



Digital Systems

3.1 Digital Product Management &
Max Lab 1a|1b

FOX
MIS

Attendance

Please login to Canvas and “Check-In”

Attendance is not a part of your grade for this class. The university has mandated that we take attendance for all classes, face-to-face, online and hybrid, to assist in contact tracing should an outbreak of Covid-19 occur.

FOX
MIS

ROADMAP

START

Week 1:

Introduction & Systems Analysis

- Course Description
- Systems Thinking

Week 1:

Introduction to Process Mapping

- Systems & Processes
- Swim Lane Diagrams

- Max Labs 0- due
- Practice test - due

Week 2:

Digital Product Management & ERD

Week 2:

Introduction to Data Modeling

- Max Labs 1A/1B- due
- Max Labs 2A/2B due

Week 2:

Exam #1

10/30 – 11/1: Exam Availability

Week 4 :

Exam #2

11/13-11/5 Exam Availability

Week 4:

Cybersecurity & AI

- Protection Protocols
- Artificial Intelligence

- Cybersecurity/AI assignment due
- Max Labs 3a/3b due

Week 4:

Platforms & Digital Business Models

- API's
- Cloud

Week 3:

Information Systems

- ERP & CRM
- Data Analytics & SCM

- Lean IT #1 due

Week 5:

JavaScript Unit #1 & 2

- Hello World, Variables
- Input and Output
- Operator types
- Strings

Watch Lynda.com video – due
Code Academy due

Week 6:

JavaScript Unit #3&4

- Logical Operators
- Conditional Types
- Intro to Loops
- While and Do
- Writing the code
- Practice Coding Exam

Week 7:

HTML & CSS

- Coding Assignment -due
- Lean IT #2 due

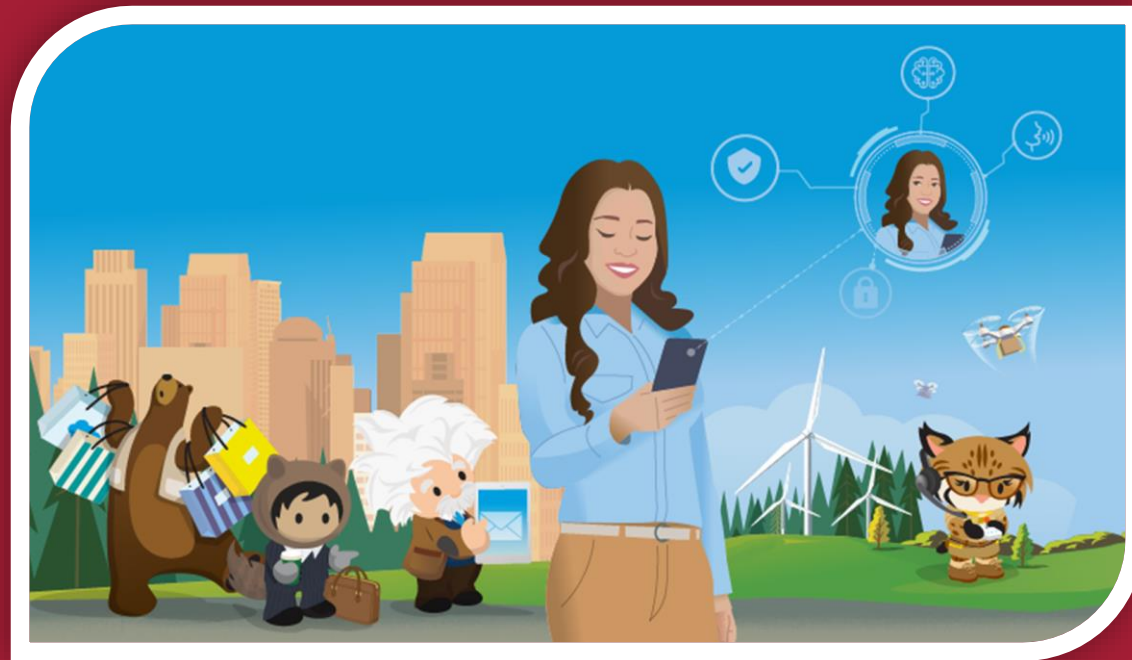
Week 7:

Exam #3

12/8 – 12/ 9: Exam Availability

FINISH

The Max Labs Project



Overview & Startup

Why Salesforce?

This is not Salesforce training – rather, a great platform to **deliver** cloud-based *systems products*.

- Enables & Enhances Business
- Used By Industry Fortune 100's
 - Across All Business functional Areas
- Great Resume Builder For You!

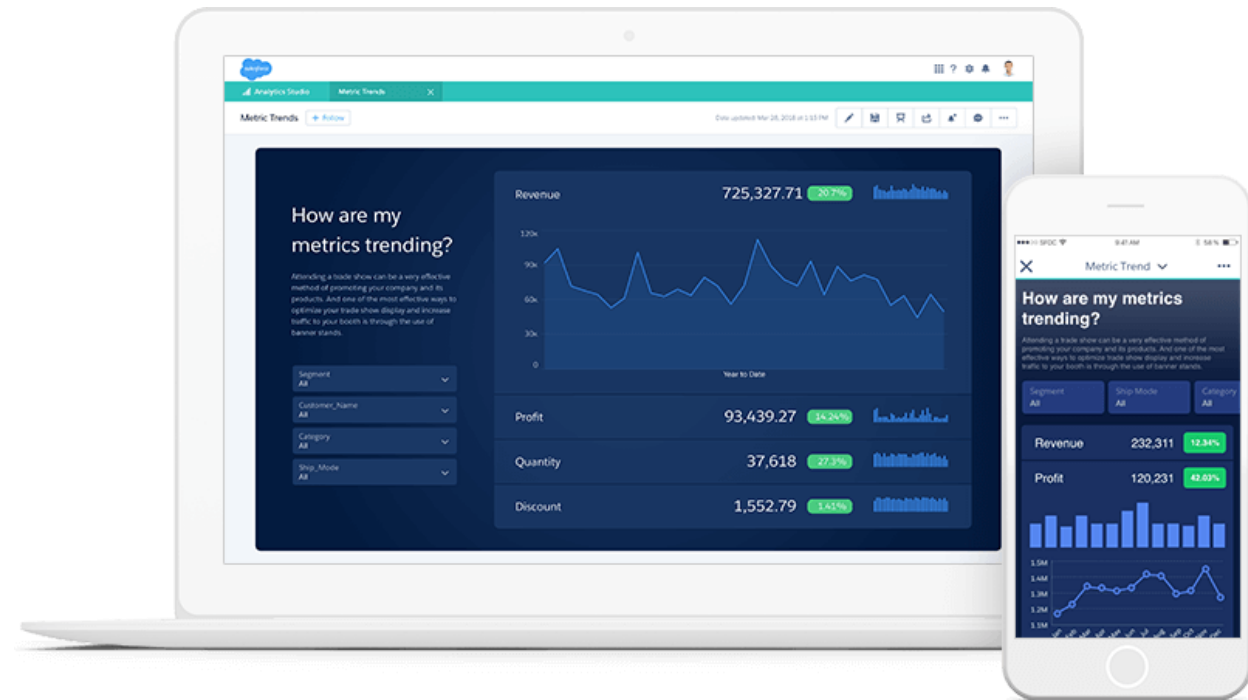


Source: <https://www.salesforce.com/>

Max Labs – Enabling Organizations

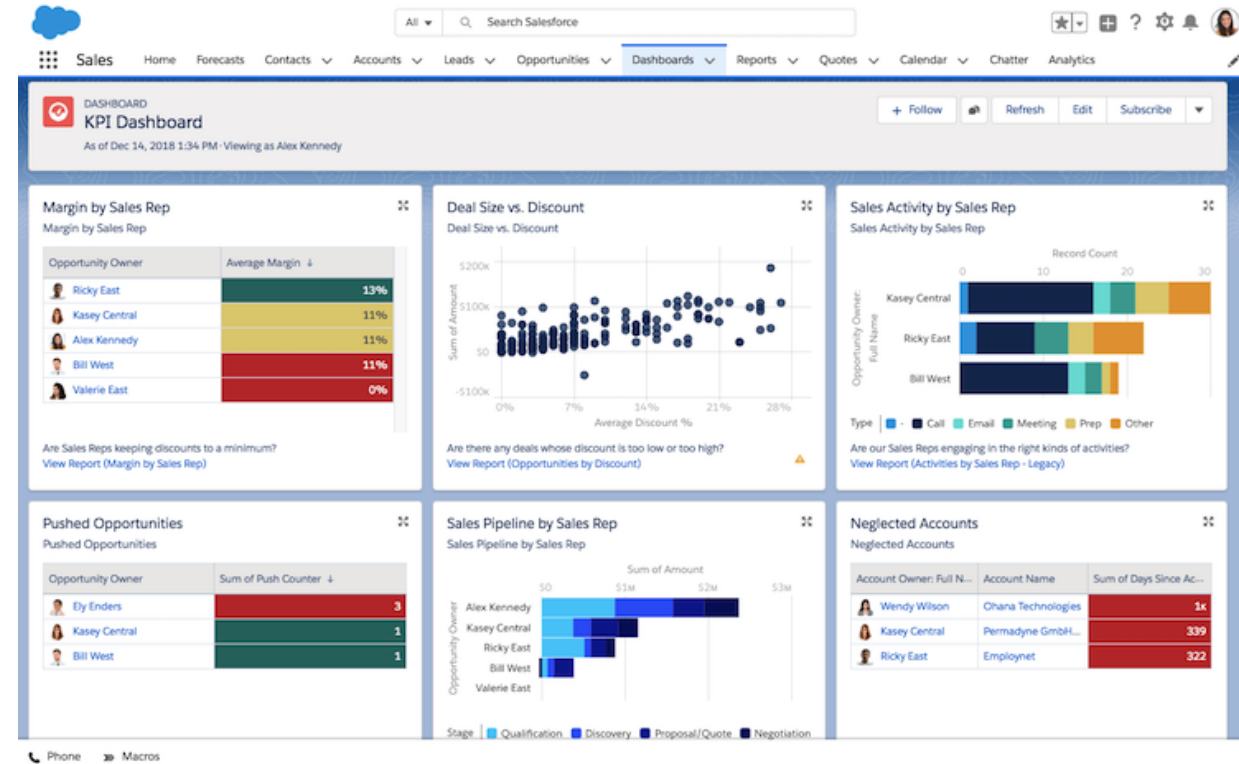
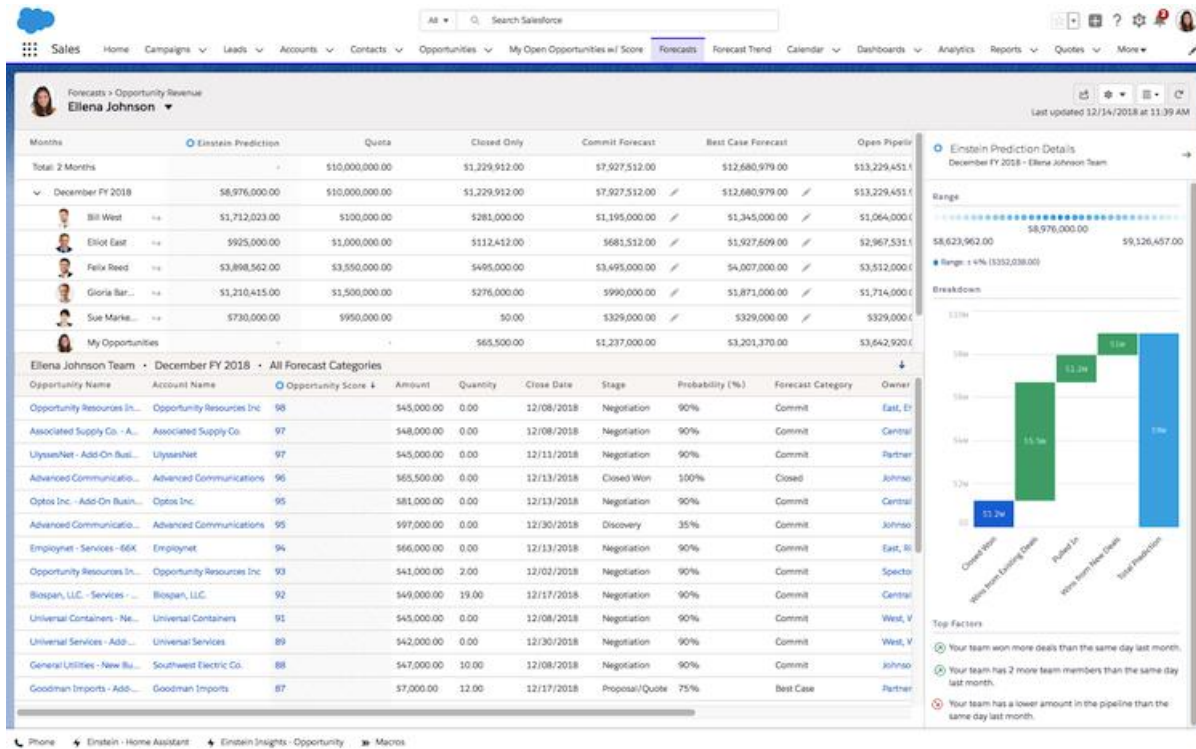
Technology Enables Organizations to work faster/smarter/more efficient

