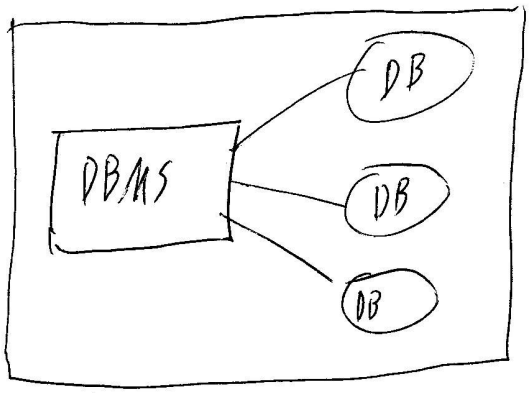
SDB - Worksheet 1:

a)



Database system

Database mangemet system (DBMS):
Mangement system that communicates with the different databases and stores/work with data.

Database:
The places where the data get stored.

Database System:
combination of the DBMS and the Databases

b) Redundant data is data that holds the same information more than once.

Redundancy on the data level:
Different data that holds the same information

Redundancy on the application level:
Different applications apply the same changes to the data.

c) Consistency means that the data is difined by a set of rules. Every data must be consitent before any action and afte any action.

d) Atomacity: All changes in a transaction occure together. Not split

Consistency: The data follows difined rules (Attribute conditions)

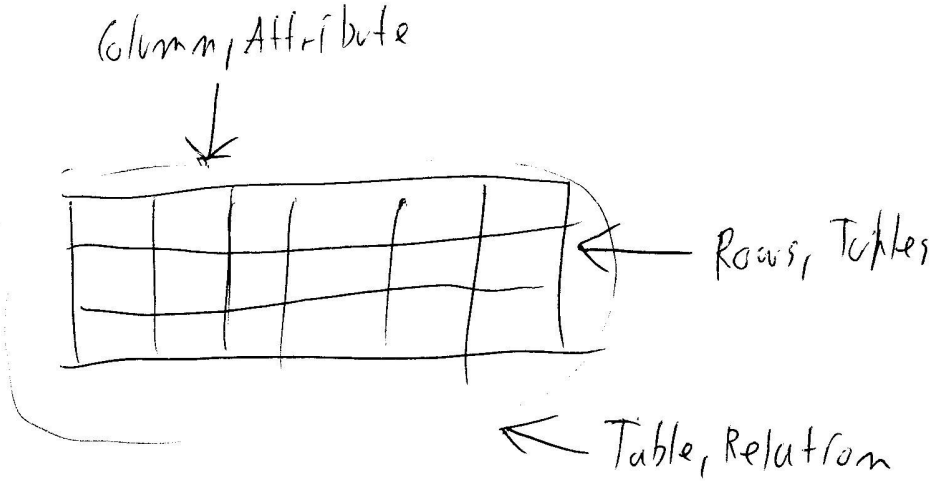
Isolation: Transactions get treated as if they are the only transaction on the server

Durability: Data gets stored permantaly.

WS 1

(2)

a)



b) A key can has a unique value to identify each row. Some important keys are the Primary key and foreign key.

c). #1. Projection

```
SELECT name, date FROM sometable
```

2. Selection

```
SELECT * FROM somtable
WHERE name = 'somename'
```

3. Joining

```
SELECT * FROM sometable s1
JOIN someotherfabe s2
ON s1.name = s2.name
```

(3)

a) SELECT * FROM expenditures
WHERE payment >= 15.000

b) SELECT department, SUM(payment)
FROM expenditures
GROUP BY department

c) SELECT *, payment / 0.9 AS dollar
FROM expenditures

(4)

a) 6 rows

b) ~~5 rows~~ still 6 rows

c) SELECT * FROM Movies
NATURAL JOIN studios

id	title	studio_id	name	founded
1	Fast...	13	Universal...	1913
53	Titanic	74	NULL	NULL
34	Jurass...	13	Universal...	1912
76	Iron...	53	Walt dis...	1953

d) The tables should join on both attributes called id creating a different table.

