# Exercise #1 in Database systems 2022B (HIT) - Ofer Wald

The following questions relate to the database that can be found online at:
https://www.db-book.com/university-lab-dir/sqljs.html
Database definitions and data sets may be downloaded from:
https://www.db-book.com/university-lab-dir/sample_tables-dir/index.html

The following answers should be supplied in both Relational Algebra and SQL. If there is no way to provide an answer with either language, please write “impossible” and provide a short reasoning.

## Q1:

Find all instructors that belong to the “Physics” Department: (just the name)

## Q2:

Find the instructor with the highest salary: (name and id)

## Q3:

Find the average salary in every department:

## Q4:

Show which department has the highest average salary:

## Q5:

Show all courses that were NOT taught in the year 2017

## Q6:

Please provide an alternative to the following SQL statements without using “INTERSECT”

```
(select course_id  from section where sem = 'Fall' and year = 2017)
intersect
(select course_id  from section where sem = 'Spring' and year = 2018)
```

## Bonus question:

Yossi has decided to rewrite the following SQL statement without using the word “between”

```
select name
from instructor
where salary between 90000 and 100000
```

He wrote:

```
select name
from instructor
where salary > 90000 and salary < 100000
```

Was he correct? Can you fix his query?

## Extra bonus question:

You have decided to volunteer to work at the newly established “Magic” department in the university, and naturally, your salary will be 0.

Please write the set of statements allowing you to achieve that given the current data definitions.

Due date is 14/4 or one week after moodle access is granted to users (later of both)
Scoring is Q1-Q4 - 15 points each, Q5-Q6 - 20 points, bonus questions are 10 and 20 points