- See How It Works First-Hand
- Understand how Used by Industry Fortune 100's
 - Across all Business Functional Areas
- Great Resume Builder For You!



Source: <https://www.salesforce.com/>

Max Labs – What do they include?



Source: <https://www.salesforce.com/>

Max Labs – Tips for Your Success

- READ the Pre-lab first. (Set's up your entire experience.)
- READ & FOLLOW every single instruction EXACTLY, in order. (You'll have no problems.)
- READ the cover sheet BEFORE you start every lab.
- ALWAYS read stories BETWEEN instructions. (Connections to our key Course Concepts)
- They're quick (allow about 60-90 min for each lab)
- **DO NOT** get the 30-day trial account from www.salesforce.com.
- The Lab 1b instructions tell you EXACTLY how to pay the lab fee. (Just follow them)
- If you're stuck, FIRST check the Help FAQ at MaxzPlace.com
- **BE SURE** your name appears on every screen-capture you submit to show your progress
- **DO NOT** use Yahoo! for your Salesforce account email. (Use Gmail)
- They're on the exams (w/un-guessable questions)
- They'll help you get a job (IF you can explain what you did/learned)

The screenshot displays the MaxzPlace website interface. At the top, the logo 'MaxzPlace' is followed by the tagline 'the Max Labs place for students'. A navigation menu includes 'Home', 'What/Why/How?', 'Help FAQ', 'Help Forum', 'Go Beyond', and 'Comment Wall'. The main content area features three vertical cards. The first card, titled 'What?', shows a woman with a dog and asks 'What are the Max Labs?'. The second card, titled 'Why?', shows a man at a computer and asks 'Why me? I'm no techie!'. The third card, titled 'How?', shows a smartphone with a donut chart and asks 'Build apps? Me?!'. Each card includes a 'Tell me more' link with a right-pointing arrow. The footer contains social media icons for Facebook, Twitter, YouTube, and LinkedIn, along with the text '© 2018 by The Max Labs Project'.

Source: <https://www.maxzplace.com/what>

Business Systems Innovation Labs

Lab 1a Pre-flight Checklist

Max's Distinctive, Impressive BizTech Student Blog

I did it! Check this OUT!

As an introverted, socially awkward computer science major, I've often been asked how I managed to make it into the top 1% of students at SJSU. I'm proud to say that I did it, and I want to share with you the steps I took to get there. I'm not a genius, but I am a hard worker, and I'm willing to put in the time and effort to succeed. I'm also a bit of a perfectionist, and I want to make sure that everything I do is the best it can be. I'm not a genius, but I am a hard worker, and I'm willing to put in the time and effort to succeed. I'm also a bit of a perfectionist, and I want to make sure that everything I do is the best it can be.



Max, welcome to the top 1% of students at SJSU. I'm proud to say that I did it, and I want to share with you the steps I took to get there. I'm not a genius, but I am a hard worker, and I'm willing to put in the time and effort to succeed. I'm also a bit of a perfectionist, and I want to make sure that everything I do is the best it can be.

"I did it! Check this OUT!"

Today, you'll pick up where you left off with the story of Max, the SJSU student blogger. Just follow along as she describes what she did in her new job with a startup company.

Prep: What do you need to start?

Max Labs 1

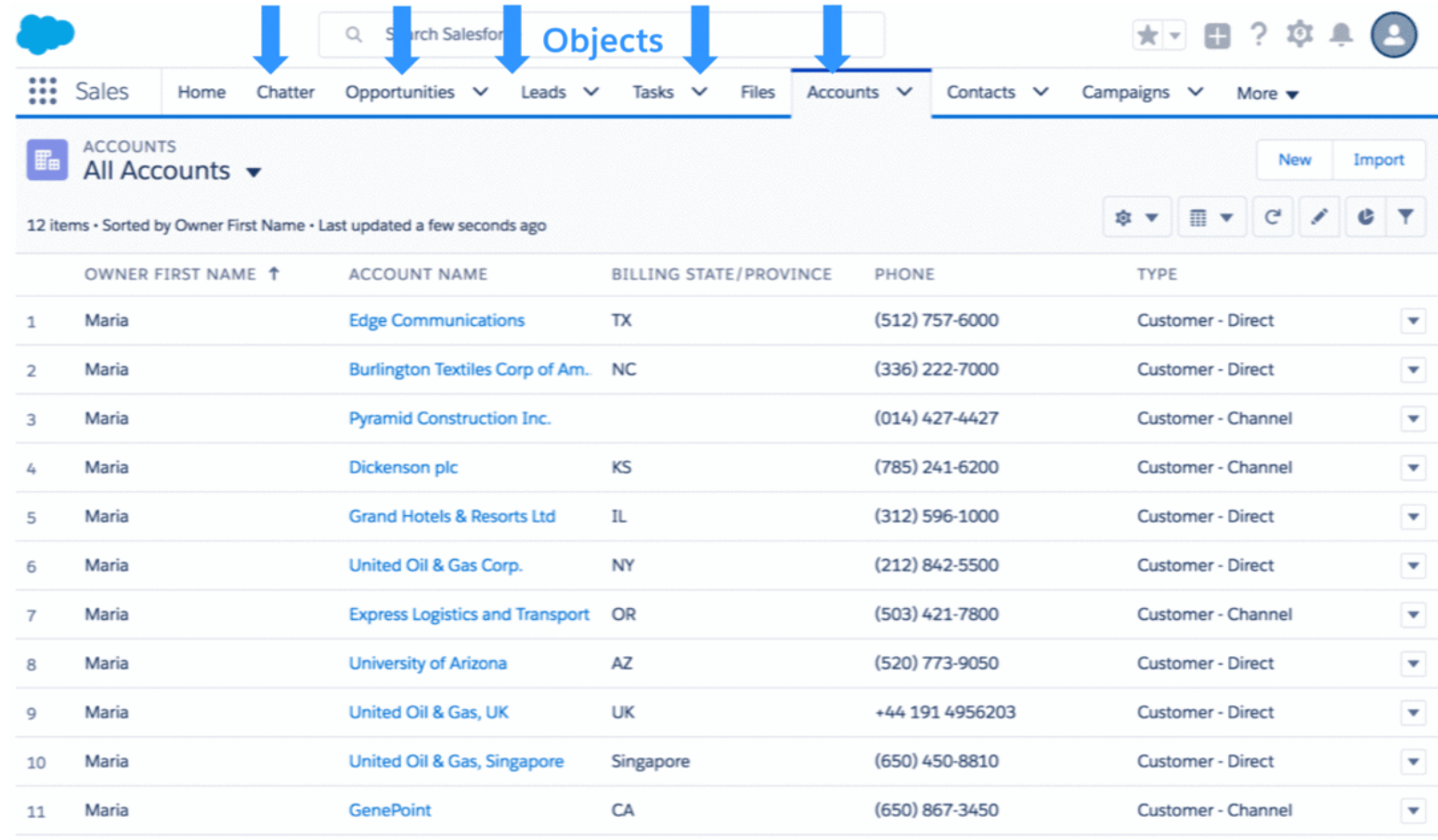
DUE by EOD November 1

**FOX
MIS**

Max Labs – 1a Discussion

Creating Databases (objects)

- Why do we need these lists?
- Why not just use Excel?
- What are we tracking?
- Unique ID?



The screenshot shows the Salesforce interface for the 'Accounts' object. Blue arrows point to the search bar, the 'Accounts' tab, and the 'All Accounts' list. The table below displays a list of accounts with columns for Owner First Name, Account Name, Billing State/Province, Phone, and Type.

