



C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

C written DBMS

Lorenzo Tecchia, Nathan Ritter
`lorenzot@zedat.fu-berlin.de`
`nathanr02@fu-berlin.de`

Freie Universität Berlin

April 27, 2023



Overview of the presentation

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

- 1 Introduction
- 2 Domain and Requirements
- 3 Target Group of the software
- 4 Knowledge level required
- 5 Software drawbacks



DBMS Idea

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

Our Project is a DBMS
written in the C
Language.
Even tho the C language
is a very old language it's
still widely used
nowadays, to write many
DBMSs.





What is a DBMS

C written
DBMS

Tecchia,
Ritter

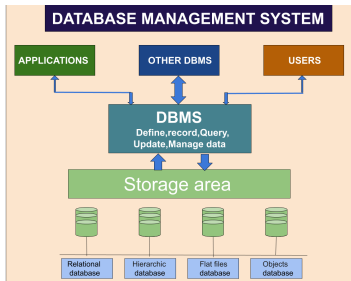
Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks



- DBMS stands for Database Management system.
- A DBMS is a tool for storing retrieving stored data.
- DBMS are needed anywhere you have a data.



Functions of a DBMS

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

- So what would be the basic functions of a DBMS?
- What are the most crucial capabilities of any modern DBMS?

(Security, Library management, server management, Type definition, ecc...)



Libraries for string management

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

PostgreSQL has the
REGEX library, but our
software could have any
ad hoc library that the
customer requires.

•[RegEx]*



Able to manage different users

C written
DBMS

Tecchia,
Ritter

Introduction




Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

Different users with different access policy would have to be managed by the DBMS and would have the ability to group them accordingly.

Name	Privilege
 lorenzotecchia...	↕ Read & Write
 staff	↕ Read only
 everyone	↕ Read only



Able to manage different servers

C written
DBMS

Tecchia,
Ritter

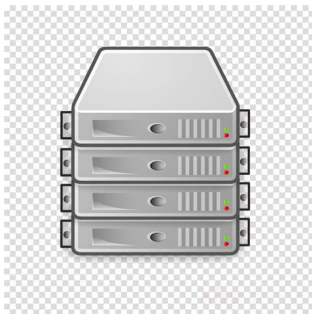
Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks



Different users would
have many servers
between them, so the
DBMS should be able to
switch between them.



Different data types

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

```
54 create table mtl.magazine
55 (
56     ISSN_M          varchar,
57     Name_M           varchar,
58     Argument         timestamp,
59     Manager           varchar,
60     YearRelease      date,
61     PublicationPeriod int,
62     AccessMode       text,
63     PublishingHouse  serial
64 );
```

Tables of RDBMSs
(Relational DBMSs)
would have different
attributes and so the
need for different data
types.



Create Indexes

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

```
34 CREATE INDEX idx_name  
35 ON mtl.author (LName, FName);  
36
```

Indexes are necessary for fast data retrieval and data parsing. Like primary keys, or the so called indexes.



Security

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

User shall have passwords to log into their servers, and to make changes to the data itself.



Data retrieval time

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

```
(execution: 29 ms, fetching: 120 ms)
```

The DBMS should provide functions to monitor the time elapsed for every query done the the servers. And provide any ad-hoc required speed/performance.



Accuracy

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

Data accuracy means providing capabilities or functions that refer to error-free records that can be used as a reliable source of information.(e.g. not allowing negative numbers for item counting).



Consistency

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

In database systems, consistency (or correctness) refers to the requirement that any given database transaction must change affected data only in allowed ways. (e.g. constraints, cascades, triggers)



Target Groups of our Software

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

**Target Group
of the
software**

Knowledge
level required

Software
drawbacks

What are the target group of the software?



Programmers

C written
DBMS

Tecchia,
Ritter

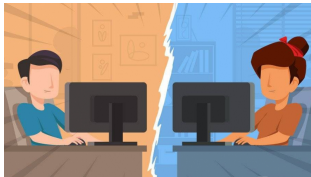
Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks



Programmers developing
Applications/Systems
etc. for companies that
need to store large
amounts of data
efficiently and effectively



Customers

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

What are Our potential
Customers?

Well Everyone with an
incline for programming
and Knowledge of
Databases



Programming



Companies

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

Could shape out the DBMS to their needs, or request specifics functionalities that perfectly meet their needs and requirements.



What level of knowledge is required to use the software?

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

Having deeper knowledge of DBMSs will be useful, to provide clever solutions for the same problem, but even newbies can approach the software.



Problems with our software

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

What problems will we
face?

Lots of other DBMS are
available and well
established, like
PostgreSQL or SQLite.
(Which are also written
in C).





Adaptation/Migration

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks



Changing the DBMS for an existing Database is a very complex process so, companies wouldn't be totally inclined to change to our software (if they already have their own).



The End

C written
DBMS

Tecchia,
Ritter

Introduction

Domain and
Requirements

Target Group
of the
software

Knowledge
level required

Software
drawbacks

THE END