Sales force Development

Lesson 5: Building Your Data Model

5.2: Building applications on Force.com platform
Application Building Blocks

Applications
Tabs
Page Layouts
Record Types

Overview

Owner Adal
Track IT Exe
Event Dream
Session Name Autom

User Interface

- Force.com Pages
- Web controls
- Sites

- Workflow
- Validation Rules
- Approval Processes

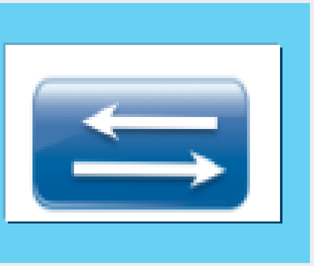
Business Logic

- Force.com Page Controllers
- Force.com code
- Web Services API

- Objects
- Fields
- Relationships

Data Model

- Web Services API
- Metadata API



Declarative ⟷ **Programmatic**

Simplicity + Speed ⟷ **Control + Flexibility**

Lesson Objectives

By the end of this lesson, you will be able to:

- Create custom objects
- Create custom fields
- Create master-detail relationship
- Create lookup relationship
- Create many-to-many relationship
- Create lookup filters
- View your schema graphically

5.1: Create Objects
Objects

Analogous to database tables

- Standard objects: pre-defined CRM-oriented
- Custom objects: developer defined

Configurable

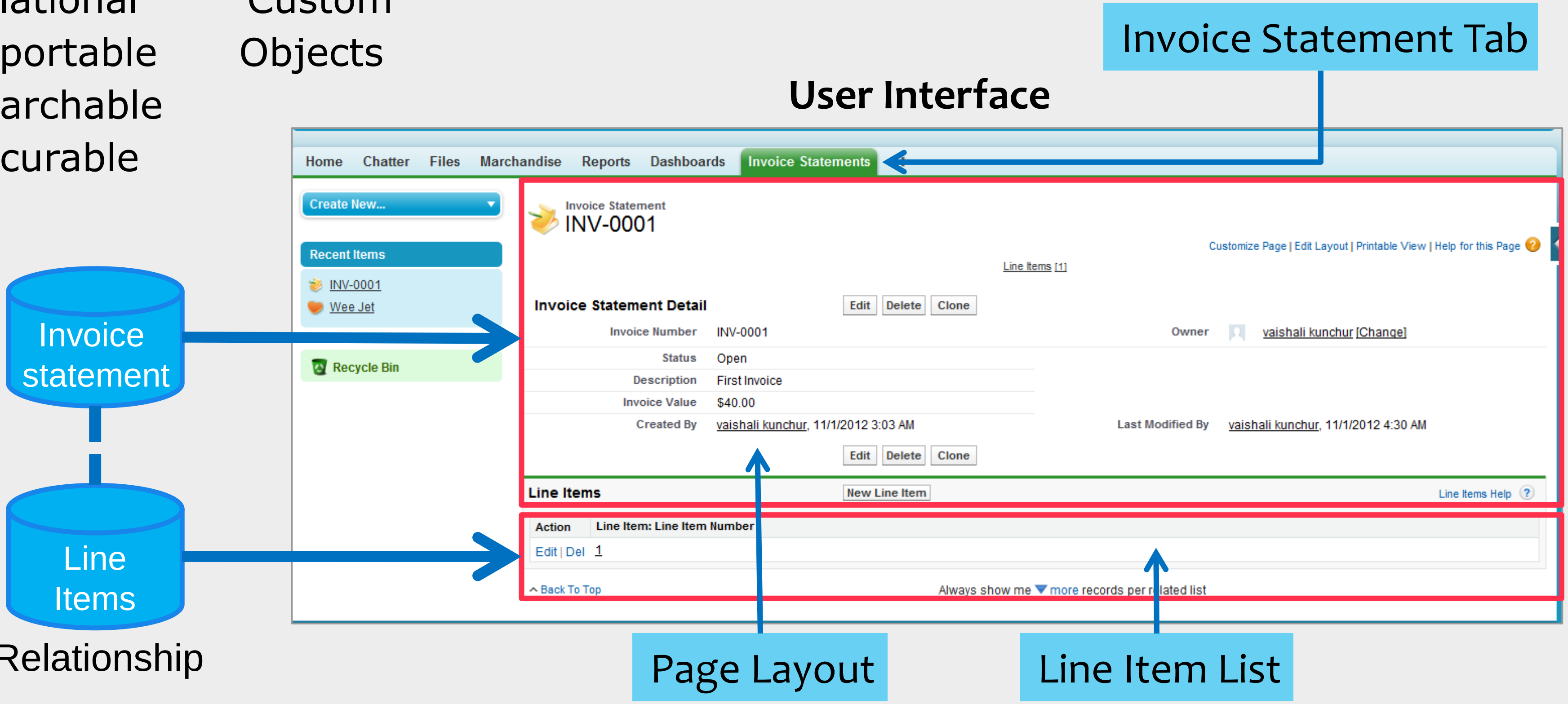
Relational

Reportable

Searchable

Securable

Custom
Objects



Invoice Statement
INV-0001

Invoice Statement Detail

Invoice Number	INV-0001	Owner	vaishali kunchur [Change]
Status	Open		
Description	First Invoice		
Invoice Value	$40.00		
