**Waterford Institute of Technology**

**Databases – ICTSkills Group**

*Continuous Assessment Project*

*April 2016*

**Designing and Developing**

*of*

**Oracle based Database**

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***Course title: ICT Skills Higher Diploma***



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# Introduction

This project is part of Continuous Assessment for Database module in ICTSkills Programme. The purpose of this work is to gain practical skills for designing and developing a database in Oracle and its SQL implementation.

The database is developed using the business scenario of a generic Translation Agency. The implementation process includes EER Diagram modelling, which defines and describes the entities and main business rules, table normalization and table mapping including all the constraints and related rules.

The tables are created and populated using Oracle’s SQL statements in Application Express. Included below are all the SQL commands used for creating and populating the database tables and also a short list of frequently used queries.

# Business scenario

The business is a Translation Agency which provides various translation services to public and corporate clients. The main services include:

1. Verbal or freelance translations – demanded mainly by corporate clients, such as Hospitals, HSE, Garda and Court Services, etc. The translation service is initially booked by the client. At this stage all details are discussed regarding date, time, location and languages required. If the required languages are available in its profile, the Translation Agency will generate an assignment for the corresponding interpreter. An invoice is also being generated, based on the duration of the session and rate.

1. Written translation – mostly provided to private and public clients and includes optional official authentication. The main indices here are the length of the translated documents and authentication levy.
2. Machine assisted or computer translations – this service is available through a Translation Software and is used for non-technical or low complexity texts. It is much faster but lacks accuracy. The service is being charged at a reduced rate base on amount of words translated.

The business activity is based on several rules, including:

Each client is assigned a unique ID number at time of booking, which is non-transferrable. The Translation Agency assigns the job to an interpreter, which masters the required languages and this assignment is non-transferrable also. All of the translation services include information about languages required, client ID, corresponding assignment details, generated invoice, and: optional – official authentication, location of the job, amount of words or pages.

The required language is being searched in the languages database and corresponding interpreter is being contracted. The interpreters are being selected based on the location of the prospective job also. For this purpose, the interpreters are required to provide their full name, address, contact number, and they may register for one language combination only. Each language combination has a source and target language and is being assigned a unique reference ID number.

Each interpreter has access to continuous training organized by the Agency. The completion of the training sessions is being tracked via the Enrolment tab. An interpreter may enrol for one or many sessions and this enrolment record is non-transferrable. And each training session is available to all members of the Translation Agency.

The Agency needs to keep track of the payments received from its clients and corresponding invoices.

# Enhanced Entity Relationship Model

This step includes identifying the business entities and representing their relationship, taking in account the main business rules.