	OWNER FIRST NAME ↑	ACCOUNT NAME	BILLING STATE/PROVINCE	PHONE	TYPE
1	Maria	Edge Communications	TX	(512) 757-6000	Customer - Direct
2	Maria	Burlington Textiles Corp of Am.	NC	(336) 222-7000	Customer - Direct
3	Maria	Pyramid Construction Inc.		(014) 427-4427	Customer - Channel
4	Maria	Dickenson plc	KS	(785) 241-6200	Customer - Channel
5	Maria	Grand Hotels & Resorts Ltd	IL	(312) 596-1000	Customer - Direct
6	Maria	United Oil & Gas Corp.	NY	(212) 842-5500	Customer - Direct
7	Maria	Express Logistics and Transport	OR	(503) 421-7800	Customer - Channel
8	Maria	University of Arizona	AZ	(520) 773-9050	Customer - Direct
9	Maria	United Oil & Gas, UK	UK	+44 191 4956203	Customer - Direct
10	Maria	United Oil & Gas, Singapore	Singapore	(650) 450-8810	Customer - Direct
11	Maria	GenePoint	CA	(650) 867-3450	Customer - Channel


Source: <https://developer.salesforce.com/blogs/developer-relations/2017/04/salesforce-data-security-model-explained-visually.html>

Max Labs – 1a Discussion


Getting Started

- **Get** a Salesforce account
- **DO NOT** get the 30-Day Free Trial Account
- **DO NOT** use an AOL, Hotmail or Yahoo account
- **Do** use a new Gmail account you create for this project.

Explore Lightning Platform, the fastest way to create enterprise cloud apps



Build apps Lightning fast with drag and drop tools
Customize your data model with clicks
Go further with Apex code
Integrate with anything using powerful APIs
Stay protected with enterprise-grade security
Customize UI with clicks or any leading-edge web framework

 lightning platform

Get your very own Developer Edition
A full-featured copy of Lightning Platform, for FREE.

Name
First Last

Email

Role

Company

Country

Postal Code

Username

By registering, you confirm you have read and agree to the [Terms of Use](#) and the [Master Subscription Agreement](#) and agree that my data is subject to the [Privacy Statement](#), including use for marketing purposes.

Source: <https://developer.salesforce.com/signup>

Max Labs – 1a Discussion

Determining Data Needs

- What are Max's needs for creating the "Pitch"
- What data are we capturing?
- What are we tracking?
- How will this data be used?

The screenshot shows a Google Sheet titled "The Good CRM" with a menu bar (File, Edit, View, Insert, Format, Data, Tools, Add-ons, Help) and a toolbar. The main table has columns A through F. Column A is "Contact Name", B is "Source of prospect", C is "Next action date", D is "Contact log", E is "Lead nurturing stage", and F is "Estimated opportunity size". The table contains 5 rows of data. A settings sidebar is open on the left, showing categories like Process Automation, User Interface, Custom Code, Environments, and SETTINGS, with sub-items like Company Settings, Identity, and Security.

	A	B	C	D	E	F
1	Contact Name	Source of prospect	Next action date	Contact log	Lead nurturing stage	Estimated opportunity size
2	Joe Smith	Business Card	1/4/19	Chatted with on 12/20/18 and discussed XYZ. Needed more information about X...	3	\$43,500
3	Tony Stark	Tech Convention	1/11/19	Chatted with on 12/20/18 and discussed XYZ. Needed more information about X...	1	All the money
4	Bruce Wayne	Business Card	1/15/19	Chatted with on 12/20/18 and discussed XYZ. Needed more information about X...	2	\$1,000,000
5	Beyonce	Cold Call	1/16/19	Chatted with on 12/20/18 and discussed XYZ. Needed more information about X...	3	\$75,000

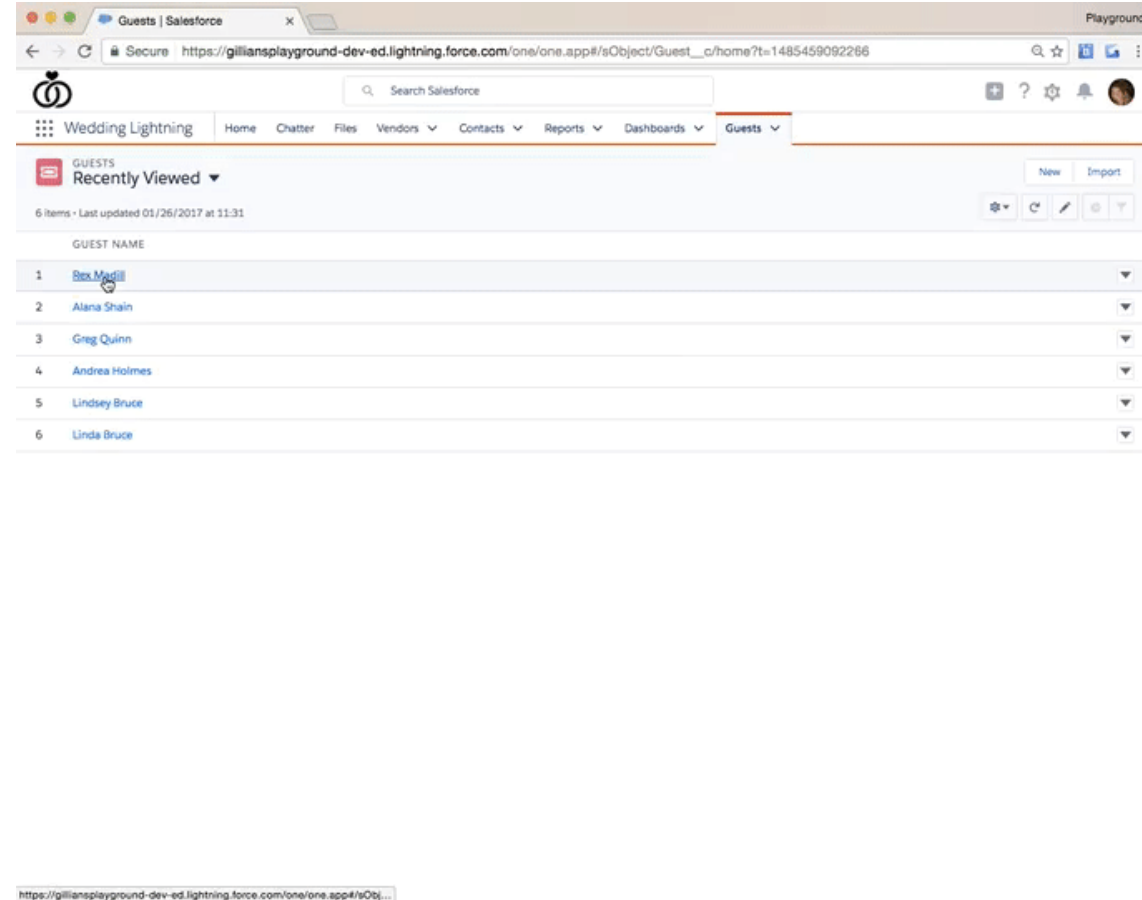
NAME	TYPE	OBJECT
Clone This User	Visualforce Page	
Group Record Page	Lightning Page	
Group Layout	Page Layout	Group
Vendor Record Page	Lightning Page	
Vendor Layout	Page Layout	Vendor
Gillian Madill	User	

Source: <https://www.softwareadvice.com/resources/updates/https://advisesage.com/learn/lightning-business-objects/>

Max Labs – 1a Discussion

Page Layouts

- What information do we want to show.
- Why are aesthetics important?
- Creating cleaner data?

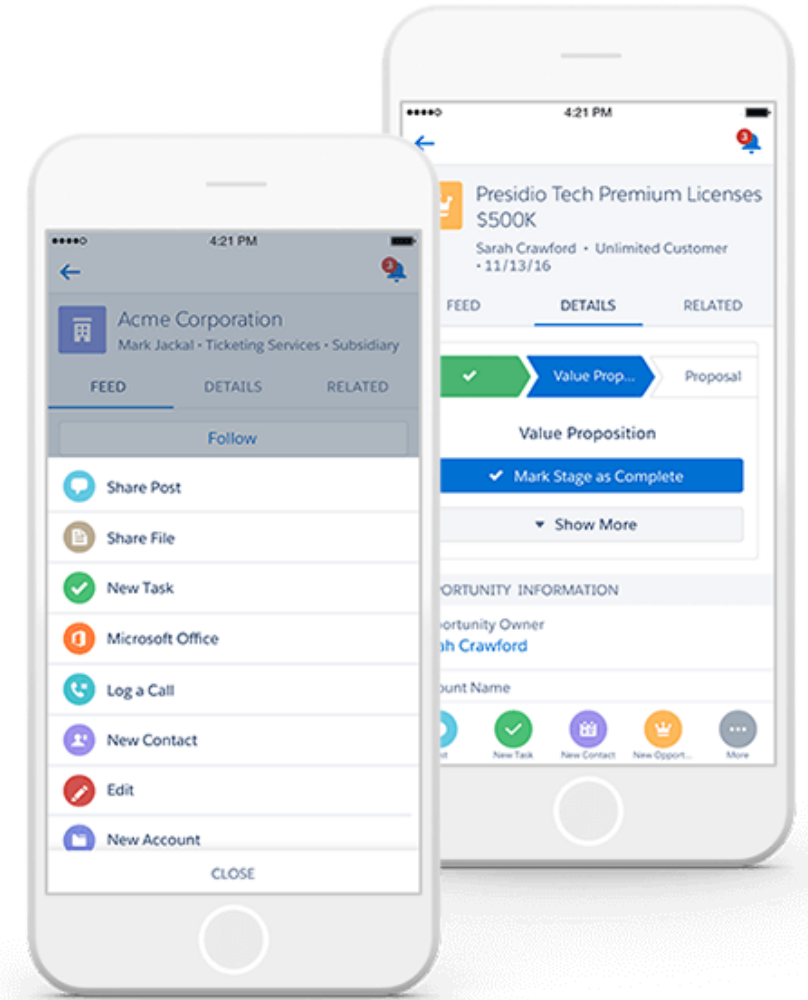


Source: <https://admin.salesforce.com/learn-lightning-compact-layouts>

Max Labs – 1a Discussion

Mobile App

- What information do we want to show.
- Why are aesthetics important?
- Is this an API, ERP, Both?



Source: <https://www.salesforce.com/eu/learning-centre/crm/mobile-crm/>

Max Labs – 1b Discussion

Digital Business Models.

