Creation of the database based on IDEF1X model

Goal: Create database based on IDEF1X model.

Steps:

1. Open the model created as the result of the previous work, saved in the “delivery.erwin” file.

2. Select physical model. Now instead of “entity” we will use the “table” definition, as well as instead “attribute” we will used “field”.

3. Change table field parameters according to tables 1 – 5 given below

As the example we will consider parameters change of the field “price_per_item” in the table “Supplied_products”:

1) Right click on “Supplied_products” table and select “Columns…”;

2) Select “price_per_item” field and select data type “Currency” on the “Access” tab (figure 1);

3) Click “Ok”.

Change data type of the field “price” of the table “Market_prices” into “Currency” in the same way.

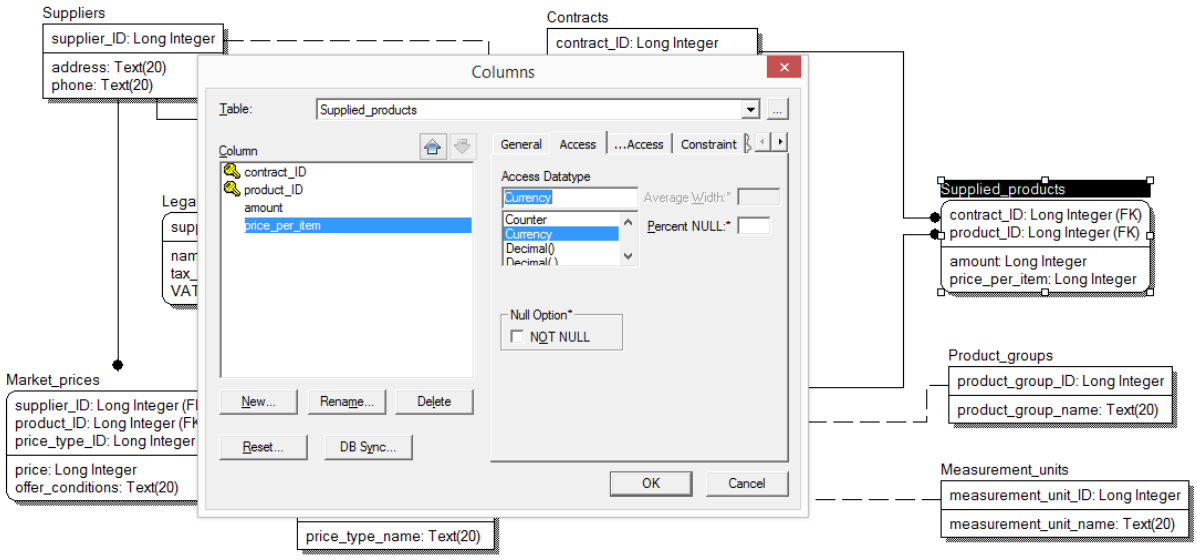

Figure 1

4. Create working directory (e.g., D:\ACCLAB).

5. Run DBMS Access.

6. Create new database with the name “delivery.mdb” (figure 2).

7. If the database was created earlier – open it.

8. Create database tables according to the structure outlined in tables below. To create each table:

1) Click “Create”;

2) Select “Table” and enable design view;

1. “Suppliers” table

Each table entry contains following fields:

Field name	Data type	Field size	Description
SupplierName	Text	50	Supplier name
SupplierID	Number	Integer	Supplier ID
Note	Memo		Note

2. “LegalEntities” table

Each table entry contains following fields:

Field name	Data type	Field size	Description
SupplierID	Number	Integer	Supplier ID
TaxNumber	Text	20	Tax number
VATNumber	Text	20	VAT certificate number

3. “IndividualEntrepreneurs” table

Each table entry contains following fields:

Field name	Data type	Field size	Description
SupplierID	Number	Integer	Supplier ID
LastName	Text	20	Last name
FirstName	Text	20	First name
SecondName	Text	20	Second name
RegistrationNumber	Text	20	Registration certificate number

4. “Contracts” table

Each table entry contains following fields:

Field name	Data type	Field size	Description
ContractNumber	Number	Integer	Contract number
ContractDate	Date/Time	Short Date	Contract conclusion date
SupplierID	Number	Integer	Supplier ID
ContractName	Text	50	Contract name
Comment	Memo		Note

5. “Supplied” table

Each table entry contains following fields:

Field name	Data type	Field size	Description
ContractNumber	Number	Integer	Contract number
Product	Text	50	Product name
Amount	Number	Long Integer	Batch size (items)
PricePerItem	Number	Single with 2 decimal places	Price per item (in UAH)

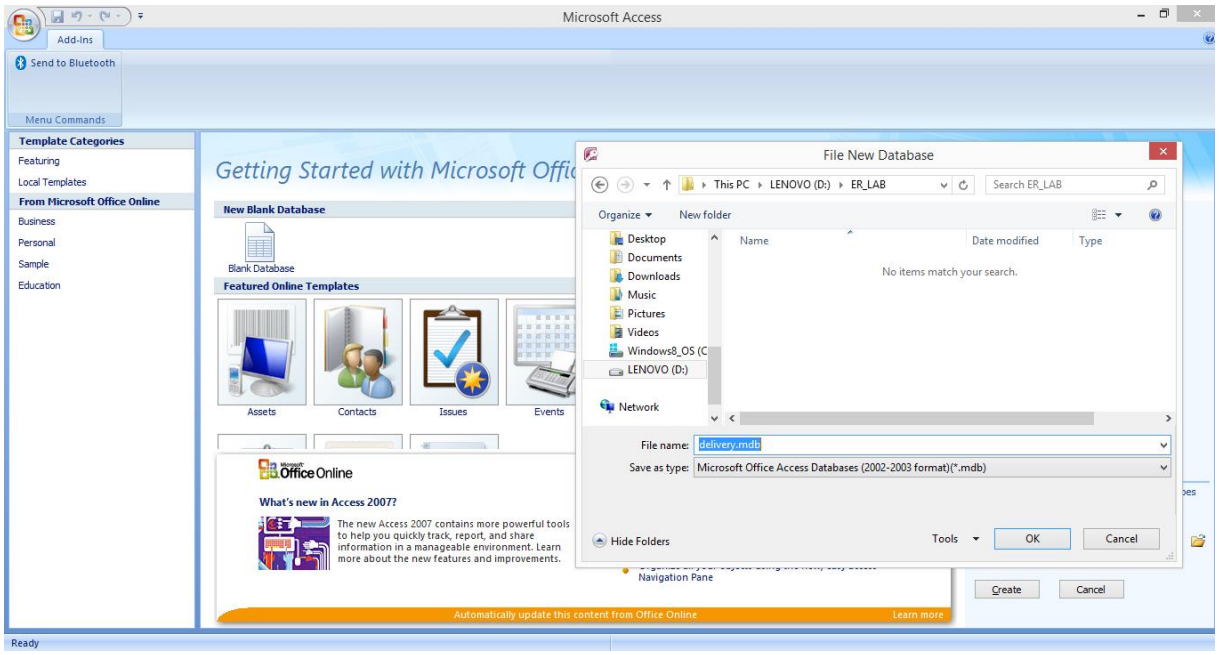

Figure 2

3) Type table name and then input table structure information (from problem description section);

4) Input primary key (Pk) information. To make the field primary select it and click “Primary Key”. Attention! Hence, PK might include only a single field!