Created By	vaishali kunchur, 11/1/2012 3:03 AM	Last Modified By	vaishali kunchur, 11/1/2012 4:30 AM

Line Items

Action	Line Item: Line Item Number
Edit | Del	1

Always show me ▼ more records per related list

5.1: Create Objects
Fields

Analogous to database columns

- Standard fields: system generated upon object creation 7 field
- Custom fields: developer- defined

ID	Name	Owner	Created By	Created Date	Last Modified by	Last Modified Date	Custom 1	Custom 2	…

5.1: Create Objects
Standard Fields: ID

A key which uniquely locates each record

System assigned, not updatable

Indexed

Each key has two versions:

- 15-digit, case-sensitive
- 18-digit, case-insensitive

First 3 digits identify the object type

5.1: Create Objects
Standard Fields: Name

A short description to identify a record’s contents

Indexed

Required

Datatype options:

- Text: user assigned, not necessarily unique, modifiable
- Auto-number: system generated, (usually) unique, not modifiable

ALERT: Auto number fields can be reset by modifying the object definition. This can lead to non-unique numbering.

5.1: Create Objects
Standard Fields: Name (cont.)

Label of the name field defined by developer

Contact Details

- Name Jon Amos

Position Detail

- Title Black Box Tester

Job Application Details

- Job Application Number APP-0000

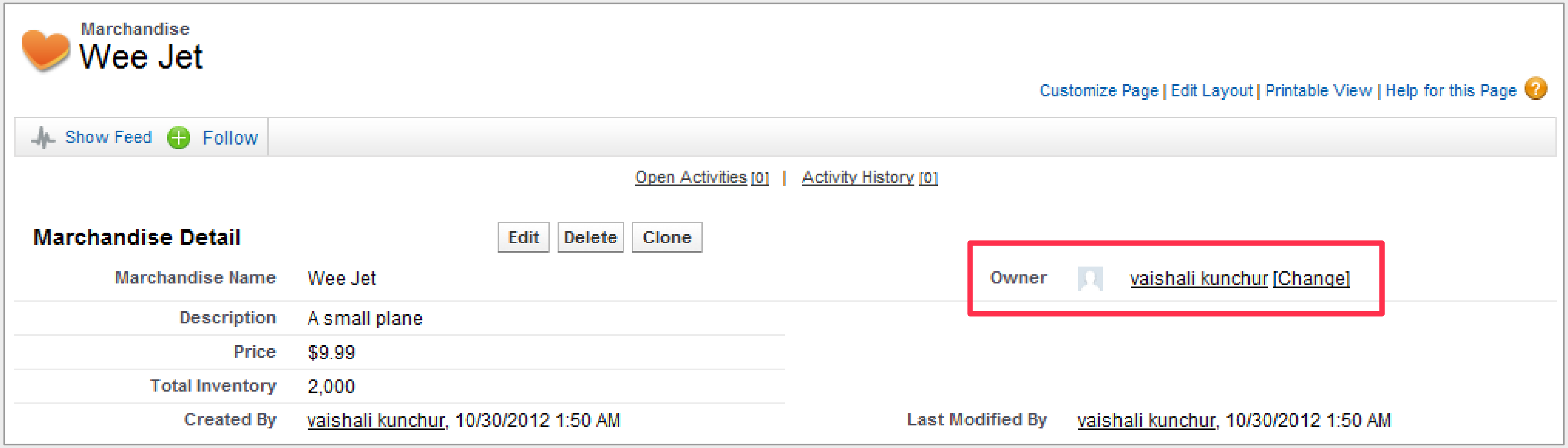
By default, the Name field appears as the first column in list views and related lists.