~~e) SELECT name,~~

→

e)
```
SELECT s.name AS name, m.title AS title, m.studio_id AS id
FROM movies m, studios s
WHERE m.studio_id = s.studio_id
```

(5)

a)

river	cities
name geom	name geom

```
SELECT r.name, c.name
FROM river r, cities c
WHERE st_crosses(r.geom, c.geom)
```

b)

hos	city
num_hos, geom	district, name

```
SELECT district, SUM(h.num_beds)
FROM hospitals h, city c
WHERE st_contains(hc.district, h.geom)
GROUP BY c.districs
```

c)
```
SELECT s1.name, s2.name
FROM states s1, states s2
WHERE NOT ST_touches(s1.geom, s2.geom)
```

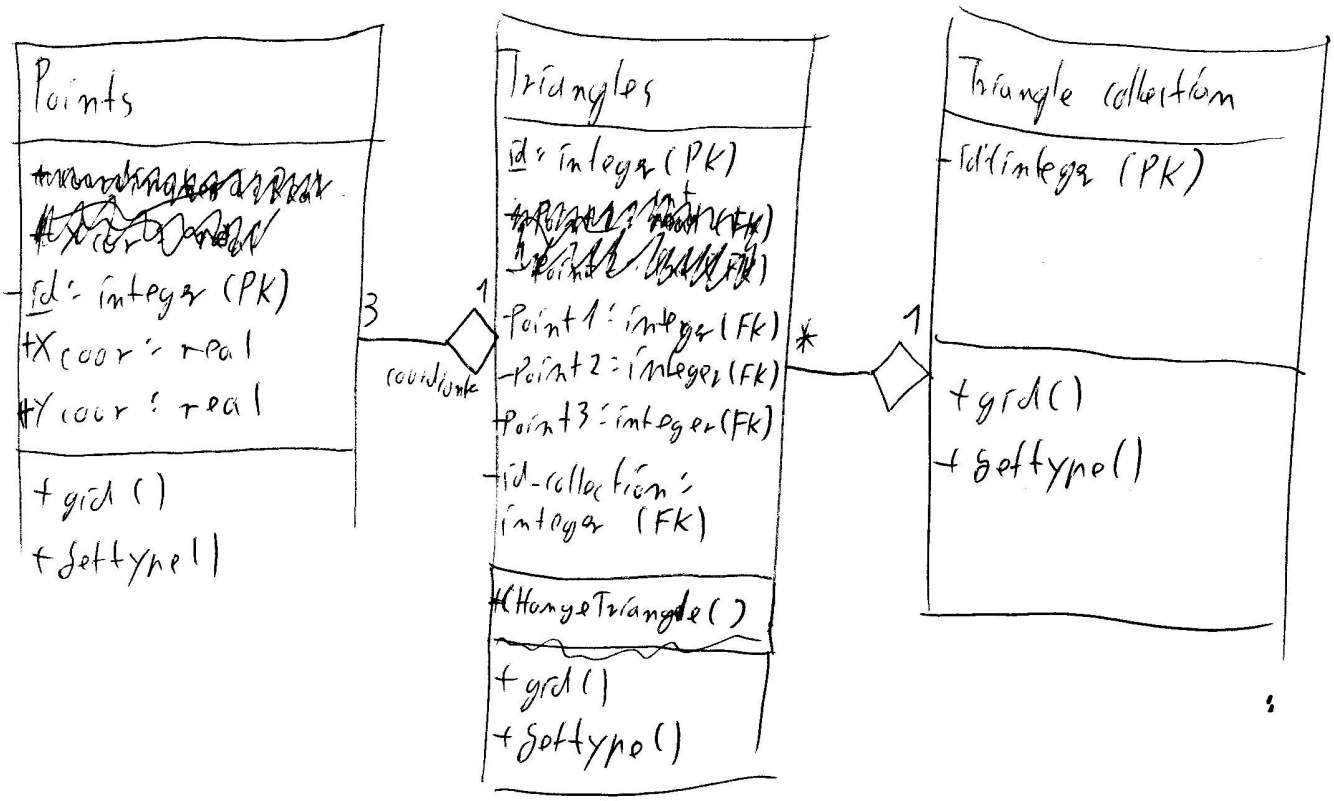
(6)

a) By adding a constrain

```
CREATE TABLE project_elvaluation (
...
grade VARCHAR(1) (HECK('A','B','C','D','E'))
...
```