- Share & Communicate
- Revise and Redesign
- 3rd Party Products (APIs)

FEATURED SOLUTIONS SHOW MORE >

App Name	Rating	Price	Type
accountingseed Accounting on Salesforce	★★★★★	PAID	APP
Secure Data Collection FORMASSEMBLY	★★★★★	PAID	APP
Cloud Contact Center Software for Sales and Service NewVoiceMedia	★★★★★	PAID	APP
HELLOSIGN eSignatures for Salesforce	★★★★★	PAID	APP
InGenius Screen pop · Click-to-dial · Call logging	★★★★★	PAID	APP
formstack Native Form Builder	★★★★★	PAID	APP
Automated Document Generation nintex Drawloop	★★★★★	PAID	APP
D&B Optimizer for SALESFORCE Accelerate Sales with Clean Lead, Contact & Account Data	★★★★★	PAID	LIGHTNING DATA
Deliver first-class customer onboarding. TASKRAY	★★★★★	PAID	APP
SurveyMonkey Make customer feedback actionable in Salesforce	★★★★★	PAID	APP
conga Composer™ Engaging documents, presentations, and reports	★★★★★	PAID	APP
slalom strategy. technology. transformation.	★★★★★		CONSULTANT

TOP CATEGORIES

- ★ Finance
- ★ Human Resources
- ★ Enterprise Resource Planning
- ★ Sales
- ★ Customer Service
- ★ IT & Admin
- ★ Marketing
- ★ Integration
- ★ Salesforce Labs
- ★ Analytics

Source: <https://appexchange.salesforce.com/>

Max Labs – 1b Discussion

Monetize Max's Blog

- Do Not Close Your Browser
- Buy Now
- Click Confirmations
- Install (Launch Process)
- Max's Pitch Package



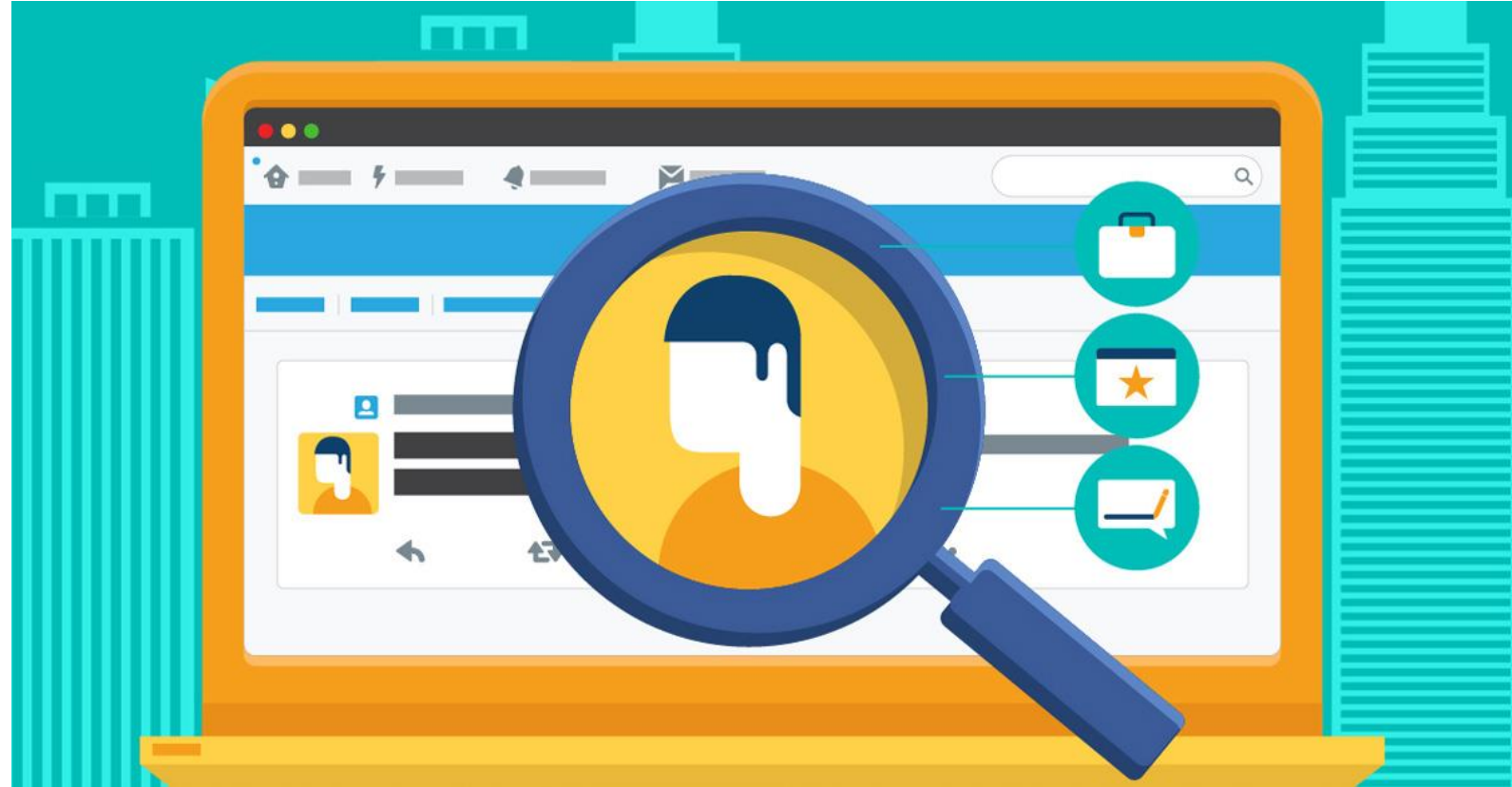
Me & Rocky!

Source: <https://www.themaxlabsprojectshop.com/>

Max Labs – 1b Discussion

Pitch Data File

- CSV files
- Organization
- Viewing the Data
 - Customization



Source: <https://www.salesforce.com/ca/blog/2016/09/sales-search-cheat-sheet.html>

Max Labs – 1b Discussion

Generating Reports

- CSV files
- Organization
- Viewing the Data
 - Filtering
 - Integration

The screenshot shows a Salesforce report interface for 'All Opportunities'. The report displays 34 total records, grouped by lead source. The columns include: LEAD SOURCE, OPPORTUNITY NAME, TYPE, NEXT STEP, STAGE, FISCAL PERIOD, AGE, CREATED DATE, OWNER ROLE, and ACCOUNT NAME. The data is organized into several groups based on lead source.

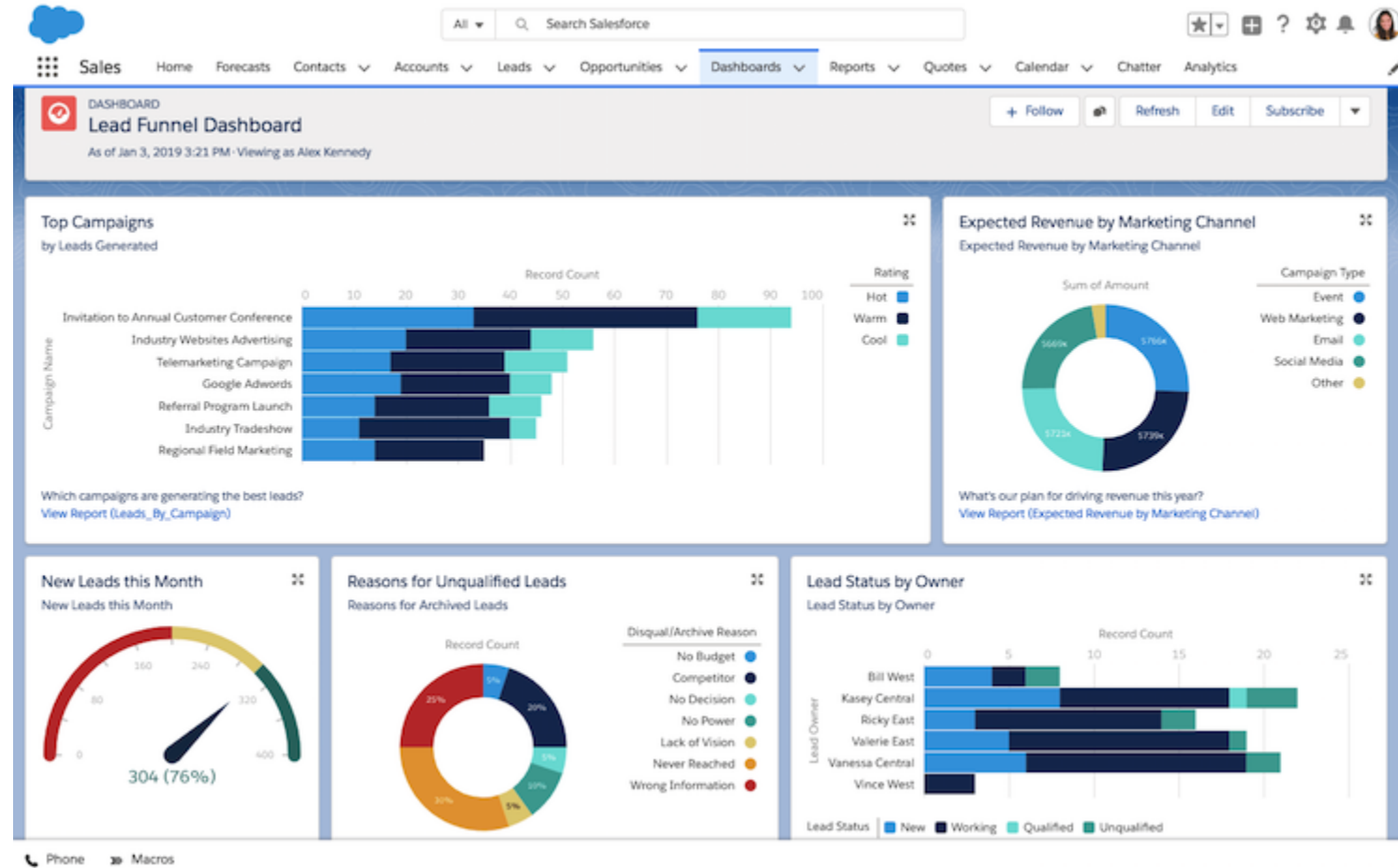
LEAD SOURCE	OPPORTUNITY NAME	TYPE	NEXT STEP	STAGE	FISCAL PERIOD	AGE	CREATED DATE	OWNER ROLE	ACCOUNT NAME
(9 records)	United Oil Office Portable Generators	Existing Customer - Upgrade	-	Negotiation/Review	Q3-2007	203	6/15/2016	-	United Oil & Gas Corp.
	Grand Hotels Kitchen Generator	Existing Customer - Upgrade	-	Id. Decision Makers	Q3-2007	203	6/15/2016	-	Grand Hotels & Resorts Ltd
	United Oil Refinery Generators	Existing Customer - Upgrade	-	Proposal/Price Quote	Q3-2007	203	6/15/2016	-	United Oil & Gas Corp.
	GenePoint Lab Generators	-	-	Id. Decision Makers	Q3-2007	203	6/15/2016	-	GenePoint
	United Oil Installations	Existing Customer - Upgrade	-	Negotiation/Review	Q3-2007	203	6/15/2016	-	United Oil & Gas Corp.
	United Oil Plant Standby Generators	Existing Customer - Upgrade	-	Needs Analysis	Q3-2007	203	6/15/2016	-	United Oil & Gas Corp.
	Edge Emergency Generator	Existing Customer - Replacement	-	Id. Decision Makers	Q3-2007	203	6/15/2016	-	Edge Communications
	Wines R Us deal	New Customer	-	Prospecting	Q4-2016	203	6/15/2016	-	-
	Sunnyside Deal	Existing Customer - Replacement	-	Value Proposition	Q4-2016	203	6/15/2016	-	-
Web (2 records)	Burlington Textiles Weaving Plant Generator	New Customer	-	Closed Won	Q3-2007	0	6/15/2016	-	Burlington Textiles Corp of America
	ABC Company	New Customer	-	Prospecting	Q4-2016	203	6/15/2016	-	-
Phone Inquiry (1 record)	Pyramid Emergency Generators	-	-	Prospecting	Q3-2007	203	6/15/2016	-	Pyramid Construction Inc.
Purchased List (1 record)	Dickenson Mobile Generators	New Customer	-	Qualification	Q3-2007	203	6/15/2016	-	Dickenson pic
Word of mouth (3 records)	Edge Emergency Generator	New Customer	-	Closed Won	Q3-2007	0	6/15/2016	-	Edge Communications
	Edge Installation	Existing Customer - Upgrade	-	Closed Won	Q3-2007	0	6/15/2016	-	Edge Communications