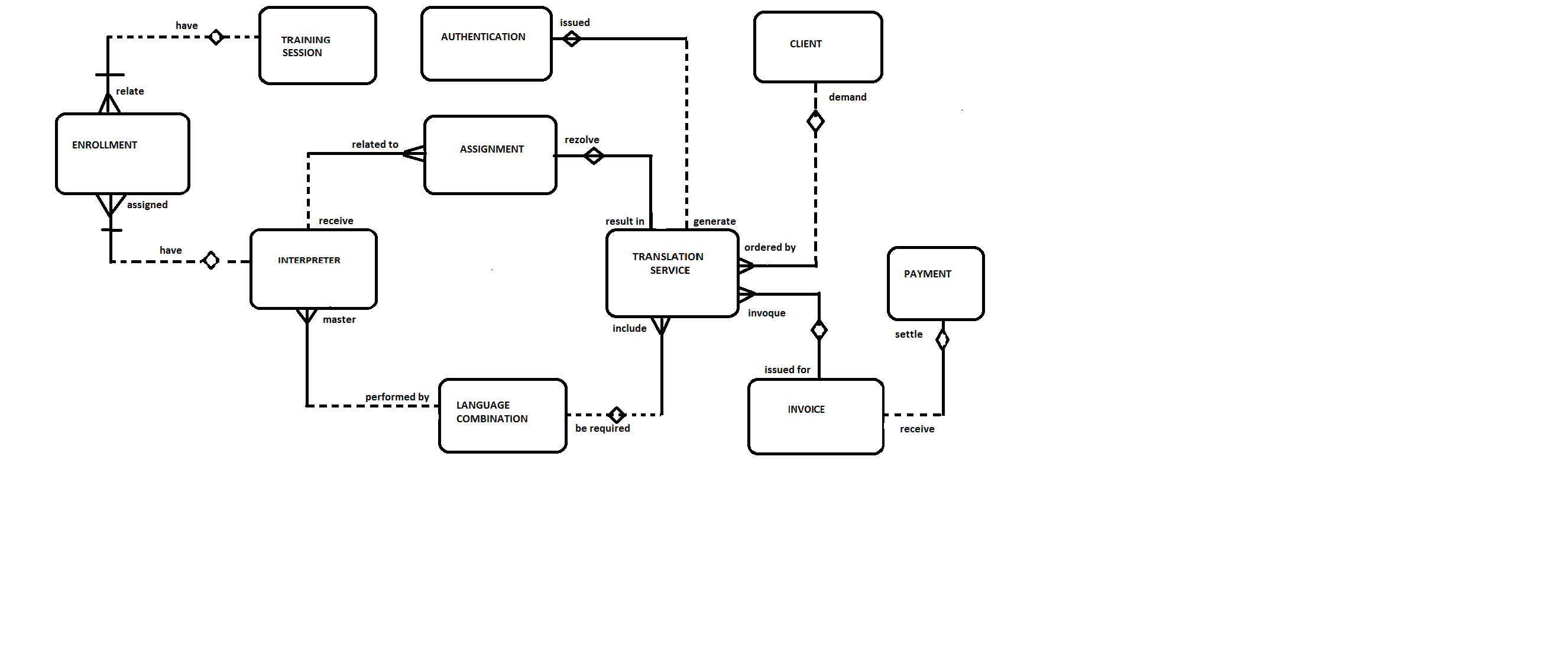
**The main entities are:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | **TRANSLATION SERVICE** | | | | # ID | | | | \* assignment id | |  | | \* interpreter id | | | | \* client id | | | | \* invoice number | | | |  | **\* Verbal translation** | | |  | \* duration | | |  | \* location | | |  | **\* Written translation** | | |  | \* number pages | | |  | o authentication | | |  | **\* machine translation** | | |  | \* number words | | |  |  | | | |  | | --- | | **INTERPRETER** | | #id | | \*first\_name | | \*second\_name | | \*address | | \*phone\_num | | \*lng\_combination | | \* assignment | |  | | |  | | --- | | **CLIENT** | | # ID | | \*first\_name | | \*second name | | \*address | | \*phone number | |  | |  | |  | |
| |  | | --- | | **ASSIGNMENT** | | #ID | | \*date | | \*interpreter id | | \*tran\_ service id | |  | |  | |  | | |  | | --- | | **ENROLLMENT** | | #interpreter id | | #training id | |  | |  | |  | |  | |  | | |  | | --- | | **LANGUAGE COMB** | | #ID | | \*name | | \*source language | | \*target language | |  | |  | |  | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | **TRAINING** | | # ID | | \* topic | | \* date | | \* location | |  | |  | |  | | |  | | --- | | **INVOICE** | | # number | | \*date | | \*amount | |  | |  | |  | |  | | |  | | --- | | **PAYMENT** | | # ID | | \* date | | \*amount | | \*invoice\_nr | |  | |  | |  | |
| |  | | --- | | **AUTHENTICATION** | | #ID | | \*date | | \*trans\_service id | |  | |  | |  | |  | |  |  |

