

DATABASE FOR DESIGN ALTERNATIVE



Session 2 | Team 10

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01

Our Client

Interior Design

02

Business Problem

Digitalization

03

Conceptual Data Modelling

Entity Relationship Diagram

04

Normalization

05

SQL Query

Problem Solved and Insight

06

Lessons Learned



01

Our Client Interior Design

Our Client

Design Alternatives

- Found in 1994
- Kitchen and bathroom design
- Elders and disabilities
- Customer focus



— Susan Benedict
Certified interior designer



02

Business Problem Digitalization

Business Problem



Paperless

Employee, Vendor



**Payment
Status**

Expense



**Customer &
Vendor
Insights**

Strategy

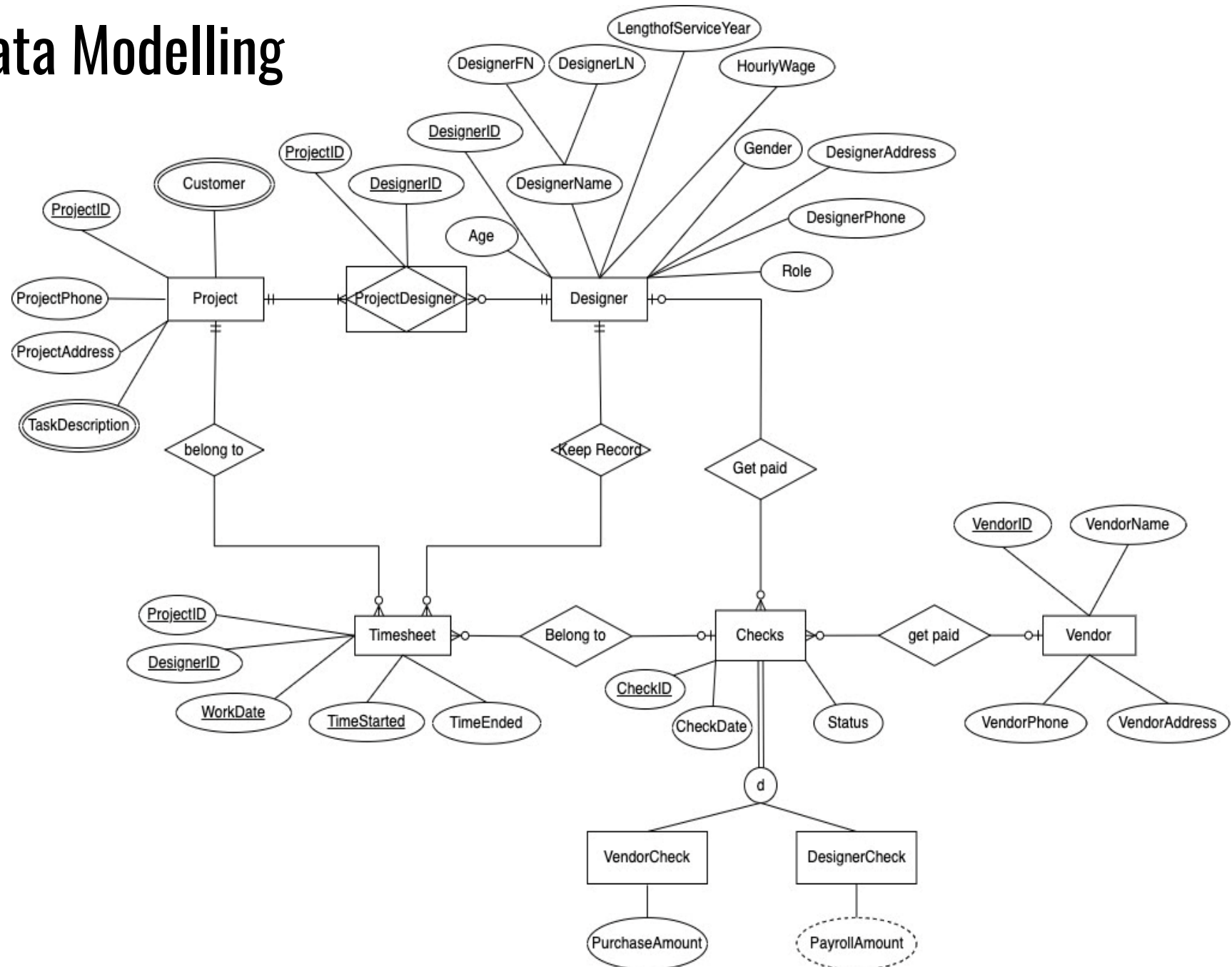
03

Conceptual Data Modelling

ERD



Conceptual Data Modelling





04

Normalization

Normalization

Customer and Task	Address	Phone
Powell, Susan & Jim: Hardware	89 Lancelot Ct.Lafayette, IN 47905	765-488-6209
Powell, Susan & Jim: LED Lights	89 Lancelot Ct.Lafayette, IN 47905	765-488-6209



<u>ProjectID</u>	Customer	TaskDscription	ProjectAddress	ProjectPhone
599	Powell, Susan & Jim	Hardware	89 Lancelot Ct.Lafayette, IN 47905	765-488-6209
599	Powell, Susan & Jim	LED Lights	89 Lancelot Ct.Lafayette, IN 47905	765-488-6209

Normalization

<u>ProjectID</u>	ProjectAddress	ProjectPhone
599	89 Lancelot Ct.Lafayette, IN 47905	765-488-6209

<u>ProjectID</u>	<u>Customer</u>
599	Susan Powell
599	Jim Powell

<u>ProjectID</u>	<u>TaskDscription</u>
599	Hardware
599	LED Lights



05

SQL Query Problems Solved and Insights

Query 1

Task duration in hour units and total wage for each record of the timesheet.

	DesignerID	DesignerFN	DesignerLN	ProjectID	WorkDate	DurationHr	HourlyWage	Wage
▶	1	Katie	Switzer	375	2021-06-29	2.5833	17	43.92
