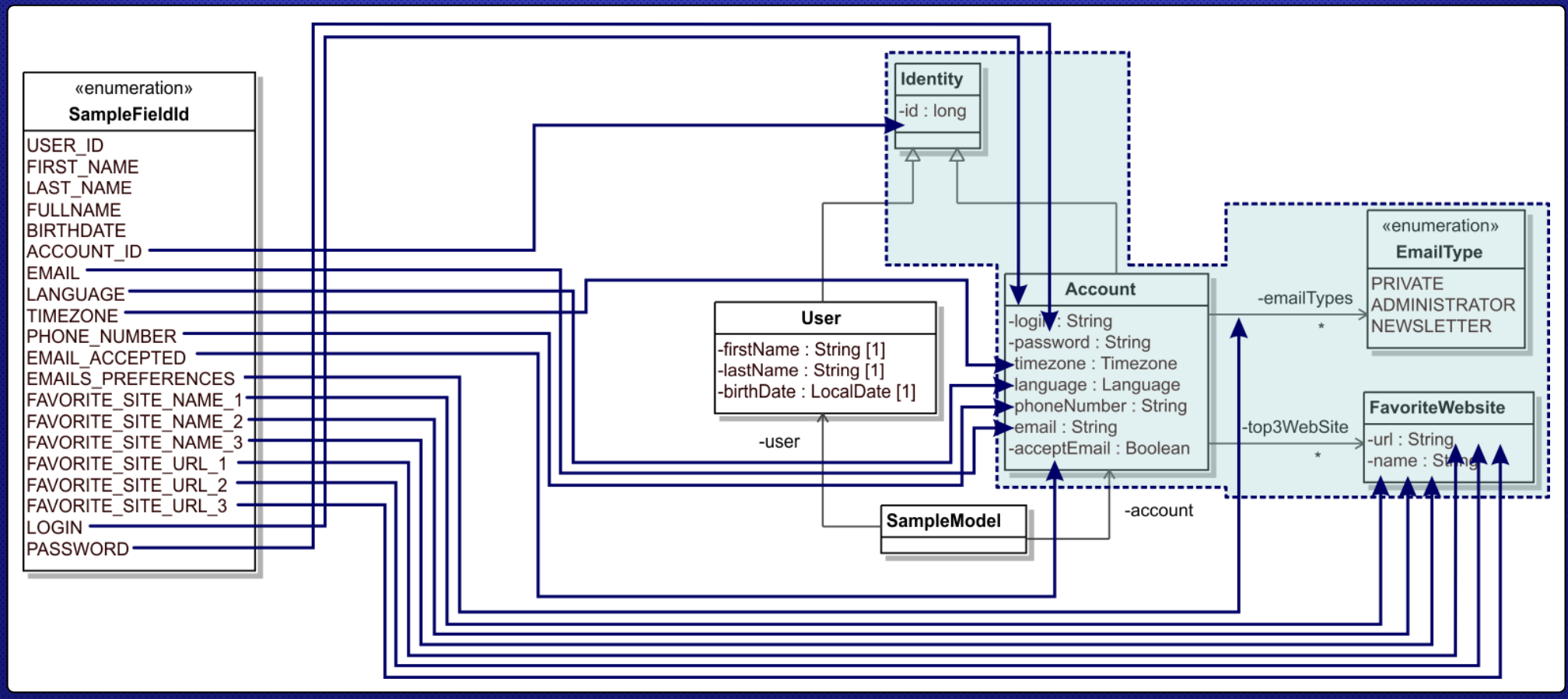
SampleModel
-account


«enumeration»
SampleFieldId
USER_ID
FIRST_NAME
LAST_NAME
FULLNAME
BIRTHDATE
ACCOUNT_ID
EMAIL
LANGUAGE
TIMEZONE
PHONE_NUMBER
EMAIL_ACCEPTED
EMAILS_PREFERENCES
FAVORITE_SITE_NAME_1
FAVORITE_SITE_NAME_2
FAVORITE_SITE_NAME_3
FAVORITE_SITE_URL_1
FAVORITE_SITE_URL_2
FAVORITE_SITE_URL_3
LOGIN
PASSWORD
Identity
-id : long
User
-firstName : String [1]
-lastName : String [1]
-birthDate : LocalDate [1]
-user
Account
-login : String
-password : String
-timezone : Timezone
-language : Language
-phoneNumber : String
-email : String
-acceptEmail : Boolean
-emailTypes
*
«enumeration»
EmailType
PRIVATE
ADMINISTRATOR
NEWSLETTER
-top3WebSite
*
FavoriteWebsite
-url : String
-name : String
SampleModel
-account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-emailTypes
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*
FavoriteWebsite
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SampleModel
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EXAMPLE