**The relationship between the entities is represented in the**

**EER diagram below:**



# 

# Normalized Tables:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **INTERPRETERS (INTRP)** | | |  |  |  |  |
| **Collumn name** | | **key type** | **optionality** | **data type** | **Size** | **Constraints** |
| id | | Pk | # | NUMBER | 6 | PRIMARY KEY |
| first\_name | |  | \* | VARCHAR\_2 | 20 | not null |
| second\_name | |  | \* | VARCHAR\_2 | 20 | not null |
| address | |  | \* | VARCHAR\_2 | 60 | not null |
| phone\_num | |  | \* | NUMBER | 10 | not null |
| lang\_comb\_id | | Fk | \* | NUMBER | 6 | not null |
|  | |  |  |  |  |  |
|  | |  |  |  |  |  |
| **LANGUAGE COMBINATIONS(LANG\_COMB)** | | | | |  |  |
| **Collumn name** | | **key type** | **optionality** | **data type** | **Size** | **constraints** |
| ID | | Pk | # | NUMBER | 6 | primary key |
| source language | |  | \* | VARCHAR\_2 | 20 | NOT NULL |
| target language | |  | \* | VARCHAR\_2 | 20 | NOT NULL |
|  | |  |  |  |  |  |
|  | |  |  |  |  |  |
| **ASSIGNMENTS (ASSIGN)** | | |  |  |  |  |
| **Collumn name** | | **key type** | **optionality** | **data type** | **Size** | **Constraints** |
| ID | | Pk | # | NUMBER | 6 | PRIMARY KEY |
| intrp\_id | | Fk | \* | NUMBER | 6 | not null |
| assign-date | |  | \* | DATE | id | not null |
|  | |  |  |  |  |  |
|  | |  |  |  |  |  |
| **ENROLLMENTS(ENROLL)** | | |  |  |  |  |
| **Collumn name** | | **key type** | **optionality** | **data type** | **Size** | **Constraints** |
| intrp-id | | fk1 | \* | NUMBER | 6 | composite UID |
| train\_id | | fk2 | \* | NUMBER | 6 | composite UID |
|  | |  |  |  |  |  |
| **AUTHENTICATIONS (AUTHN)** | | |  |  |  |  |
| **collumn name** | **key type** | | **optionality** | **data type** | **Size** | **constraints** |
| id | Pk | | # | NUMBER | 6 | primary key |
| authn\_date |  | | \* | DATE |  | not null |
|  |  | |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PAYMENTS(PAYMT)** | |  |  |  |  |
| **collumn name** | **key type** | **optionality** | **data type** | **Size** | **Constraints** |
| id | Pk | # | NUMBER | 6 | PRIMARY KEY |
| paym\_date |  | \* | DATE |  | not null |
| amount |  | \* | NUMBER | (8,2) | not null |
| invoice\_nr | Fk | \* | NUMBER | 9 | not null |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **TRAINING SESSIONS(TRAIN)** | |  |  |  |  |
| **collumn name** | **key type** | **optionality** | **data type** | **Size** | **Constraints** |
| id | Pk | # | NUMBER | 6 | PRIMARY KEY |
| train\_date |  | \* | DATE |  | not null |
| topic |  | \* | VARCHAR\_2 | 60 | not null |
| location |  | \* | VARCHAR\_2 | 20 | not null |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **INVOICES** |  |  |  |  |  |
| **collumn type** | **key type** | **optionality** | **data type** | **Size** | **Constraints** |
| invoice\_nr | Pk | # | NUMBER | 9 | PRIMARY KEY |
| invoice\_date |  | \* | DATE |  | not null |
| amount |  | \* | NUMBER | (6,2) | not null |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **CLIENTS** |  |  |  |  |  |
| **collumn name** | **key type** | **optionality** | **data type** | **Size** | **Constraints** |
| id | Pk | # | NUMBER | 6 | PRIMARY KEY |
| frist\_name |  | \* | VARCHAR\_2 | 20 | not null |
| second\_name |  | \* | VARCHAR\_2 | 20 | not null |
| address |  | \* | VARCHAR\_2 | 60 | not null |
| phone\_num |  | \* | NUMBER | 10 | not null |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **TRANSLATION SERVICES (TRAN\_SERV)** | | |  |  |  |
| **collumn name** | **key type** | **optionality** | **data type** | **Size** | **Constraints** |
| id | Pk | # | NUMBER | 6 | primary key |
| assign\_id | fk1 | \* | NUMBER | 6 | not null |
| client\_id | fk2 | \* | NUMBER | 6 | not null |
| invoice\_nr | fk3 | \* | NUMBER | 6 | not null |
| authn\_id | fk4 | \* | NUMBER | 6 |  |
| duration |  | o | NUMBER | 3 |  |
| location |  | o | VARCHAR2 | 60 |  |
| num\_pages |  | o | NUMBER | 3 |  |
| num\_words |  | o | NUMBER | 4 |  |
| lang\_comb\_id | fk5 | \* | NUMBER | 6 | not null |