Source: <https://admin.salesforce.com/learn-lightning-create-reports>

Max Labs – 1b Discussion

Dynamic Dashboards

- Database
- Monitoring
- Collaboration
- Customization



Source: <https://admin.salesforce.com/learn-lightning-create-reports>

Business Systems Innovation Labs Lab 2a Pre-flight Checklist



"No Sh, Sherlock - The Case of the Lost Integrity"**

Halloween's approaching & Max is back with another episode and a mystery to solve.

Prep: What do you need to start?

- ✓ If you didn't do Lab 1a and 1b, that's ok. Just do **Steps 6-33 & 102-114** of Lab 1b and you're good for this one.
- ✓ If you didn't get the **Average Amount & Equity by Type** report created successfully in Lab 1b, that's ok. When you hit Step 57 in this one, just refer to the screen cap of that report embedded after that step. No worries.

Max Labs 2

DUE by EOD November 1

**FOX
MIS**

Max Labs – 2a Discussion

Managing Data Corruption

- What's the Issue?
 - Error Messages?
- Mitigation
 - Best Practices?
 - Validation Rules?

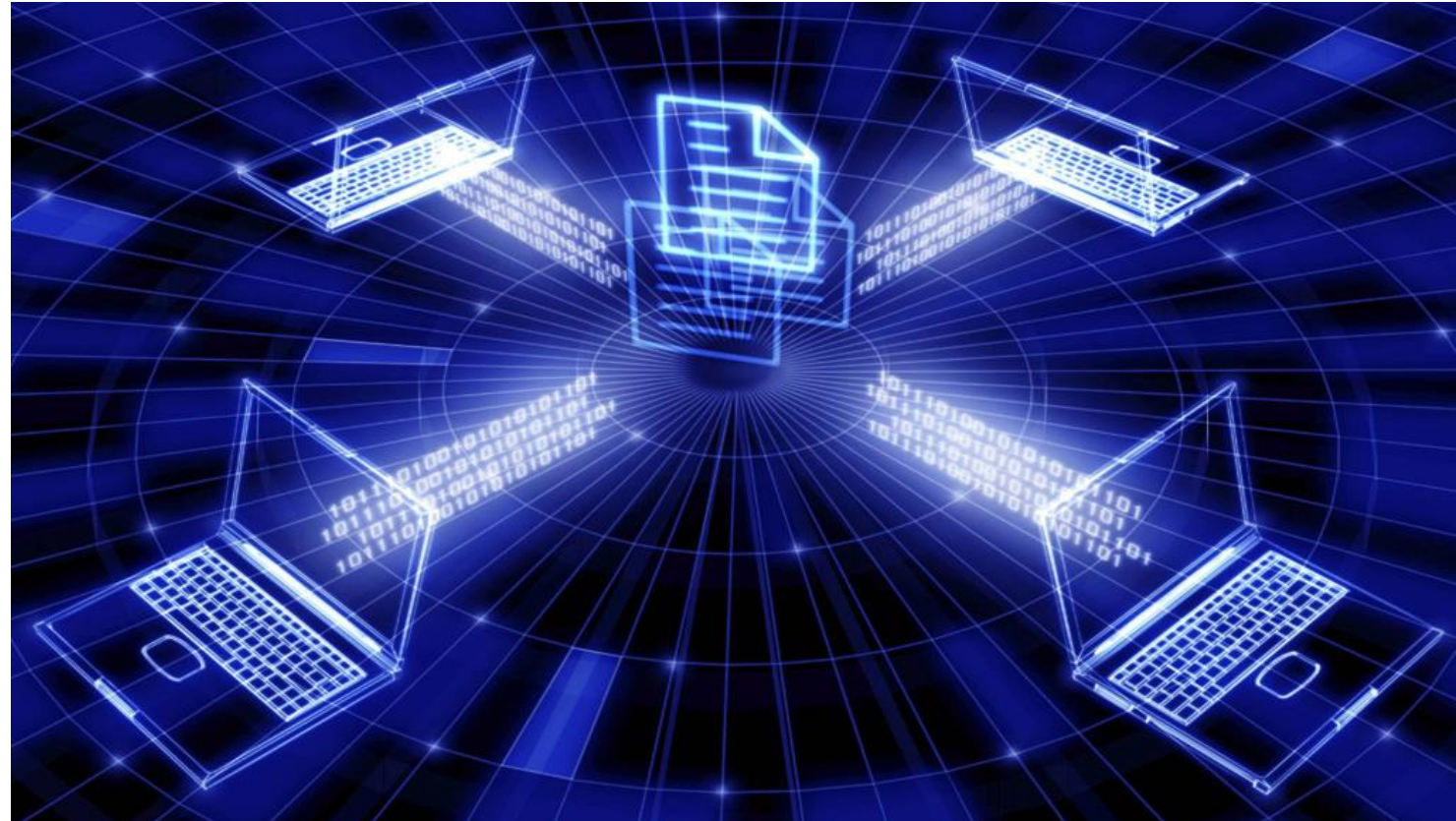


Source: <http://techgenix.com/tgwordpress/wp-content/uploads/2018/06/data-corruption-Shutterstock.jpg>

Max Labs – 2a Discussion

Data Redundancy

- Root Causes?
- Misrepresentation of Facts:
 - Corrupted Reports & Dashboard
- Solutions
 - Creating a Plan



Source: <https://news.bitcoin.com/wp-content/uploads/2016/02/f100.jpg>

Max Labs – 2a Discussion

Data Integrity

- Velocity & Veracity
- Principles

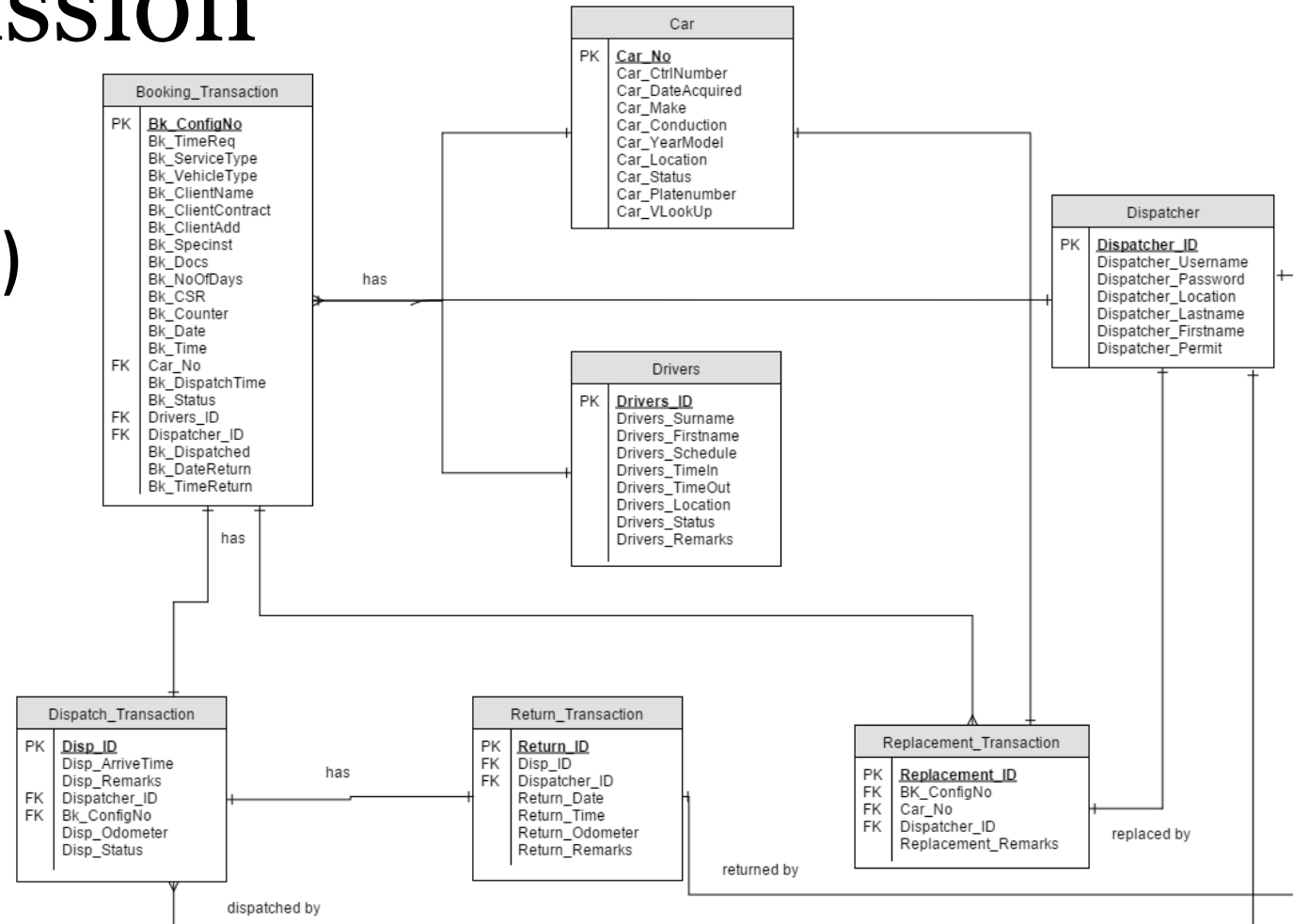


Source: <http://www.rightpatient.com/wp-content/uploads/2015/05/Data-Integrity-2.jpg>

