

CCT396, Fall 2011

Database Design and Implementation

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Week 7

**Catchup and Case
Studies**

Introduction

1-Table SQL

The ER Model

Conversion

Joins

Normalization

Catchup

Applications

Advanced SQL

Documents

Security

Performance

Normal Forms

5 th Normal Form	}	Yet more decomposition
4 th Normal Form		
BC Normal Form		
3 rd Normal Form	}	No improper dependencies
2 nd Normal Form		
1 st Normal Form	}	No multi-valued attributes

3NF?

(vote_id, kitten1_id, kitten2_id,
kitten1_caption, kitten2_caption,
vote)

3NF?

(photo_id, caption, date_uploaded,
user_id, user_name, pro?,
camera_id, width, height,
num_comments)

(user_id, user_name, pro?,
photo_id, comment_text,
date_posted)

3NF?

(photo_id, caption, date_uploaded,
user_id, user_name, pro?,
camera_id, width, height,
num_comments)

(comment_id, user_id, user_name,
pro?, comment_text, date_posted,
photo_id)

Real Life Examples

<http://toronto.ca/open/>

Non-ER Diagrams

Flowcharts

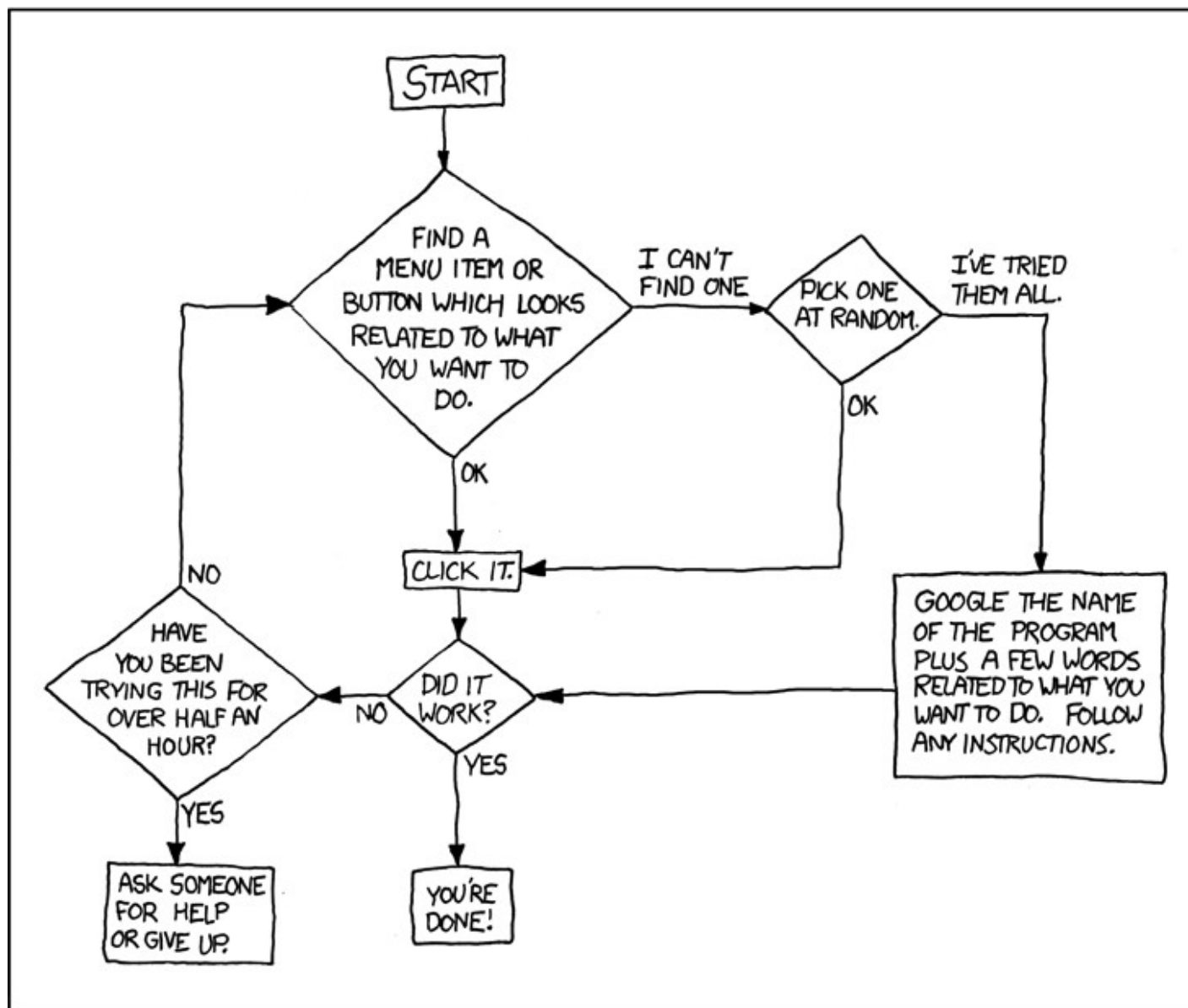
Sequence diagrams

Data flow diagrams

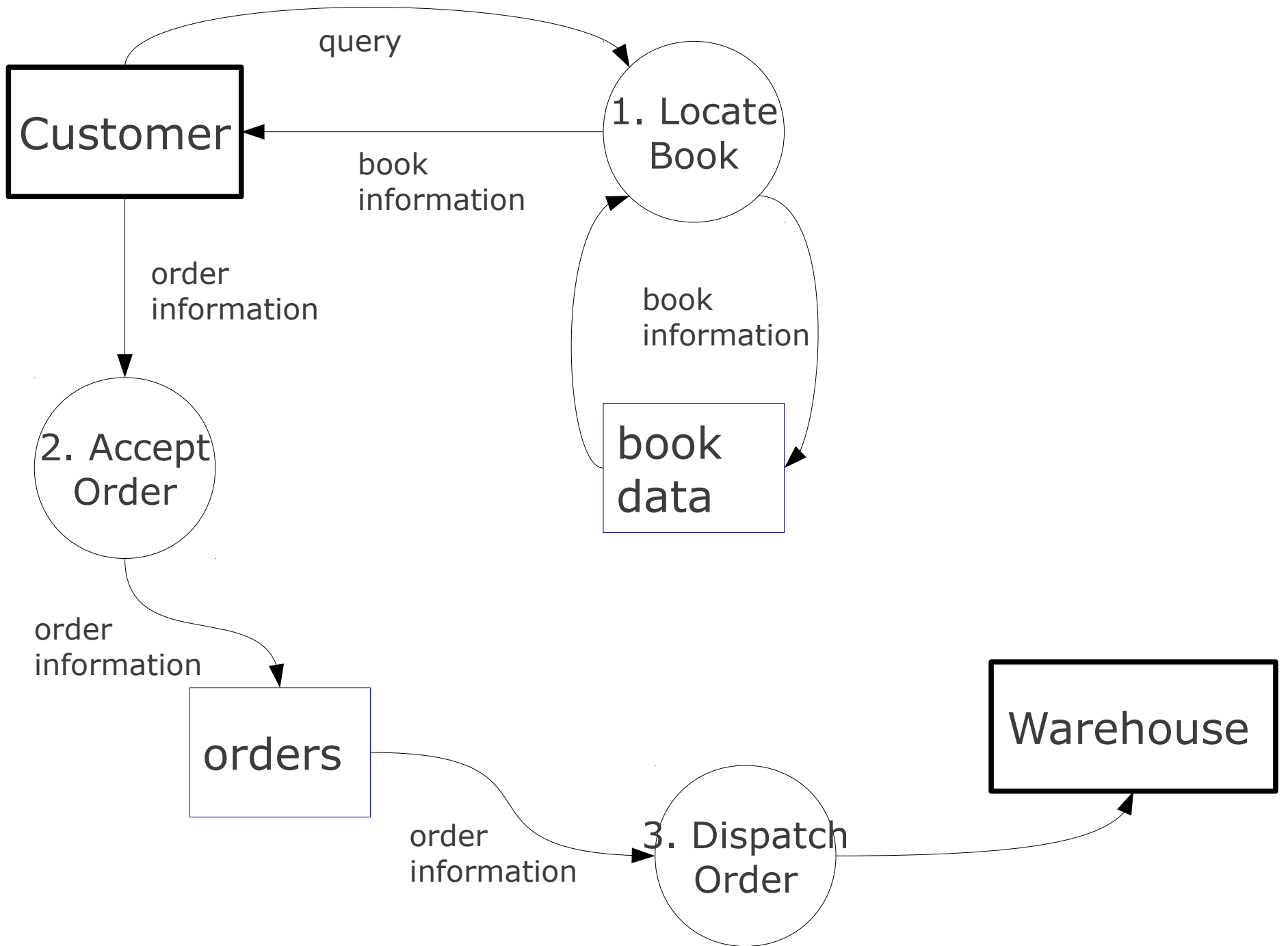
All of those are
NOT ER diagrams

DEAR VARIOUS PARENTS, GRANDPARENTS, CO-WORKERS,
AND OTHER "NOT COMPUTER PEOPLE."

WE DON'T MAGICALLY KNOW HOW TO DO EVERYTHING IN EVERY
PROGRAM. WHEN WE HELP YOU, WE'RE USUALLY JUST DOING THIS:



PLEASE PRINT THIS FLOWCHART OUT AND TAPE IT NEAR YOUR SCREEN.
CONGRATULATIONS; YOU'RE NOW THE LOCAL COMPUTER EXPERT!



