**Omarbek Daulet**

Laboratory work 4

1.

a) What are the main phases in the database design? What is done on each  
development phase?

3 phase

Initial phase --characterize fully the data needs of the prospective database users.

Second phase -- choosing a data model

Final Phase --Moving from an abstract data model to the implementation of the database

b) What is the entity-relationship (ER) data model?  
  
An ER model is a representation of a database in the form of visual graphical diagrams. The ER model visualizes a process that defines a certain subject area.

2.

a)

|  |
| --- |
| Student |
| ID  Name  First name  Second name  Address  Country  City  Street  {phone\_number}  date\_of\_birth  age() |

**simple** - ID, date\_of\_birth

**composite** - name, address

**derived** - age **(age depends on date\_of\_birth)**

**multivalued** - {phone\_number} (several numbers)

b)

|  |
| --- |
| **Dormitory** |
| **University\_id FK**  **Student\_id FK**  **Bool** |

|  |
| --- |
| **Teacher** |
| **Teacher\_id PK**  **University\_id FK**  **Name**  **Salary** |

|  |
| --- |
| **University** |
| **University\_id PK**  **Student\_id FK**  **Course\_id FK** |

|  |
| --- |
| **Office of the Registrar** |
| **University\_id PK**  **Student\_id PK**  **Name**  **Address**  **country**  **city**  **street** |

|  |
| --- |
| **Course** |
| **University\_id FK**  **Course\_id PK**  **Teacher\_id FK**  **Title**  **credits** |

3. Give examples for one-to-many, one-to-one, many-to-many, many-to-onerelations. (Draw the examples as a scheme)

One to one

One to many, many to one

Many to many

Advisor

|  |
| --- |
| student |
| ID  Name  Tot\_cred |

|  |
| --- |
| instructor |
| ID  Name  Salary |

|  |
| --- |
| Instructor |
| ID  Name  Salary |

|  |
| --- |
| instructor |
| ID  Name  Salary |

sdasdasdasdasd

|  |
| --- |
| student |
| ID  Name  Tot\_cred |

Advisor

|  |
| --- |
| student |
| ID  Name  Tot\_cred |

Advisor

**Office of the  
Registrar**

**Student\_id**

**Course**

**Dormitory**

**University**

**Teacher**

**University\_id**