Max Labs – 2a Discussion

Entity Relationship Diagrams (ERD's)

- Cardinality & Crow's Feet
- Data Modeling Requirements
 - Understanding Users Needs
 - Preventing Redundancy



Source: <https://sites.google.com/site/dracvbms/entity-relationship-diagram>

Max Labs – 2b Discussion

Importing Data

- Creating Tables
- Avoiding Redundancy



Source: <https://nebulaconsulting.co.uk/wp-content/uploads/2014/04/pexels-photo-1179800.jpeg>

Max Labs – 2b Discussion

Avoiding Redundancy

- Data Normalization
- Understanding Relationships
- ERD's

Use Cases



Source: <https://www.salesforce.com/blog/2015/11/3-steps-to-the-proper-care-and-handling-of-your-data.html>

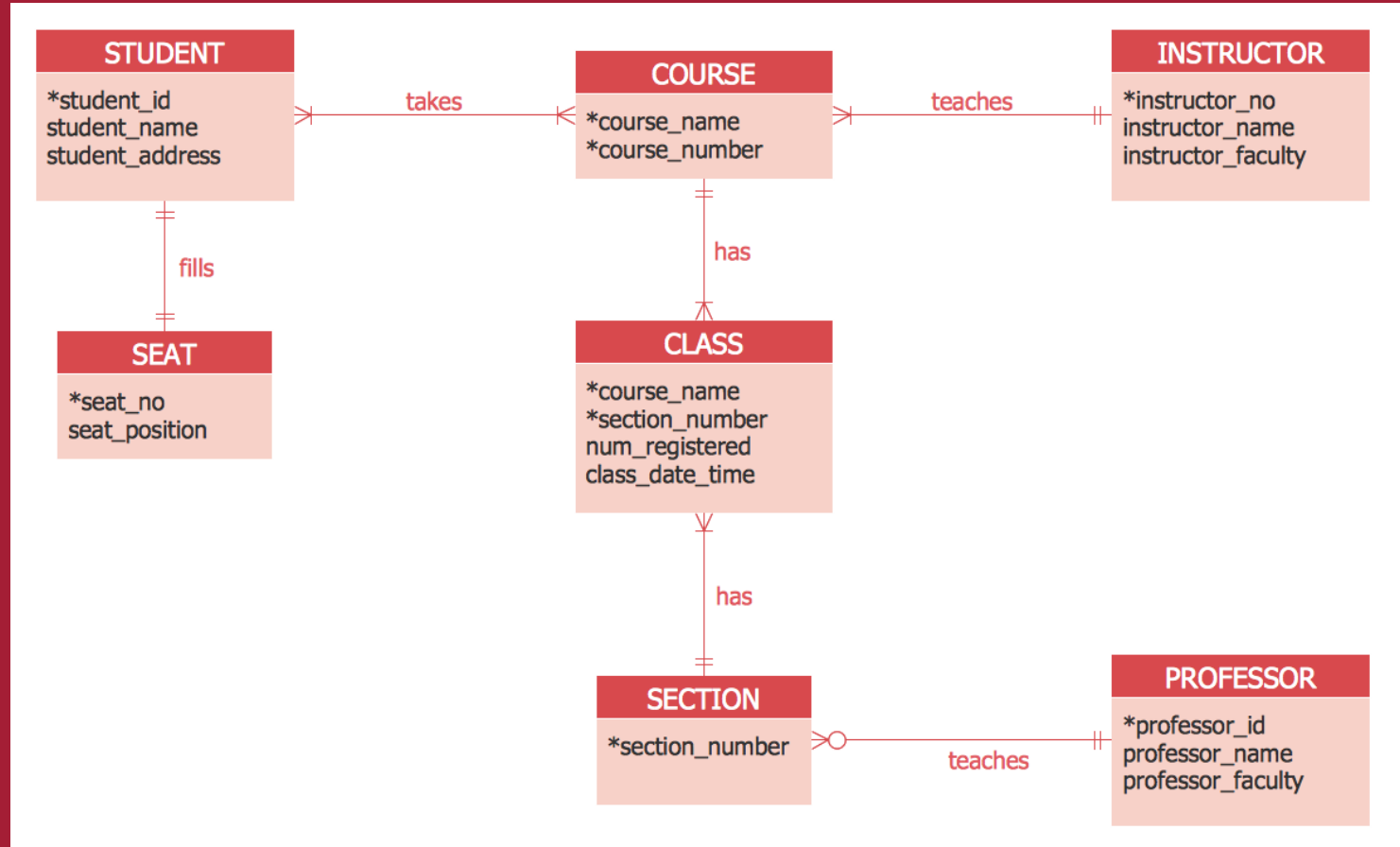


Digital Systems

3.2 Data Modeling with
Entity Relationship Diagrams (ERD)

FOX
MIS

What is an “Entity Relationship Diagram”?

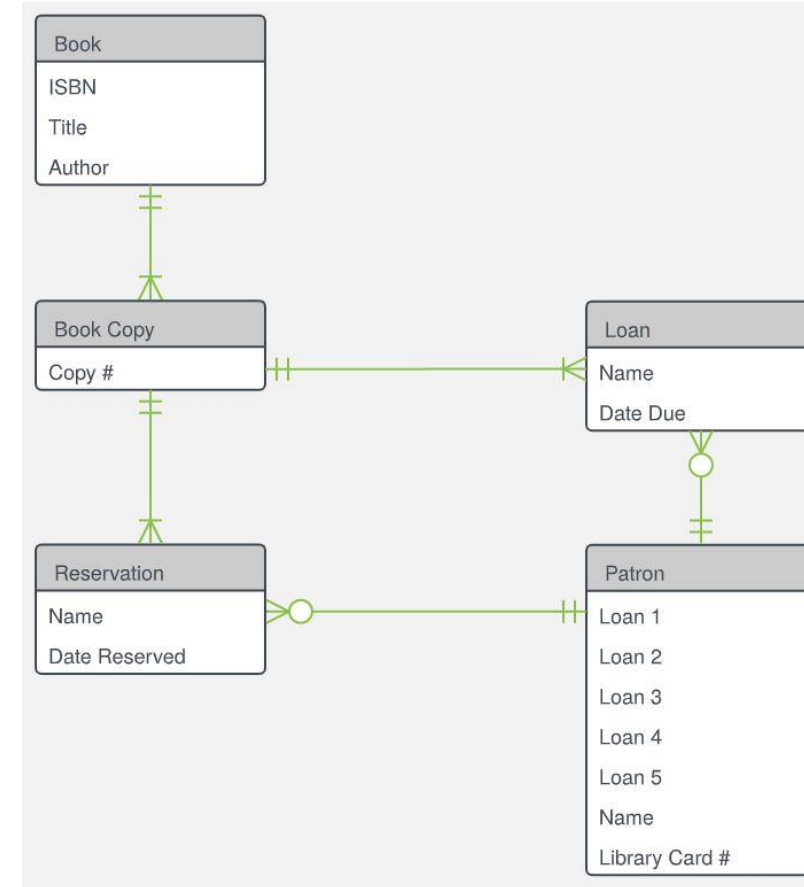


Data Model

Entity = Noun | Attribute = Adjective | Relationship = Verb

What is an Entity Relationship Diagram?

An Entity Relationship Diagram (ERD) is a visual representation of different data using conventions that describe how these data are related to each other.

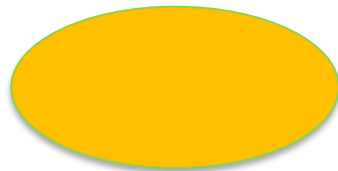


Source: <https://d2slcw3kip6qmk.cloudfront.net/marketing/pages/chart/examples/libraryerdiaagram.svg>

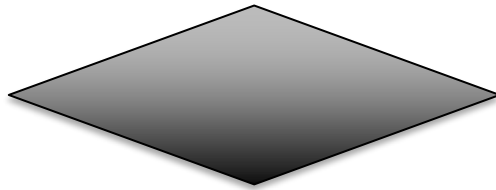
Primary ERD Symbols: Chen's Database Notation