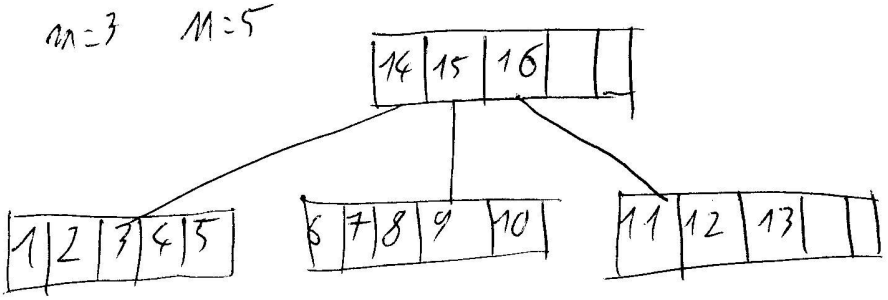
b) Referantial integrity means that a key has a foreign key where its refernce to (where the data can be joined)
1. Reject the changes 2. insert a default value
3. delete entrys a cascading

(7)



- ~~three points~~ The points should be a aggregation because they can exist on there own
- The same is true for the triangle and the triangle collection, ~~even if this also could be a composition.~~
- Coordinates are readable like wanted, but the acces control must be provideted in the DBMS later

(8) a) m=3 M=5



b) 4 elements

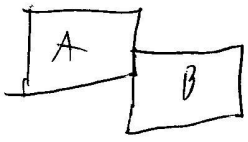
c) 2 more elements

d) - The leaf gets splitted into 2 new leaf.
- ~~There~~ Then 2 minimal bounding boxes are created for all the values in it. In this case both hold 3 values (bboxes)
- The two new B.B got added to the parent node.

W1

(9)

a)



b) B.crosses(A)

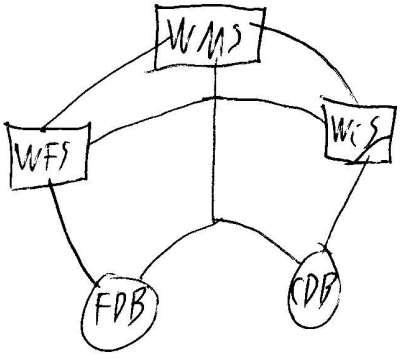
$$\begin{bmatrix} 1 & 0 & 2 \\ 0 & -1 & 1 \\ 1 & 0 & 2 \end{bmatrix}$$

c) Because only polygons can overlap, aka the ~~area~~ dimension of intersection of both interior in a overlap is a ~~a~~ area (2)

(10)

a) Web map service: holds images
Web feature service: holds vector data / features
Web coverage service: holds raster data

holds = provides



b) Metadata is in a SDI often stored in a metadata catalogue.
It holds the information who shares which ~~data~~ data.
The metadata is centrally hosted and published on the web.

c) + by requesting "request=GetCapabilities" in the URL

(11)

a) SELECT srid
FROM spatial_ref_sys
WHERE proj4text LIKE '%+proj=tmerc%'
AND proj4text LIKE '%datum=WGS84%'
AND proj4text LIKE '%+lon_0=1%'

b) INSERT INTO city (name, geom)
VALUES ('Berlin', ST_geomasText('POINT(52 13.30)', 4326))

c) SELECT * ST_SRID() UpdateGeometrySRID('tablecolumn', SRID)
FROM city
WHERE

SELECT c.name, ST_AsText(updateGeometrySRID(c.geom, ref.srid))
(Select srid
FROM spatial_ref_sys
WHERE proj4text LIKE '%+proj=...+n_defs%') ref,

(Select name, geom
FROM city) c
ORDER BY c.name

- exam was known
- finished 23 minutes early, was OK time constrain
- UNC and ref sys are quite hard to understand

1