# Table mapping:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TRANSLATION SERVICES (TRAN\_SERV)** | | | | | | |  | |  | |  | |  | |
| **Field** | | | **Type** | | **Size** | | **Null/Not Null** | | **Constraints** | | **Index** | | **Description** | |
| id | | | NUMBER | | 6 | | NOT NULL | | primary key | | pk | | unique booking number | |
| assign\_id | | | NUMBER | | 6 | | NOT NULL | | FOREIGN KEY | | fk1 | | related specialization | |
| client\_id | | | NUMBER | | 6 | | NOT NULL | | FOREIGN KEY | | fk2 | | related client id | |
| invoice\_nr | | | NUMBER | | 6 | | NOT NULL | | FOREIGN KEY | | Fk3 | | unique invoice nr | |
| authn\_id | | | NUMBER | | 6 | |  | | FOREIGN KEY | | fk4 | | related authentication nr | |
| duration | | | NUMBER | | 3 | |  | |  | |  | | duration (minutes) | |
| location | | | VARCHAR2 | | 60 | |  | |  | |  | |  | |
| num\_pages | | | NUMBER | | 3 | |  | |  | |  | | written translation | |
| num\_words | | | NUMBER | | 4 | |  | |  | |  | | machine translation | |
| lang\_comb\_id | | | NUMBER | | 6 | | NOT NULL | | FOREIGN KEY | | fk | | languages required | |
|  | | |  | |  | |  | |  | |  | |  | |
| **CLIENTS** | | |  | |  | |  | |  | |  | |  | |
| **Field** | | | **Type** | | **Size** | | **Null/Not Null** | | **Constraints** | | **Index** | | **Description** | |
| id | | | NUMBER | | 6 | | NOT NULL | | PRIMARY KEY | | pk | | unique number | |
| frist\_name | | | VARCHAR\_2 | | 20 | | NOT NULL | | 20 | |  | |  | |
| second\_name | | | VARCHAR\_2 | | 20 | | NOT NULL | | 20 | |  | |  | |
| address | | | VARCHAR\_2 | | 60 | | NOT NULL | | 60 | |  | |  | |
| phone\_num | | | NUMBER | | 10 | | NOT NULL | | 10 | |  | |  | |
|  | | |  | |  | |  | |  | |  | |  | |
|  | | |  | |  | |  | |  | |  | |  | |
| **INVOICES** | | |  | |  | |  | |  | |  | |  | |
| **Field** | | | **Type** | | **Size** | | **Null/Not Null** | | **Constraints** | | **Index** | | **Description** | |
| nr | | | NUMBER | | 9 | | NOT NULL | | PRIMARY KEY | | pk | | Invoice number | |
| invoice\_date | | | DATE | |  | | NOT NULL | |  | |  | |  | |
| amount | | | NUMBER | | (6,2) | | NOT NULL | |  | |  | |  | |
|  | | |  | |  | |  | |  | |  | |  | |
| **TRAINING SESSIONS(TRAIN)** | | | |  | |  | |  | |  | |  | |
| **Field** | **Type** | | | **Size** | | **Null/Not Null** | | **Constraints** | | **Index** | | **Description** | |
| id | NUMBER | | | 6 | | NOT NULL | | PRIMARY KEY | | pk | | unique booking number | |
| train\_date | DATE | | |  | | NOT NULL | |  | |  | |  | |
| topic | VARCHAR\_2 | | | 60 | | NOT NULL | |  | |  | |  | |
| location | VARCHAR\_2 | | | 20 | | NOT NULL | |  | |  | |  | |
| **PAYMENTS(PAYMT)** | | | |  | |  | |  | |  | |  | |
| **Field** | | **Type** | | **Size** | | **Null/Not Null** | | **Constraints** | | **Index** | | **Description** | |
| id | | NUMBER | | 6 | | NOT NULL | | PRIMARY KEY | | pk | | unique number | |
| paym\_date | | DATE | |  | | NOT NULL | |  | |  | |  | |
| amount | | NUMBER | | (8,2) | | NOT NULL | | (8,2) | |  | |  | |
| invoice\_nr | | NUMBER | | 9 | | NOT NULL | | FOREIGN KEY | | fk | | corresponding invoice | |
|  | |  | |  | |  | |  | |  | |  | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **INTERPRETERS (INTRP)** | |  |  |  |  |  |
| **Field** | **Type** | **Size** | **Null/Not Null** | **Constraints** | **Index** | **Description** |
| id | NUMBER | 6 | NOT NULL | PRIMARY KEY | pk | unique number |
| first\_name | VARCHAR\_2 | 20 | NOT NULL |  |  |  |
| second\_name | VARCHAR\_2 | 20 | NOT NULL |  |  |  |
| address | VARCHAR\_2 | 60 | NOT NULL |  |  |  |
| phone\_num | NUMBER | 10 | NOT NULL |  |  |  |
| lang\_comb\_id | NUMBER | 6 | NOT NULL | FOREIGN KEY | fk | related lang\_comb\_id |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **LANGUAGE COMBINATIONS(LANG\_COMB)** | | |  |  |  |  |
| **Field** | **Type** | **Size** | **Null/Not Null** | **Constraints** | **Index** | **Description** |
| ID | NUMBER | 6 | NOT NULL | PRIMARY KEY | pk | unique number |
| source language | VARCHAR\_2 | 20 | NOT NULL |  |  |  |
| target language | VARCHAR\_2 | 20 | NOT NULL |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ASSIGNMENTS (ASSIGN)** | | |  |  |  |  |  |
| **Field** | | **Type** | **Size** | **Null/Not Null** | **Constraints** | **Index** | **Description** |
| ID | | NUMBER | 6 | NOT NULL | PRIMARY KEY | pk | Unique number |
| intrp\_id | | NUMBER | 6 | NOT NULL | FOREIGN KEY | fk1 |  |
| assign-date | | DATE | id | NOT NULL |  |  |  |
| **ENROLLMENTS(ENROLL)** | | |  |  |  |  |  |
| **Field** | **Type** | | **Size** | **Null/Not Null** | **Constraints** | **Index** | **Description** |
| intrp-id | NUMBER | | 6 | NOT NULL | FOREIGN KEY | fk | composite unique key |
| train\_id | NUMBER | | 6 | NOT NULL | FOREIGN KEY | fk | composite unique key |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **AUTHENTICATIONS (AUTHN)** | |  |  |  |  |  |
| **Field** | **Type** | **Size** | **Null/Not Null** | **Constraints** | **Index** | **Description** |
| id | NUMBER | 6 | NOT NULL | PRIMARY KEY | pk | unique number |
| authn\_date | DATE |  | NOT NULL |  |  |  |