- Entity = noun
ex: shopper, item



- Attribute = adjective/characteristic
ex: item price



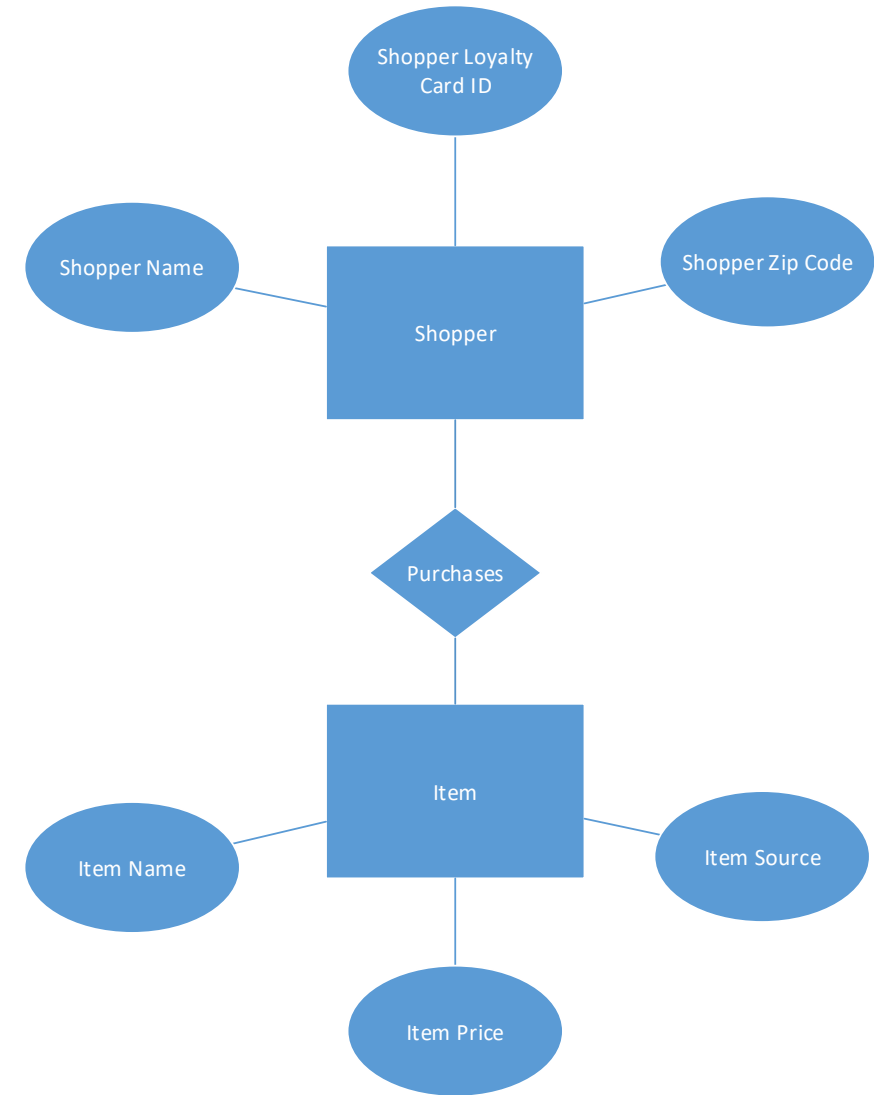
- Relationship = verb
ex: buys

Translating

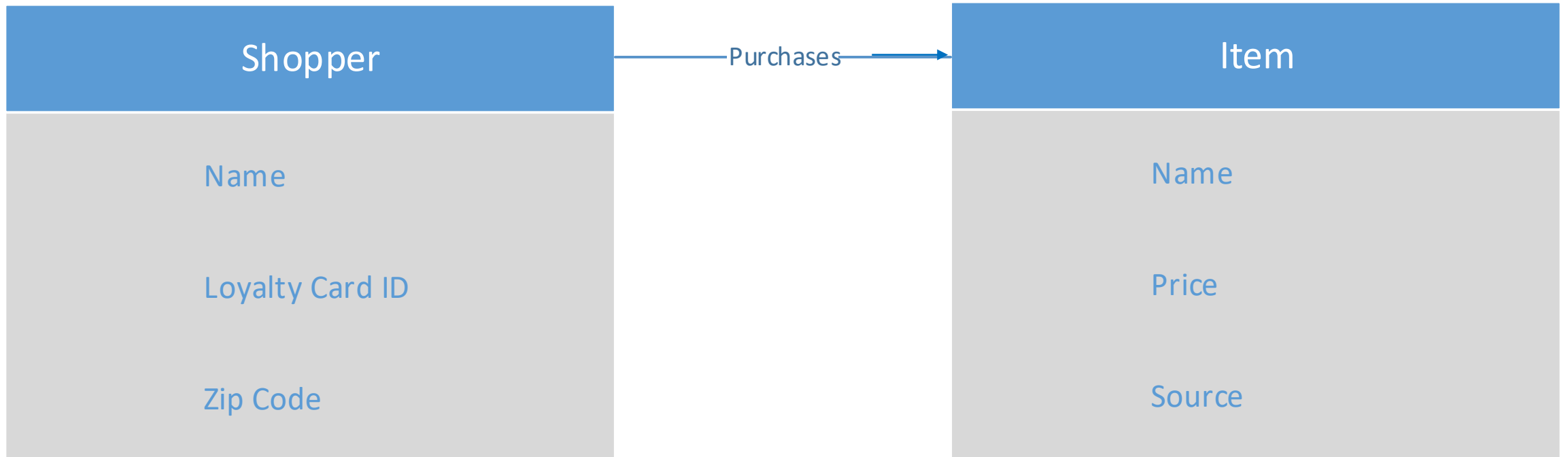
A shopper walks into a store to buy an item. When the shopper makes a purchase, the system is updated with information about the person, including their name, loyalty card id and zip code. The store also records which items were purchased, including details like item name, price and item source.

Entity Relationship Diagram

Chen's Database Notation

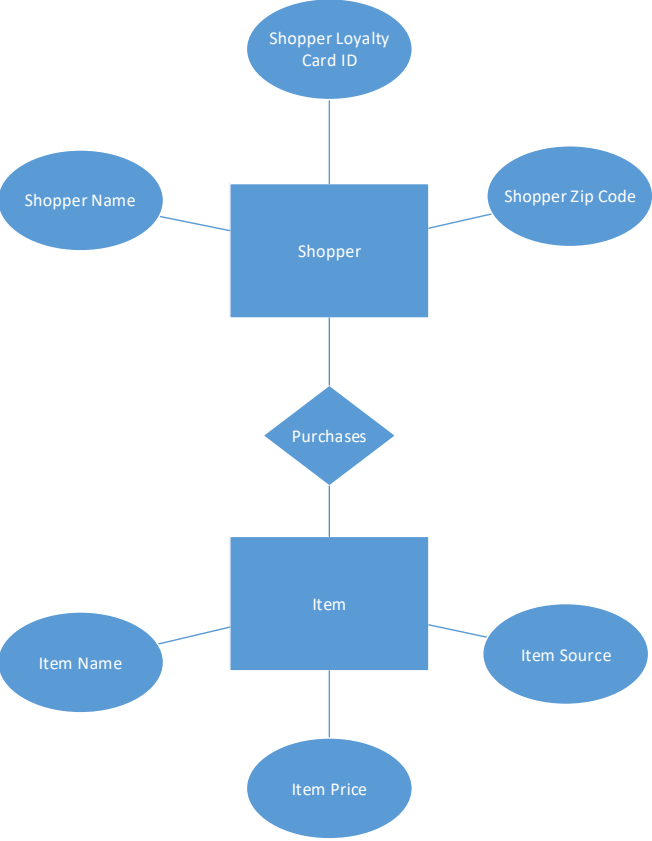


Entity Relationship Diagram: ERD tables



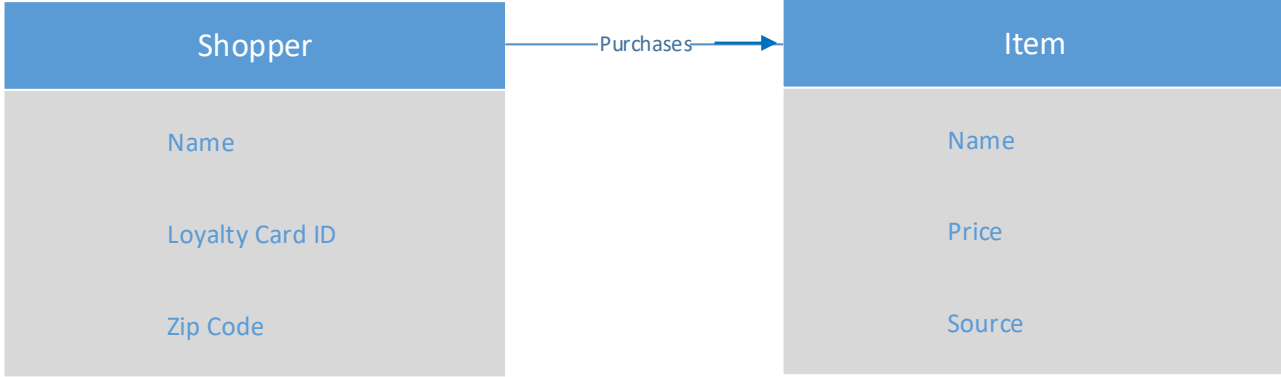
Crow's Foot Database Notation

Entity Relationship Diagram: **recap**



Chen's Database Notation

A shopper walks into a store to buy an item. When the shopper makes a purchase, the system is updated with information about the person, including their name, loyalty card id and zip code. The store also records which items were purchased, including details like item name, price and item source.



Crow's Foot Database Notation

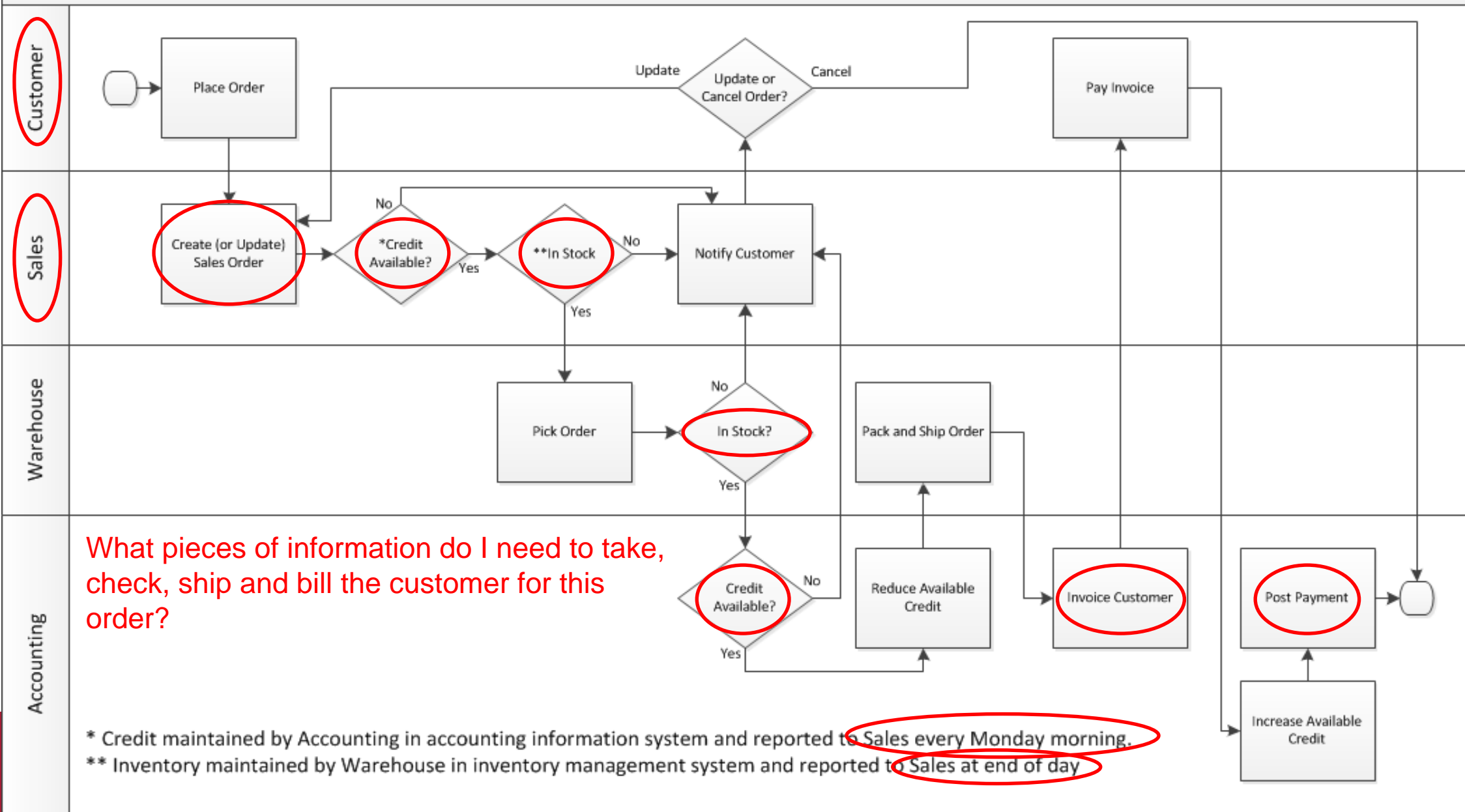
Swim Lane Diagrams – Order to Cash (O2C)