5) For the table “Suppliers” include the field “SupplierID” into the PK (figure 3);

6) For the tables “LegalEntities” and “IndividualEntrepreneurs” include the field “SupplierID” into the PK;

7) For the table “Contracts” include the field “ContractNumber” into the PK;

8) For the table “Supplied” include the field “ContractNumber” into the PK. Unlike the other tables, this table requires a composite primary key that will allow to control unique pair of contract number and product name. Therefore,

the field “Product” should be included into the PK. For this click “Indexes” and add “Product” field into the “PrimaryKey” index (figure 4);

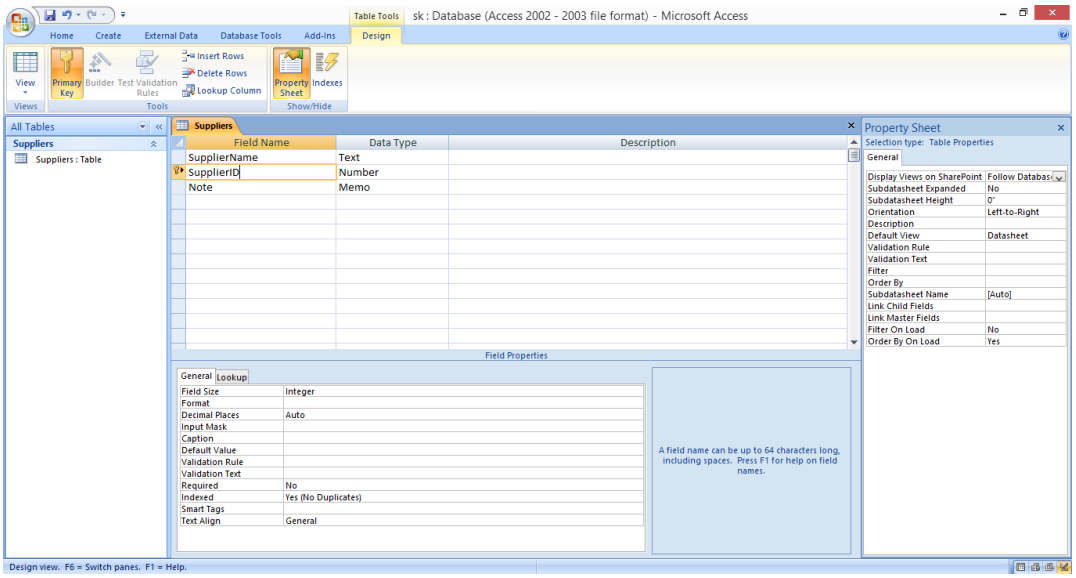

Figure 3

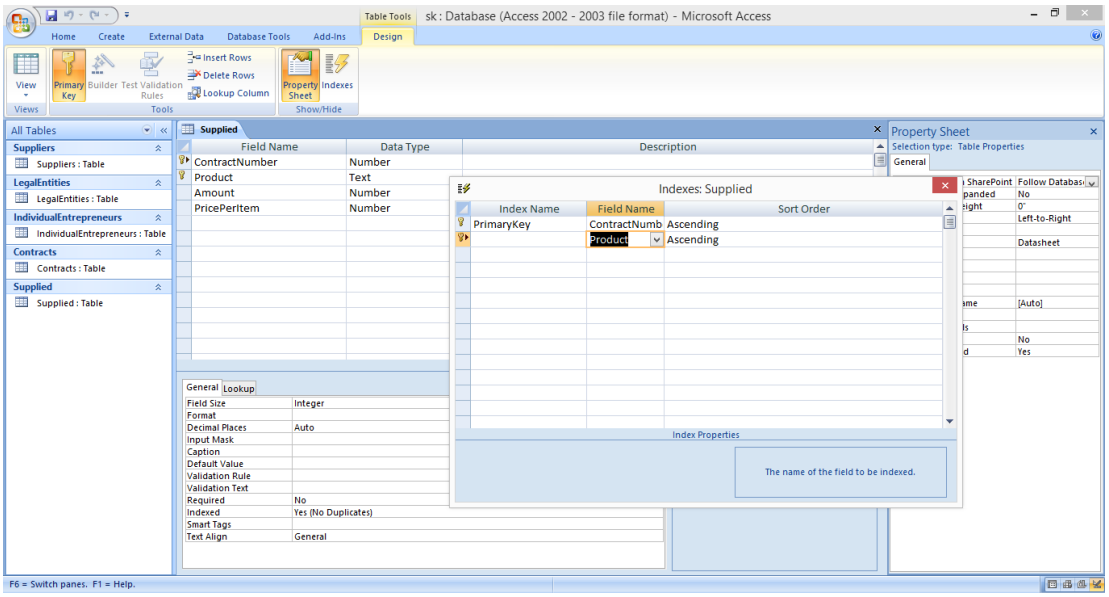

Figure 4

9) Save created table for which close design tab.