# 

# SQL Implementation

(Application Express / Workspace: IE\_A176 / Username: IE\_A176\_SQL01\_S15)

**/\* Create table SQL statements \*/**

**/\* Creating Clients table \*/**

**CREATE TABLE clients (**

id NUMBER (6),

first\_name VARCHAR2 (20) NOT NULL,

second\_name VARCHAR2 (20) NOT NULL,

address VARCHAR2 (60) NOT NULL,

phone\_number NUMBER (10) NOT NULL,

company\_name VARCHAR2(40);

CONSTRAINT clients\_id\_pk PRIMARY KEY (id)

);

**/\* Creating Payments table \*/**

CREATE TABLE payments (

id NUMBER (6),

paym\_date DATE NOT NULL,

amount NUMBER (8,2) NOT NULL,

invoice\_nr NUMBER (9) NOT NULL,

CONSTRAINT payments\_id\_pk PRIMARY KEY (id),

CONSTRAINT payments\_invoice\_nr\_fk FOREIGN KEY (invoice\_nr)

REFERENCES invoices (nr) ON DELETE CASCADE

);

**/\* Creating Invoices table \*/**

**CREATE TABLE invoices (**

nr NUMBER (6),

invoice\_date DATE NOT NULL,

amount NUMBER (6,2) NOT NULL,

CONSTRAINT invoices\_nr\_pk PRIMARY KEY (nr)

);

**/\* Creating Training sessions table \*/**

CREATE TABLE training\_sessions (

id NUMBER (6),

train\_date DATE NOT NULL,

topic VARCHAR2 (60) NOT NULL,

location VARCHAR2 (20) NOT NULL,

CONSTRAINT train\_session\_id\_pk PRIMARY KEY (id)

);

**/\* Creating Authentications table \*/**

CREATE TABLE authentications (

id NUMBER (6),

authn\_date DATE NOT NULL,

tran\_serv\_id NUMBER (6) NOT NULL,

CONSTRAINT authn\_id\_pk PRIMARY (id),

CONSTRAINT authn\_tran\_serv\_id\_uk UNIQUE (tran\_serv\_id));

**/\* Create Language combinations table \*/**

CREATE TABLE language\_combinations (

id NUMBER (6),

source\_lang VARCHAR2 (20) NOT NULL,

target\_lang VARCHAR2 (20) NOT NULL,

CONSTRAINT lang\_comb\_id\_pk PRIMARY KEY (id)

);