The process starts when the customer contacts Sales to place an order. The person in Sales creates the sales order. As part of doing this, the person in sales first checks to see if the customer has enough available credit to cover the order. They do this by looking up the customer's credit on a report that is generated by Accounting and sent to Sales every Monday morning. If the customer doesn't have enough available credit then the person in sales notifies the customer who can then either update or cancel their order. Next the person in sales checks to see if the items being ordered are in stock. They do this by checking a report on inventory that the Warehouse created at the end of each day. If the items being ordered are not in stock then the person in Sales notifies the customer who can then update or cancel their order. If the report indicates the items are in stock then the order goes to the Warehouse where the workers there will pick the order. Since Sales is looking at a report that is only updated at the end of each day, there is a chance that they accepted an order for an item that is not really in stock. If that is the case the Warehouse notifies Sales who then notifies the customer who can update or cancel their order...

Swim Lane Diagrams – Order to Cash (O2C)

...Once the people in the warehouse pick the order, the people in Accounting have to make sure that the customer actually has enough credit to cover the order. Since the people in Sales use a credit report that is generated on Monday morning, there is a chance that the information on the credit report is old. If the customer doesn't have enough available credit then Accounting notifies Sales who then notifies the customer who can then choose to update or cancel their order. If the customer has enough available credit then their available credit is reduced by the total cost of the order and the warehouse is notified and they pack and ship the order. As soon as the order is shipped the people in the warehouse notify accounting and accounting generates and sends the invoice to the customer. When the customer pays the invoice the people in Accounting increase the customer's available credit by the amount of the payment, they post the payment and we're done.

Order to Cash (Legacy Systems Low-Level)

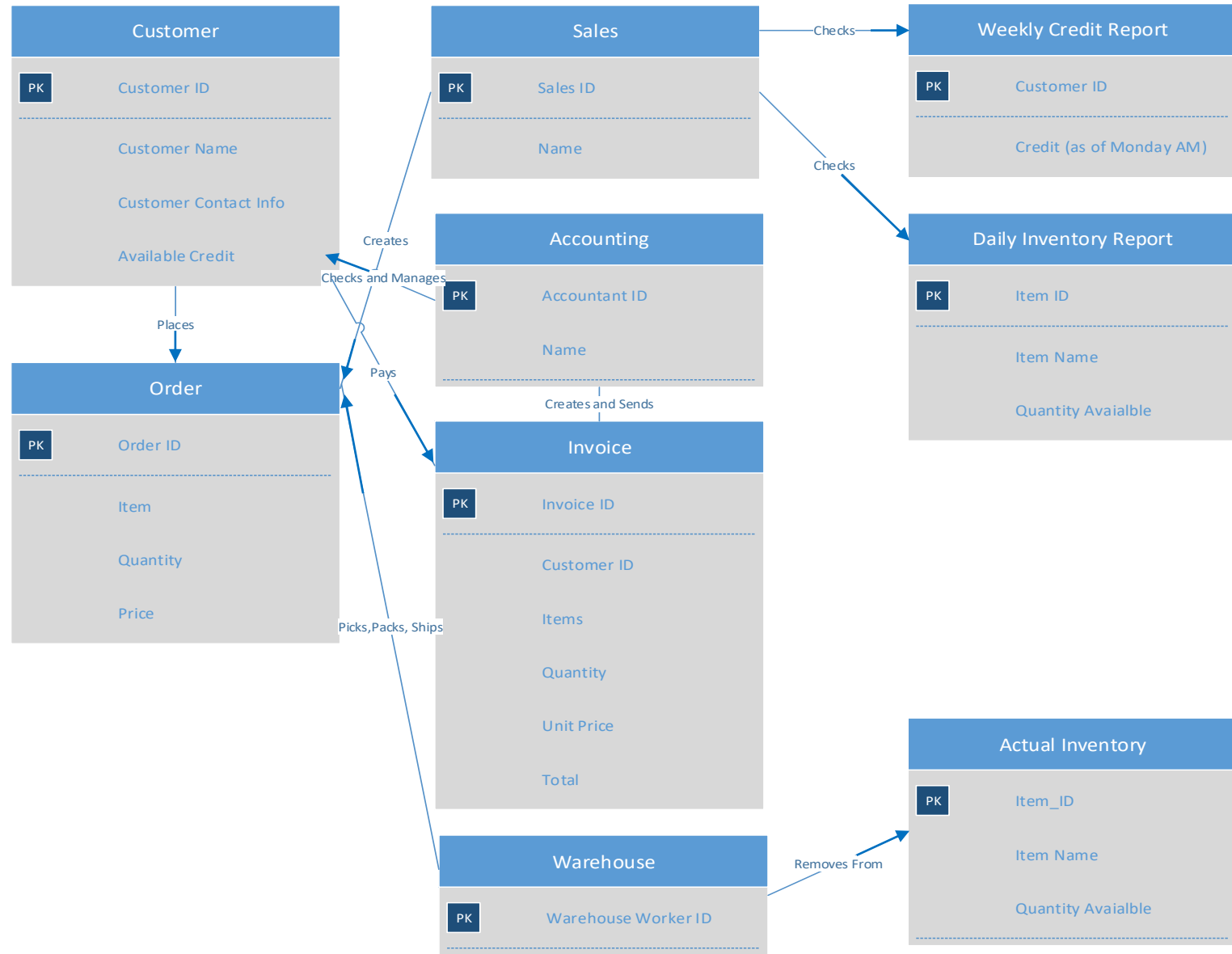


ERD: tables

- Relationship, i.e. verb is written on the arrow
- Entity listed at the top of the table
- Attributes are listed under the entity

Legend :

- PK : Primary Key





Digital Systems

Entity Relationship Diagrams - 1
In-Class Activity

FOX
MIS

Entity Relationship Diagrams - 1

What:

- Interpret an entity relationship diagram
- Construct a simple entity relationship diagram from provided story
- Add the attributes you would expect to be needed for each entity

Why:

- ERDs model the *information* required for a process
- ERDs supplement swim lane diagrams and complete a bigger picture



Digital Systems

Entity Relationship Diagrams - 2
In-Class Activity

FOX
MIS

Entity Relationship Diagrams - 2

What:

- **Construct a more complex entity relationship diagram from provided story**

Why:

- **ERDs model the information required for a process**
- **ERDs supplement swim lane diagrams and complete a bigger picture**

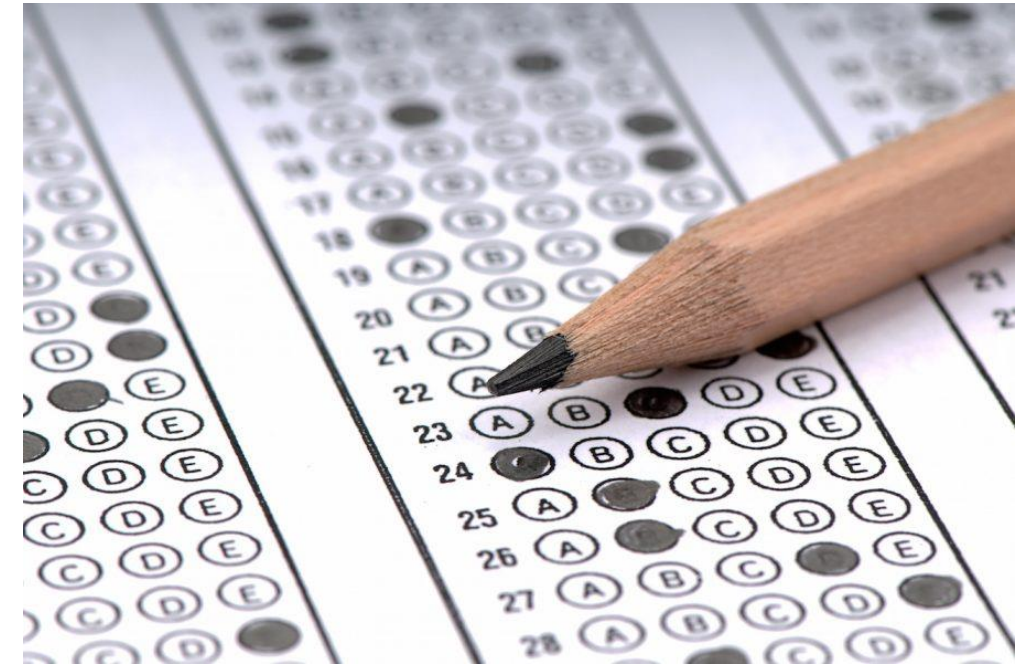
Exam 1 using Proctorio

Opens Friday (10/30) at 6PM

Close Sunday (11/1) at 11:59PM

Exam Will Cover Discussions: week 1 & 2

- **Readings, Videos and Lectures (35%)**
 - What is MIS?
 - Systems Analysis & Systems Architecture
 - Swim Lane Diagrams
 - ERD
- **Max Labs 1a/1b & 2a/2b (25%)**
 - Digital Product Management
 - Concepts of Max Labs
- **Mini-Case – Demonstrate your ability to apply (40%)**
 - Swim Lane Diagram
 - ERD



Source: <https://ccesnews.org/opinion/2018/04/23/10-tips-for-exam-preparation/#photo>

To do: Exam Prep

- **Practice Swim Lane (let's review answers!)**
- **Review slide deck “MIS 2101 Exam 1 prep”**
- **Practice ERD (will send email)**

More to Come

Prepare with Readings & Videos before our next class!!!