LOAD DATA

```
load data  
local infile "«filename»"  
into table «table»;
```

```
load data  
local infile "/tmp/pets.csv"  
into table pet;
```

Getting the Data

Simplest:

Export from Excel / OpenOffice

Alternatively:

Edit in a text editor

SCP

Option 1:

In the terminal

Option 2:

A GUI client (PSCP, WinSCP)

A Terminal App / Bash

OSX:

“Terminal” (pre-installed)

Linux:

“gnome-terminal” (pre-installed)

Windows:

“git-bash” from Git

<http://code.google.com/p/msysgit/>
(you can use PuTTY if you prefer)

SSH

ssh **okenobi**@yoda.ischool.utoronto.ca

More Unix Commands

ls – list files in a directory

cd – change **d**irectory

mkdir – create (**m**ake) a **d**irectory

rm – delete (“**r**emove”) a file or directory

cp – **c**opy a file or directory

less – view a text file

nano – edit a text file

mysql – start mysql client

some of those commands are available both in your local and remote bash, some just on the server

Anatomy of the Unix Command

the command

arguments

The diagram shows the command `cp -r /play/yoda /tmp/yoda2` enclosed in a red rectangular border. The command is split into four segments by vertical red lines: `cp`, `-r`, `/play/yoda`, and `/tmp/yoda2`. Three arrows point downwards from the labels 'the command', 'arguments', and 'arguments' to the `cp`, `-r`, and `/play/yoda` segments respectively. An arrow points upwards from the label 'options (may have their own arguments)' to the `-r` segment.

```
cp -r /play/yoda /tmp/yoda2
```

options (may have their own arguments)

Some Examples

cd /play

go to directory “/play”

Hint: press [Tab] after typing “/pl”

ls

list the files in the current directory

cd yoda

go to directory “yoda”

Hint: press [Tab] after typing “y”

ls

Hint: use [↑] for earlier commands

Some Examples

less force.txt

Hint: press [Tab] after typing "f"

Hint: press "q" to exit less

cd ..

go to up one level

ls

cd locked

go to directory "sandbox"

Hint: you don't have the permissions

Some Examples

cd sandbox

mkdir obiwan

create a directory "obiwan"
(use your own name)

ls

we should see everyone's directory

cd obiwan

go to your directory

Some Examples

ls /play/yoda/

What was that file called again?

less /play/yoda/force.txt

Let's look at it again.

cp /play/yoda/force.txt .

copy "force.txt" to the local directory

nano force.txt

edit force.txt

Hint: ^ means [Control]

Options

ls -sh

list files with file sizes

cp -r /play/yoda .

copy "recursively"

less -N force.txt .

show the file with line numbers

Getting Help

man ls

user **manual** for the **ls** command

Directories

/home/okenobi

user's "home" directory

~

alias for user's home directory

e.g. "ls ~"

·

current directory

..

parent of the current directory

Web Pages

/home/okenobi/public_html/

user's website, maps to

<http://yoda.ischool.utoronto.ca/~okenobi>

cd ~/public_html

nano index.html

(Press Ctrl-X to save and quit.)

See <http://www.w3schools.com/html/>
for intro to HTML.

Redirection

command > file.txt

write the output to file

command < file.txt

feed the content of file to the
command

command1 | command2

send the output of command1 to
command2

(We'll see examples in a second.)

SQL From a File

```
cd ~
```

```
cp /play/yoda/humans.sql .
```

```
mysql < humans.sql
```

run mysql client feeding it the contents of "humans.sql"

```
mysql < humans.sql > h.txt
```

save the output into "h.txt"

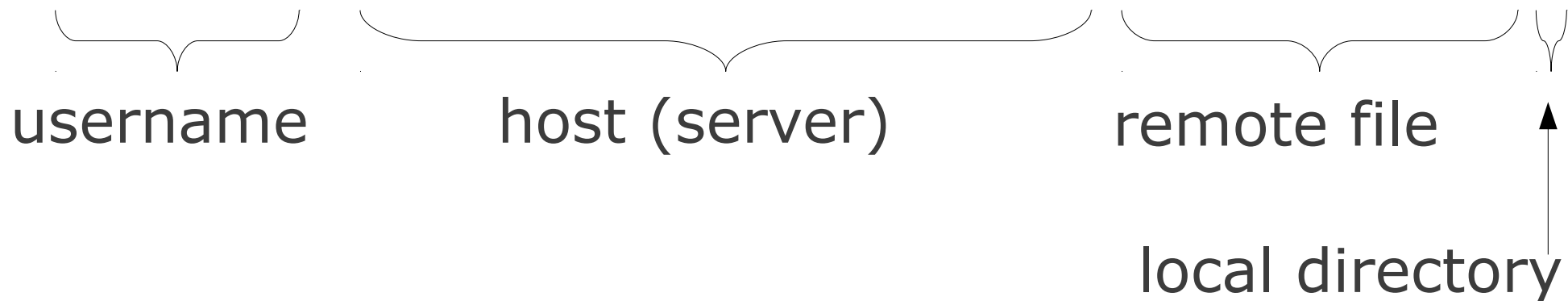
Exercise: create a file "ewoks.sql" that would give us a list of **Ewoks**.

Remote to Local

```
scp user@host:/remote/file /local/dir
```

e.g.:

```
scp okenobi@yoda.ischool.utoronto.ca:~/pets.csv .
```



Local to Remote

```
scp /local/file user@host:/remote/dir
```

e.g.:

```
scp pets.csv okenobi@yoda.ischool.utoronto.ca:~/
```

João's Fair Trade Coffee