**/\* Creating Interpreters table \*/**

CREATE TABLE interpreters (

id NUMBER (6),

first\_name VARCHAR2 (20) NOT NULL,

second\_name VARCHAR2 (20) NOT NULL,

address VARCHAR2 (60) NOT NULL,

phone\_number NUMBER (10) NOT NULL,

lang\_comb\_id NUMBER (6) NOT NULL,

CONSTRAINT intrp\_id\_pk PRIMARY KEY (id),

CONSTRAINT intrp\_lang\_comb\_id\_fk FOREIGN KEY (lang\_comb\_id)

REFERENCES language\_combinations (id) ON DELETE CASCADE

);

**/\* Creating Authentications table \*/**

CREATE TABLE authentications (

id NUMBER (6),

authn\_date DATE NOT NULL,

CONSTRAINT authn\_id\_pk PRIMARY KEY (id)

);

**/\* Creating Enrollments table \*/**

CREATE TABLE enrollments (

intrp\_id NUMBER (6) NOT NULL,

train\_id NUMBER (6) NOT NULL,

CONSTRAINT enrollments\_unique UNIQUE (intrp\_id, train\_id),

CONSTRAINT enroll\_intrp\_id\_fk FOREIGN KEY (intrp\_id)

REFERENCES interpreters (id),

CONSTRAINT enroll\_train\_id\_fk FOREIGN KEY (train\_id)

REFERENCES training\_sessions (id)

);

**/\* Creating Assignments table \*/**

CREATE TABLE assignments (

id NUMBER (6),

intrp\_id NUMBER (6), NOT NULL,

assign\_date DATE NOT NULL,

CONSTRAINT assign\_id\_pk PRIMARY KEY (id),

CONSTRAINT assign\_intrp\_id\_fk FOREIGN KEY (intrp\_id)

REFERENCES interpreters (id)

);

**/\* Creating Translation services table \*/**

CREATE TABLE translation\_services (

id NUMBER (6),

assign\_id NUMBER (6) NOT NULL,

client\_id NUMBER (6) NOT NULL,

invoice\_nr NUMBER (6) NOT NULL,

authn\_id NUMBER (6) UNIQUE,

duration NUMBER (3),

location VARCHAR2 (60),

num\_pages NUMBER (3),

num\_words NUMBER (4),

lang\_comb\_id NUMBER (6) NOT NULL,

CONSTRAINT tran\_serv\_id\_pk PRIMARY KEY (id),

CONSTRAINT tran\_serv\_assign\_id\_fk FOREIGN KEY (assign\_id)

REFERENCES assignments (id) ON DELETE CASCADE,

CONSTRAINT tran\_serv\_client\_id\_fk FOREIGN KEY (client\_id)

REFERENCES clients (id),

CONSTRAINT tran\_serv\_invoice\_nr\_fk FOREIGN KEY (invoice\_nr)

REFERENCES invoices (nr),

CONSTRAINT tran\_serv\_authn\_id\_fk FOREIGN KEY (authn\_id)

REFERENCES authentications (id),

CONSTRAINT tran\_serv\_lang\_comb\_id\_fk FOREIGN KEY (lang\_comb\_id)

REFERENCES language\_combinations (id)

);

***SQL commands for inserting data into tables:***

***/\* Inserting data into CLIENTS table \*/***

INSERT ALL

INTO clients (id, first\_name, second\_name, address, phone\_number, company\_name) VALUES (000412, 'Martin', 'Kamenski', 'Waterford', 051234556, null)

INTO clients (id, first\_name, second\_name, address, phone\_number, company\_name) VALUES (000512, 'Olga', 'Lapinskaya', 'Port Laoise', 0861213455, 'Lingua Nova Studio')

INTO clients (id, first\_name, second\_name, address, phone\_number, company\_name) VALUES (000712, 'Barry', 'Murphy', 'Kilkenny', 0562545689, null)

INTO clients (id, first\_name, second\_name, address, phone\_number, company\_name) VALUES (001013, 'Margaret', 'Deevy', 'Waterford', 051455889, 'Red Kettle')

INTO clients (id, first\_name, second\_name, address, phone\_number, company\_name) VALUES (050213, 'Maria', 'Bosco', 'Dublin', 0831548956, 'Citizenship Information')

INTO clients (id, first\_name, second\_name, address, phone\_number, company\_name) VALUES (050313, 'Ivan', 'Blagoj', 'Dublin', 016855478, 'RTV')

SELECT \* FROM dual;

***/\* Inserting data into INVOICES table \*/***

INSERT ALL

INTO invoices (nr, invoice\_date, amount) VALUES (000100213, '05/Feb/2012', 65.50)

