**Task 1.**

*employee (ID, person\_name, street, city)*

*works (ID, company\_name, salary)*

*company (company\_name, city)*

1. Names of all employees who work for “Walmart”
2. ID, name, and city of all employees who work for “Walmart”
3. ID, name, street address, and city of each employee who works for Walmart and earns more than $2000

1. ID and name of each employee in this database who lives in the same city as the company for which she or he works

**Task 2.**

Consider the employee database of figure above. Give an expression in the relational algebra to express each of the following queries:

• Find the ID and name of each employee who does not work for “Walmart”.

1 variant:

2 variant:

• Find the ID and name of each employee who earns at least as much as every employee in the database.

**Task 3.**

Consider the foreign-key constraint from the *dept\_name* attribute of instructor to the *department* relation. Give examples of inserts and deletes to these relations that can cause a violation of the foreign-key constraint.

As we know that foreign-keys are, connect two relations with each other. Therefore, if we will insert or delete something that we already have we will cause a violation of the foreign-key constraint.

*department*(*dept name*, *building*, *budget*)

*instructor*(*ID*, *name*, *dept name*, *salary*)

For example,

* insert:

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **name** | **dept\_name** | **salary** |
| 177127 | Einstein | Konoha | 450,000 |

These inserted values will cause violation because department relation does not have an dept\_name as in example

* delete:

|  |  |  |
| --- | --- | --- |
| **dept\_name** | **building** | **budget** |
| Physics | Taylor | 66700 |

If *instructor* relation will have person who works in this department, it too will cause violation of the foreign-key constraint.

**Task 4.**

Consider the employee database of figure above. What are the appropriate primary keys?

*employee (ID, person\_name, street, city)*

*The appropriate primary keys is ID and person\_name, because they have unique values so they can be primary keys. However, person\_name maybe would have situation when an employers would have the same name and surname. So the one appropriate primaty key is ID.*