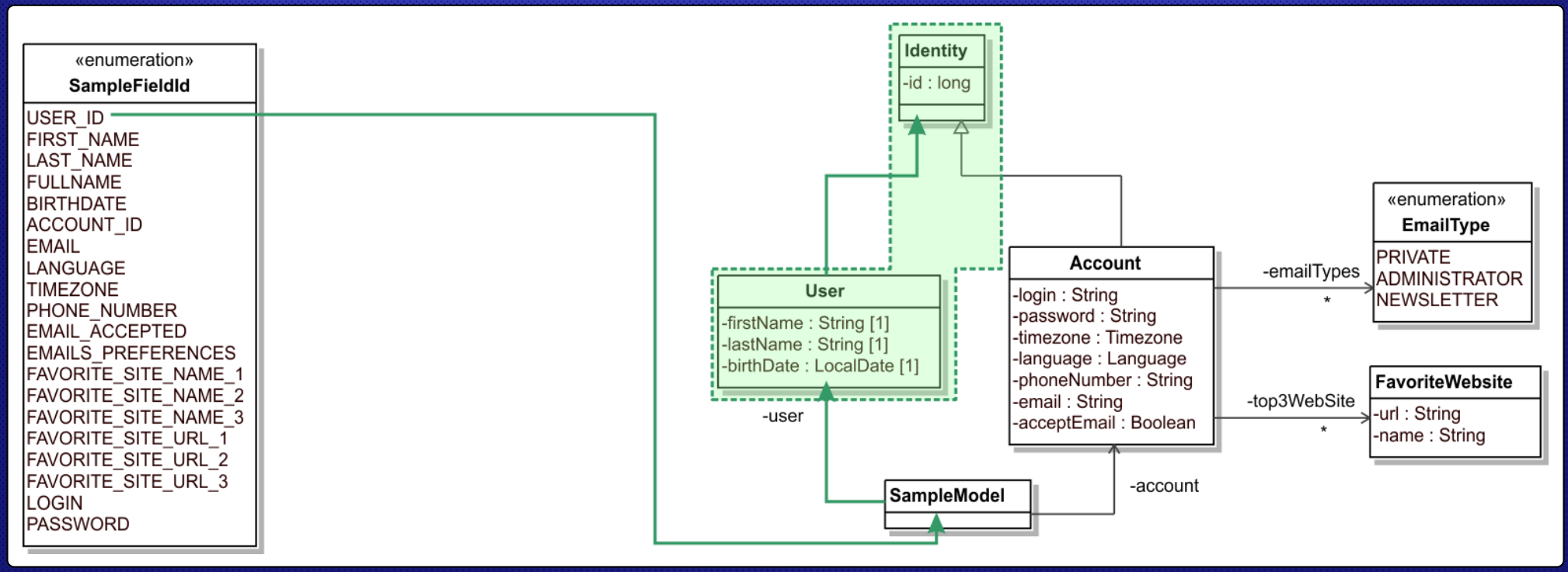
```java
public String readSomeStuff(SampleModel model) {
    if (model == null)
        return null;
    if (model.getAccount() == null)
        return null;
    if (model.getAccount().getTop3WebSite() == null)
        return null;
    if (model.getAccount().getTop3WebSite().size() < 3)
        return null;
    FavoriteWebsite website = model.getAccount().getTop3WebSite().get(2);
    return website != null ? website.getUrl() : null;
}
```

```java
public void updateSomeStuff(SampleModel model, String url) {
    if (model == null)
        return;
    if (model.getAccount() == null)
        return;
    if (model.getAccount().getTop3WebSite() == null)
        return;
    if (model.getAccount().getTop3WebSite().size() < 3)
        return;
    FavoriteWebsite website = model.getAccount().getTop3WebSite().get(2);
    if (website != null)
        website.setUrl(url);
}
```

```java
public String readSomeStuff(FieldModel model) {
    return model.get(SampleFieldId.FAVORITE_SITE_URL_2);
}

public void updateSomeStuff(FieldModel model, String url) {
    model.set(SampleFieldId.FAVORITE_SITE_URL_2, url);
}
```