INTO invoices (nr, invoice\_date, amount) VALUES (000101150, '07/March/2012', 120.00)

INTO invoices (nr, invoice\_date, amount) VALUES (000112500, '07/May/2012', 80.00)

INTO invoices (nr, invoice\_date, amount) VALUES (000010040, '12/Jan/2013', 220.00)

INTO invoices (nr, invoice\_date, amount) VALUES (000100202, '25/Apr/2013', 300.50)

INTO invoices (nr, invoice\_date, amount) VALUES (000110254, '14/Jul/2013', 275.00)

SELECT \* FROM dual;

***/\* Inserting data into TRAINING SESSIONS TABLE \*/***

INSERT ALL

INTO training\_sessions (id, train\_date, topic, location) VALUES (010, '04/Feb/2013', 'Video conference translation in courts', 'Conference Room 1')

INTO training\_sessions (id, train\_date, topic, location) VALUES (015, '14/Mar/2013', 'Computer Assisted Translation Tools', 'VET Learning Center')

INTO training\_sessions (id, train\_date, topic, location) VALUES (025, '24/Jun/2013', 'Scientific and Technical Translation', 'Conference Room 2')

INTO training\_sessions (id, train\_date, topic, location) VALUES (100, '12/Aug/2013', 'Medical Translation: precision and confidentiality', 'Public Library, Waterford')

INTO training\_sessions (id, train\_date, topic, location) VALUES (114, '20/Sep/2014', 'Proverbs and Translation', 'Conference Room 1')

INTO training\_sessions (id, train\_date, topic, location) VALUES (204, '09/May/2015', 'Culture and Translation', 'VET Learning Center')

SELECT \* FROM dual;

***/\* Inserting data into LANGUAGE\_COMBINATIONS \*/***

INSERT ALL

INTO language\_combinations (id, source\_lang, target\_lang) VALUES (0102, 'English', 'French')

INTO language\_combinations (id, source\_lang, target\_lang) VALUES (0103, 'English', 'Spanish')

INTO language\_combinations (id, source\_lang, target\_lang) VALUES (1101, 'Russian', 'English')

INTO language\_combinations (id, source\_lang, target\_lang) VALUES (0901, 'Polish', 'English')

INTO language\_combinations (id, source\_lang, target\_lang) VALUES (0301, 'Spanish', 'English')

INTO language\_combinations (id, source\_lang, target\_lang) VALUES (0104, 'English', 'German')

SELECT \* FROM dual;

***/\* Inserting data into INTERPRETERS table \*/***

INSERT ALL

INTO interpreters (id, first\_name, second\_name, address, phone\_number, lang\_comb\_id) VALUES (1001, 'Grigore', 'Oboroceanu', 'Waterford', 0862346855, 1101)

INTO interpreters (id, first\_name, second\_name, address, phone\_number, lang\_comb\_id) VALUES (1002, 'Mike', 'Blogg', 'Carlow', 0851244556, 0301)

INTO interpreters (id, first\_name, second\_name, address, phone\_number, lang\_comb\_id) VALUES (1003, 'Sam', 'Fritz', 'Kilkenny', 0872458963, 0104)

INTO interpreters (id, first\_name, second\_name, address, phone\_number, lang\_comb\_id) VALUES (1004, 'Martha', 'Cyganik', 'Waterford', 051458978, 0901)

INTO interpreters (id, first\_name, second\_name, address, phone\_number, lang\_comb\_id) VALUES (1005, 'Dominic', 'Blanc', 'Wexford', 0531542526, 0102)

INTO interpreters (id, first\_name, second\_name, address, phone\_number, lang\_comb\_id) VALUES (1006, 'Lisa', 'Murphy', 'Cork', 0214587889, 0103)

SELECT \* FROM dual;

**/\* Inserting data into ASSIGNMENTS table \*/**

INSERT ALL

INTO assignments (id, intrp\_id, assign\_date) VALUES (100313, 1003, '02/Feb/2012')

INTO assignments (id, intrp\_id, assign\_date) VALUES (100415, 1005, '05/Mar/2012')

INTO assignments (id, intrp\_id, assign\_date) VALUES (100780, 1002, '30/Mar/2012')

INTO assignments (id, intrp\_id, assign\_date) VALUES (101450, 1006, '05/Jan/2013')

INTO assignments (id, intrp\_id, assign\_date) VALUES (102457, 1004, '17/Apr/2013')