9. Create relationships between tables for which:

1) Open “Database Tools” tab;

2) Click “Relationships”;

3) Add all created tables to the data scheme;

4) Drag the field “ContractNumber” of the table “Contracts” to the field “ContractNumber” of the table “Supplied”. As the result, relationship between tables will appear (figure 5);

5) In the same way create relationship between the field ‘SupplierID” of the table “Suppliers” and the field “SupplierID” of the table “Contracts”;

6) Create relationship between the field “SupplierID” of the table “Suppliers” and the fields “SupplierID” of the tables “LegalEntities” and “IndividualEntrepreneurs”;

7) Double click on each relationship between database tables and check “Enforce Referential Integrity” (figure 6);

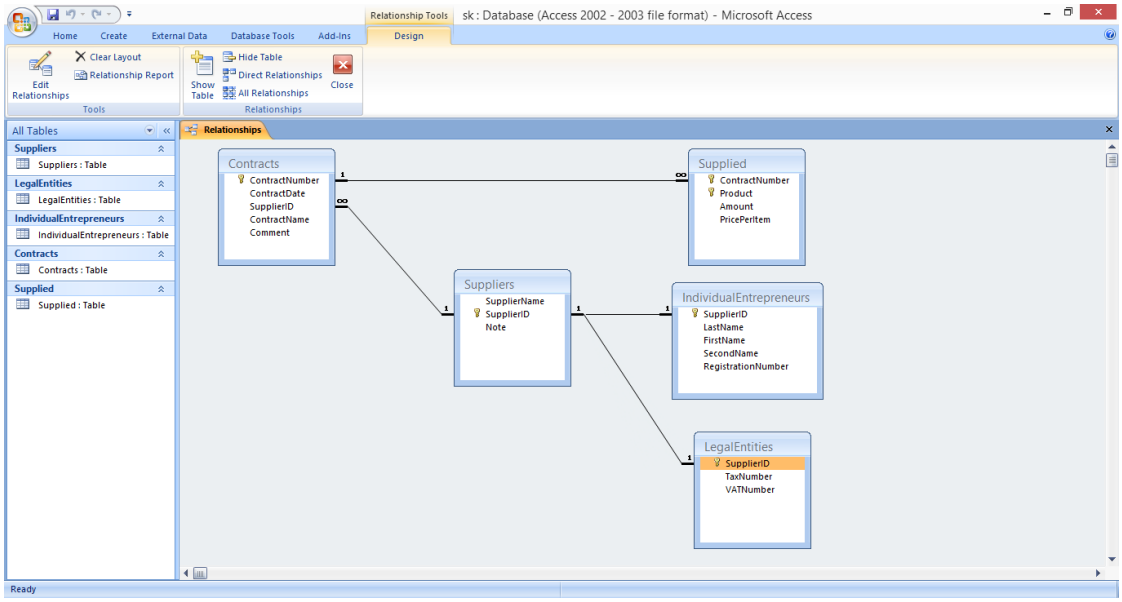

Figure 5

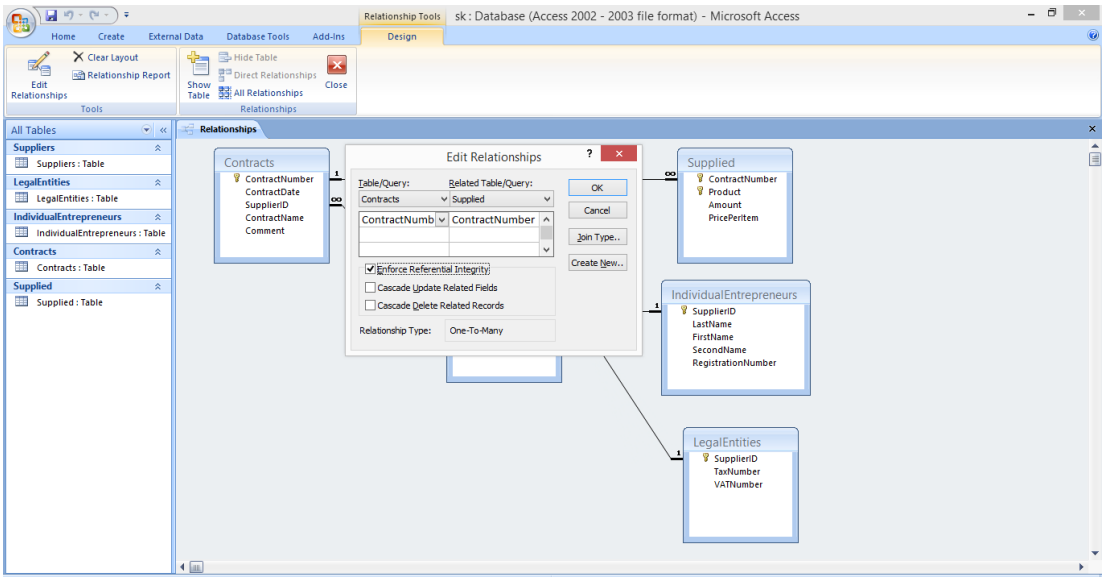

Figure 6

8) Save changes and close “Relationships” tab.

10. Check database creation result.

The sequence of steps is following:

1) Run DBMS Access;