	1	Katie	Switzer	213	2021-06-29	0.5000	17	8.50
	1	Katie	Switzer	213	2021-06-30	0.3333	17	5.67
	1	Katie	Switzer	375	2021-06-30	3.5000	17	59.50
	1	Katie	Switzer	375	2021-07-01	0.4167	17	7.08
	8	Amanda	Anthony	453	2021-07-01	3.5000	10	35.00

- Time unit conversion
- Repeated calculation



Query 2

Which employee has the most monthly payment in each role?


	Year	Month	Role	DesignerID	DesignerFN	DesignerLN	TotalWage
►	2021	6	Lead Designer	1	Katie	Switzer	117.59
	2021	7	Intern	8	Amanda	Anthony	230.00
	2021	7	Lead Designer	1	Katie	Switzer	79.33
	2021	8	Intern	2	Abby	Mikel	245.00
	2021	8	Lead Designer	5	Linda	Walamooth	502.50
	2021	9	Intern	2	Abby	Mikel	265.00
	2021	9	Lead Designer	5	Linda	Walamooth	326.25
	2021	10	Intern	2	Abby	Mikel	50.00

- Individual salary amount checking
 - Budget Control



Query 3

Expected designer payment amount which are not yet paid per month.



	Year	Month	DesignerID	TotalWage
▶	2021	10	1	527.02
	2021	10	2	50.00
	2021	10	3	55.00
	2021	10	4	105.00
	2021	10	5	548.75

- Payment Scheduling and checking

Query 4

Which companies are the top vendors?



	VendorName	TotalAmount	Frequency
▶	Frank Anderson	1853.85	5
	Hicks Gas	1543.2299999999998	4
	Biggs	1351.45	3
	OnePointe Solutions	1290.7199999999998	3
	Baer Supply	1065.98	3
	Practicon	986.01	3
	Skyway Concession Co	956.15	3

- Frequency
- Relationship Management

Query 5

1. Input new payroll check information into the database
2. Update check status when the check is cashed

CheckID	CheckDate	Status
5547	2021/12/02	Outstanding

CheckID	DesignerID	PayrollAmount
5547	2	50.00
5547	2	50.00


CheckID	CheckDate	Status
5547	2021/12/02	Cashed

- Update designer check
 - Keep track



Query 6

Top 5 loyal customers



	Customer	FrequencyofCustomer
▶	Painter	7
	Rena Aiken	4
	Braz	4
	Alex Eros	4
	Heidbreder	4

