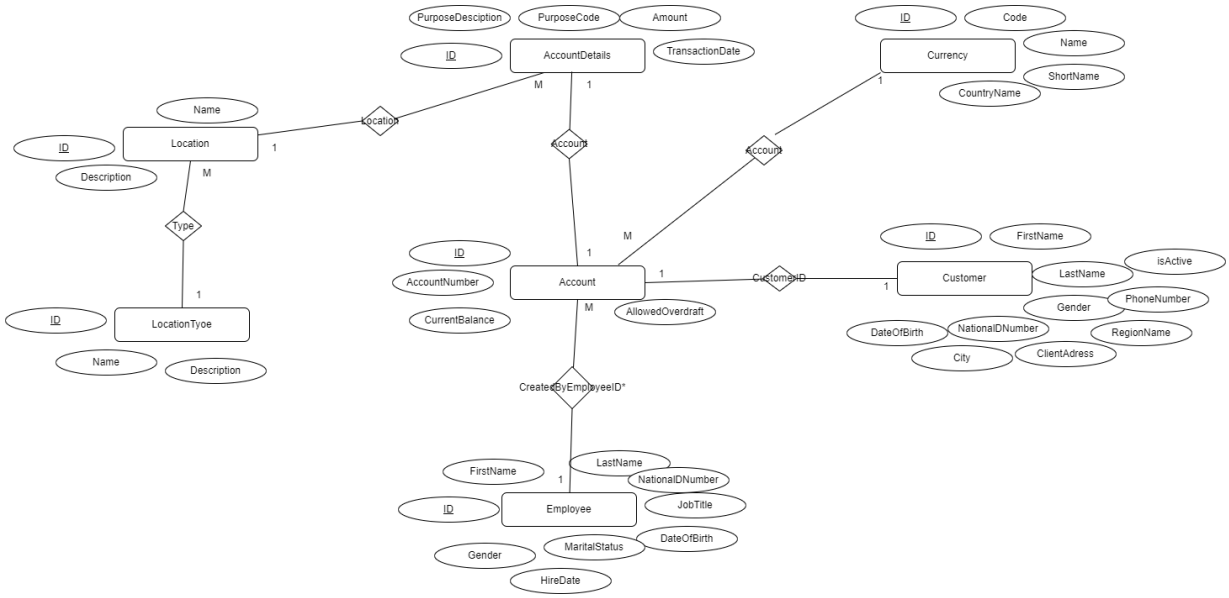
Databases Homework 6 – Triggers and Indexing

Part 0 – Database creation

1. The SQL query is creating the tables which hold the data which also includes what type of data is stored, how it is stored and what else is linked with it, it than inserts data in those tables so that we can manipulate with them

2. 

3.

```sql
-- extend the database with a new table about currency
--conversions. You need to create a new table that has the conversion rates for a particular date between
--any currency that is in the database and the Macedonian Denar (MKD). Using this table, you could
--convert the AccountDetails values from any currency to MKD currency on that date.

CREATE TABLE CurrencyConversion
(
    CurrencyConversionId INT PRIMARY KEY IDENTITY(1,1),
    CurrencyFrom VARCHAR(3) NOT NULL,
    CurrencyTo VARCHAR(3) NOT NULL,
    ConversionRate DECIMAL(18,2) NOT NULL,
```

```
    ConversionDate DATE NOT NULL
)

--Next, populate the newly created table CurrencyRates with some data for one particular date, and then
--using a "cross apply" operator and the date range found in AccountDetails, insert additional data so we
--have a conversion rate for any date.

INSERT INTO CurrencyConversion (CurrencyFrom, CurrencyTo, ConversionRate, ConversionDate)
VALUES ('EUR', 'MKD', 61.5, '2019-01-01')

INSERT INTO CurrencyConversion (CurrencyFrom, CurrencyTo, ConversionRate, ConversionDate)
VALUES ('USD', 'MKD', 54.5, '2019-01-01')

INSERT INTO CurrencyConversion (CurrencyFrom, CurrencyTo, ConversionRate, ConversionDate)
VALUES ('EUR', 'MKD', 61.7, '2019-01-02')

INSERT INTO CurrencyConversion (CurrencyFrom, CurrencyTo, ConversionRate, ConversionDate)
VALUES ('USD', 'MKD', 54.7, '2019-01-02')

INSERT INTO CurrencyConversion (CurrencyFrom, CurrencyTo, ConversionRate, ConversionDate)
VALUES ('EUR', 'MKD', 61.9, '2019-01-03')

INSERT INTO CurrencyConversion (CurrencyFrom, CurrencyTo, ConversionRate, ConversionDate)
VALUES ('USD', 'MKD', 54.9, '2019-01-03')
```

4 **COUNT(*) FOR CREATED TABLES =**

Account	600
AccountDetails	2742
Currency	6
Customer	300
Employee	100
Location	74
LocationType	5

5.

Results Messages

	CurrencyConversionId	CurrencyFrom	CurrencyTo	ConversionRate	ConversionDate
1	1	EUR	MKD	61.50	2019-01-01
2	2	USD	MKD	54.50	2019-01-01
3	3	EUR	MKD	61.70	2019-01-02
4	4	USD	MKD	54.70	2019-01-02
5	5	EUR	MKD	61.90	2019-01-03
6	6	USD	MKD	54.90	2019-01-03

Part 2 – Creating triggers

6.

```
ALTER TABLE Customer ADD CurrentBalanceMKD DECIMAL(10,2) DEFAULT 0;

-TRIGGER

CREATE TRIGGER updateCurrentBalanceMKD
ON AccountDetails
AFTER INSERT, UPDATE, DELETE
AS
BEGIN
    UPDATE Customer
    SET CurrentBalanceMKD = (SELECT SUM(AD.Amount * C.Id)
                             FROM AccountDetails AD
                             JOIN Account A ON AD.AccountID = A.AccountNumber
                             JOIN Currency C ON A.CurrencyID = C.Code
```

```
                            WHERE AD.AccountId = Customer.Id)
END
```

Part 3 – Indexing and optimization

```
WITH DimeCustomers AS (
  SELECT
    CustomerId,
    FirstName
  FROM
    Customer
  WHERE
    FirstName = 'Dime'
)

SELECT
  ad.*
FROM
  AccountDetails ad
JOIN
  DimeCustomers dc ON ad.CustomerId = dc.CustomerId
WHERE
  ad.CustomerId = (
    SELECT
      TOP 1 CustomerId
    FROM
      DimeCustomers
    ORDER BY
      CustomerId ASC
  )
  AND ad.CurrencyCode IN ('807', 'Denar', 'MKD');
```