2) Open database “delivery.mdb” and check presence of tables and their conformance to the tables created while modeling;

3) Open data scheme and check presence of relationships between database tables (figure 7);

4) Check alternate keys of the table “Ind_entrepreneurs”. It requires the following steps:

– Right click on “Ind_entrepreneurs” table and select “Design View”;

– Select “Design” in the main menu, and then select “Indexes”. Appeared window shows the list of indexes of this table (figure 36). As it

is shown, there are two alternate keys despite of the PK. These alternate keys are also unique.

– Close the window of table indexes;

– Close the window of the database structure;

5) Close the database window and DBMS.

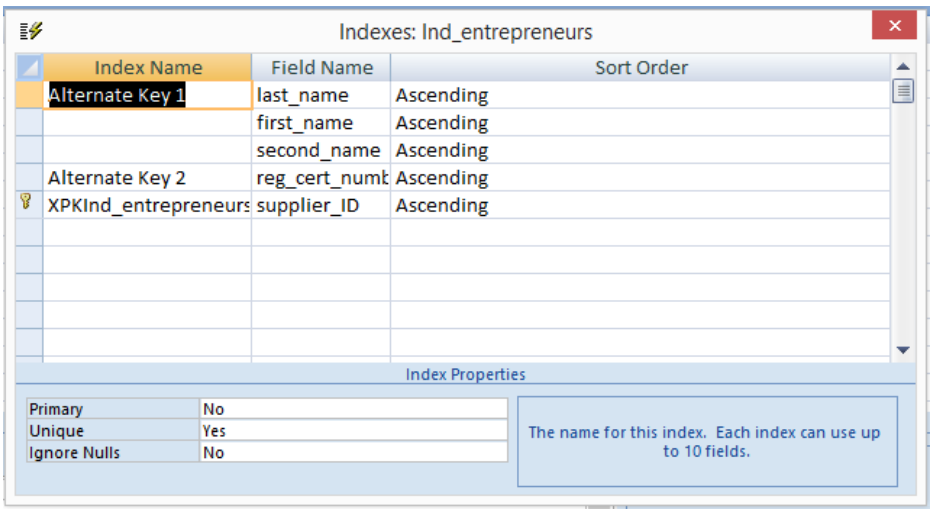

Figure 7

11. Save created model and finish work.

12. Report requirements:

1) Briefly describe the main stages of performed work;

2) Depict created database (e.g. data scheme) in order to illustrate it correctness;

3) Describe problems you have faced with and analyze their reasons. Describe how these problems were solved.