- Loyalty, Segmentation
 - CRM

Query 7

Understand the time spent and the corresponding labor cost of a specific project

	DesignerID	HourlyWage	DurationHr	LaborCost
▶	1	17	8.2500	140.2500
	7	20	2.5833	51.6667

- Keep track with designers' work
- Get total amount to bill customers



Query 8

The proportion of project from local customers

	LocalProjectRatio
▶	0.5545

- Market Strategy
- Expansion or Retain Current Customers



Query 9

Identify the most time-consuming project and its number of designers


	ProjectID	ProjectDays	NumberofDesigner
►	453	328	4
	411	313	3
	538	311	2
	494	310	2
	261	300	2
	324	294	3
	213	293	4

- Track time span of projects
- Improvement on Customer Satisfaction



Query 10

Understand what amount of check has not been cashed



	TotalOutstanding
▶	1561.6399999999999

- Management of Cashflow

06

Lessons Learned



**CAN WE
DO
BETTER?**



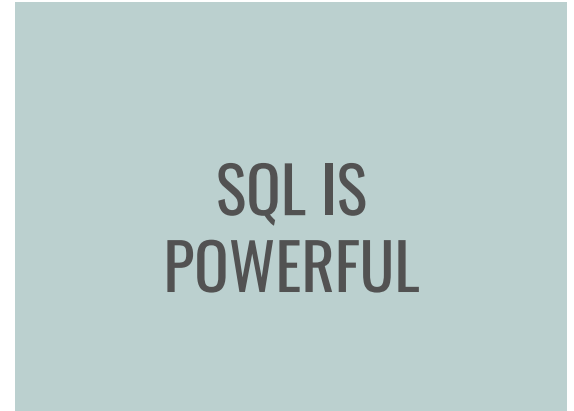
**BUSINESS PROBLEM
AND OBJECTIVE**



**ALWAYS KEEP
CLIENT POSTED**



**SQL IS
POWERFUL**



**BUSINESS RELATED
QUERIES**





THANK YOU!



Q & A



APPENDIX

Normalization – ONF

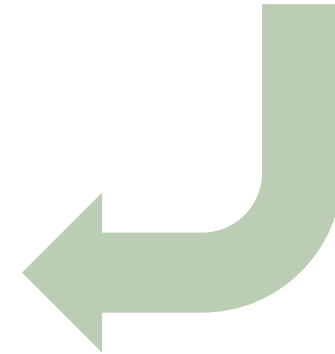


- Project (ProjectID, TaskDescription, ProjectAddress, ProjectPhone, Customer)
- ProjectDesigner (ProjectID, DesignerID)
- Designer (DesignerID, DesignerFN, DesignerLN, Gender, Age, Role, LengthofServiceYear, HourlyWage, DesignerPhone, DesignerAddress)
- Timesheet(ProjectID, DesignerID, WorkDate, TimeStarted,
TimeEnded, CheckID)
- Checks (CheckID, CheckDate, Status)
- VendorCheck (CheckID, PurchaseAmount, VendorID)
- DesignerCheck (CheckID, PayrollAmount, DesignerID)
- Vendor (VendorID, VendorName, VendorAddress, VendorPhone)

Normalization

1NF \rightarrow 2NF & 3NF

- Project (ProjectID, Customer, TaskDescription, ProjectAddress, ProjectPhone)
- Functional dependency:
 - ProjectID \rightarrow ProjectAddress, ProjectPhone
- Project (ProjectID, ProjectAddress, ProjectPhone)
- ProjectCustomer (ProjectID, Customer)
- ProjectTask (ProjectID, TaskDescription)



Normalization – 3NF



- Project (ProjectID, ProjectAddress, ProjectPhone)
- ProjectCustomer (ProjectID, Cumstomer)
- ProjectTask (ProjectID, TaskDscription)
- ProjectDesigner (ProjectID, DesignerID)
- Designer (DesignerID, DesignerFN, DesignerLN, Gender, Age, Role, LengthofServiceYear, HourlyWage, DesignerPhone, DesignerAddress)
- Timesheet(ProjectID, DesignerID, WorkDate, TimeStarted, TimeEnded, CheckID)
- Checks (CheckID, CheckDate, Status)
- VendorCheck (CheckID, PurchaseAmount, VendorID)
- DesignerCheck (CheckID, PayrollAmount, DesignerID)
- Vendor (VendorID, VendorName, VendorAddress, VendorPhone)