INTO assignments (id, intrp\_id, assign\_date) VALUES (103487, 1001, '10/Jul/2013')

SELECT \* FROM dual;

**/\* Inserting data into ENROLLMENTS table \*/**

INSERT ALL

INTO enrollments (intrp\_id, train\_id) VALUES (1006, 010)

INTO enrollments (intrp\_id, train\_id) VALUES (1005, 010)

INTO enrollments (intrp\_id, train\_id) VALUES (1001, 204)

INTO enrollments (intrp\_id, train\_id) VALUES (1001, 015)

INTO enrollments (intrp\_id, train\_id) VALUES (1004, 114)

INTO enrollments (intrp\_id, train\_id) VALUES (1003, 114)

SELECT \* FROM dual;

***/\* Inserting data into PAYMENTS table \*/***

INSERT ALL

INTO payments (id, paym\_date, amount, invoice\_nr) VALUES (00112, '07/Mar/2012', 65.5, 100213)

INTO payments (id, paym\_date, amount, invoice\_nr) VALUES (11012, '10/Apr/2012', 120, 101150)

INTO payments (id, paym\_date, amount, invoice\_nr) VALUES (20112, '04/Jun/2012', 80, 112500)

INTO payments (id, paym\_date, amount, invoice\_nr) VALUES (12013, '06/Feb/2013', 220, 10040)

INTO payments (id, paym\_date, amount, invoice\_nr) VALUES (17513, '10/May/2013', 300.5, 100202)

INTO payments (id, paym\_date, amount, invoice\_nr) VALUES (20513, '05/Aug/2013', 275, 110254)

SELECT \* FROM dual;

***/\* Inserting data into AUTHENTICATIONS table \*/***

INSERT ALL

INTO authentications (id, authn\_date) VALUES (100145, '02/Feb/2012')

INTO authentications (id, authn\_date) VALUES (100100, '05/Mar/2012')

INTO authentications (id, authn\_date) VALUES (101201, '17/Apr/2013')

SELECT \* FROM dual;

***/\* Inserting data into TRANSLATION SERVICES table \*/***

INSERT ALL

INTO translation\_services (id, assign\_id, client\_id, invoice\_nr, authn\_id, duration, location, num\_pages, num\_words, lang\_comb\_id)

VALUES (10548, 100313, 412, 112500, 100145, null, null, null, 400, 104)

INTO translation\_services (id, assign\_id, client\_id, invoice\_nr, authn\_id, duration, location, num\_pages, num\_words, lang\_comb\_id)

VALUES (10140, 100415, 512, 101150, 100100, null, null, 10, null, 102)

INTO translation\_services (id, assign\_id, client\_id, invoice\_nr, authn\_id, duration, location, num\_pages, num\_words, lang\_comb\_id)

VALUES (11201, 100780, 1013, 10040, null, null, null, 120, null, 301)

INTO translation\_services (id, assign\_id, client\_id, invoice\_nr, authn\_id, duration, location, num\_pages, num\_words, lang\_comb\_id)

VALUES (12450, 101450, 50213, 100202, null, null, null, null, 1200, 103)

INTO translation\_services (id, assign\_id, client\_id, invoice\_nr, authn\_id, duration, location, num\_pages, num\_words, lang\_comb\_id)

VALUES (20014, 102457, 50313, 110254, 101201, null, null, 15, null, 901)

INTO translation\_services (id, assign\_id, client\_id, invoice\_nr, authn\_id, duration, location, num\_pages, num\_words, lang\_comb\_id)

VALUES (10010, 103487, 412, 100213, null, 180, 'WR Hospital', null, null, 1101)

SELECT \* FROM dual;

**/\* adding 'availability' column to INTERPRETERS \*/**

ALTER TABLE interpreters

ADD available VARCHAR2(4) DEFAULT 'yes';

**/\* changing status to ‘NOT NULL’ \*/**

ALTER TABLE interpreters

MODIFY available NOT NULL;

# Conclusion

This database will allow the Agency gain easy and quick access to a full record of available interpreters and their contact details, location, etc. Each interpreter is stored on the system based on a language combination they master. The pool of languages is constantly updated with each new interpreter contracted.

The assignment system allows storing details of interpreters attending a specific job and avoids double booking the interpreters.

The agency can store details of the payments received from clients which allows tracking any outstanding invoices.

By implementing this system the Agency will enhance their efficiency and service speed, which is vital in contemporary environment.