ACCOUNT & USER ID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-emailTypes
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«enumeration»
EmailType
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ADMINISTRATOR
NEWSLETTER
-top3WebSite
*
FavoriteWebsite
-url : String
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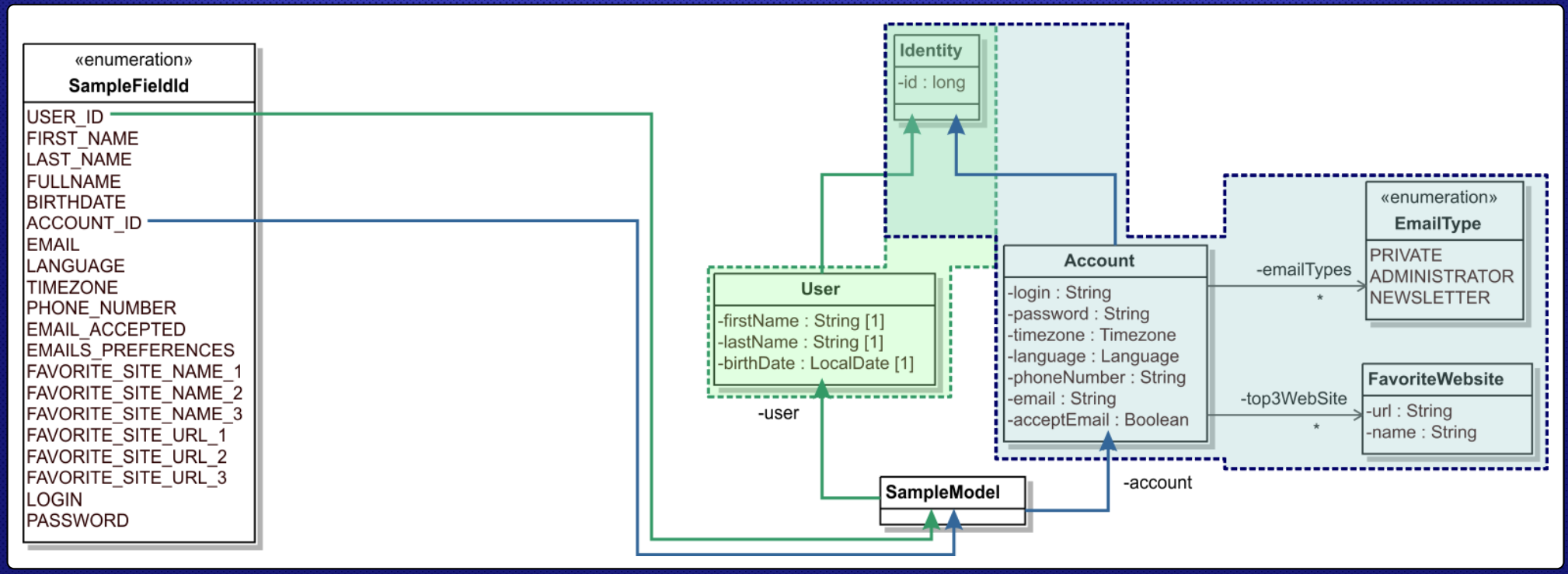
SampleModel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-password : String
-timezone : Timezone
-language : Language
-phoneNumber : String
-email : String
-acceptEmail : Boolean
-account
SampleModel
-emailTypes
*
«enumeration»
EmailType
PRIVATE
ADMINISTRATOR
NEWSLETTER
-top3WebSite
*
FavoriteWebsite
-url : String
-name : String

MANY FIELDID FOR A SINGLE PROPERTY

How to retrieve the value for a field?
getAccount().getId() or getUser().getId()?

```
public enum SampleFieldId implements FieldId {

    USER_ID(USER),
    ACCOUNT_ID(ACCOUNT),
```

CREATE 2 CONSTRAINT

One for each field, specify which getter to use

```
import org.modelmap.core.PathConstraint;

public enum SampleConstraint implements PathConstraint {
    NONE(""), //
    USER("getUser()"), //
    ACCOUNT("getAccount()"), //
    ;
```

ADD CONTRAINT FOR EACH ANNOTATION

```
import org.modelmap.sample.field.*;

public class Identity {

    @SamplePath(field = SampleFieldId.ACCOUNT_ID, constraint = SampleConstraint.ACCOUNT)
    @SamplePath(field = SampleFieldId.USER_ID, constraint = SampleConstraint.USER)
    private long id;

    public void setId(long id) { this.id = id; }

    public long getId() { return id; }
}
```

CODE GENERATION

EXECUTE THE CODE GENERATOR

Execution using a maven plugin

Annotated properties are processed using Java Reflection

Not implemented as a APT processor, due to some limitations

EXECUTE THE MAVEN PLUGIN

```
<plugin>
  <groupId>org.modelmap</groupId>
  <artifactId>modelmap-generator</artifactId>
  <version>${project.version}</version>
  <executions>
    <execution>
      <goals>
        <goal>generate</goal>
      </goals>
      <configuration>
        <packageFilter>org.modelmap</packageFilter>
        <sourceClasses>
          <sourceClass>org.modelmap.sample.model.SampleModel</sourceClass>
        </sourceClasses>
        <fieldClasses>
          <fieldClass>org.modelmap.sample.field.SampleFieldId</fieldClass>
        </fieldClasses>
      </configuration>
    </execution>
  </executions>
</plugin>
```

GENERATION OUTPUT (1/2)

TODO describe pattern generation of wrapper

GENERATION OUTPUT (2/2)

TODO describe pattern generation of field info

TODO usage for C* persistence

STREAM YOUR DOMAIN MODEL

DOMAIN MODEL AS STREAM

Domain can be manipulated as a stream of key/value pair

TODO : diff model

TODO : C* persistence

QUESTIONS / ANSWERS

MODEL-MAP AVAILABLE ON GITHUB

http://github.com/lesfurets/model-map

Framework and example

THANK YOU!