5.1: Create Objects
Standard Fields: Owner

A reference to a user or group of users (queue)

The owner is granted additional privileges

Upon creation defaults to record creator, but can be changed



Marchandise

Wee Jet

Customize Page | Edit Layout | Printable View | Help for this Page ?

Show Feed ⊕ Follow

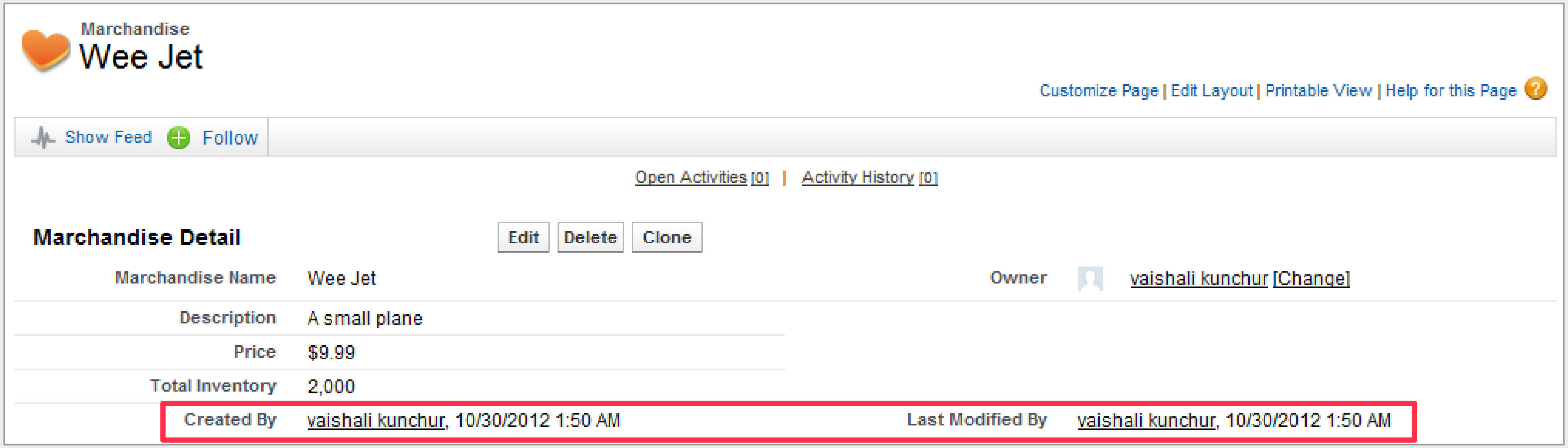
Open Activities [0] | Activity History [0]

Marchandise Detail Edit Delete Clone

Marchandise Name	Wee Jet	Owner	vaishali kunchur [Change]
Description	A small plane		
Price	$9.99		
Total Inventory	2,000		
Created By	vaishali kunchur, 10/30/2012 1:50 AM	Last Modified By	vaishali kunchur, 10/30/2012 1:50 AM

5.1: Create Objects
Standard Fields: Created/Last Modified…

System assigned, but can be initialized during record creation
Created by: a reference to the user who created the record
Last Modified By: a reference to the user who last modified the record
Created date: the date/time that the record was created
Last Modified Date: the date/time that the record was last modified



Marchandise
Wee Jet

Customize Page | Edit Layout | Printable View | Help for this Page

Show Feed Follow

Open Activities [0] | Activity History [0]

Marchandise Detail Edit Delete Clone

Marchandise Name	Wee Jet	Owner	vaishali kunchur [Change]
Description	A small plane		
Price	$9.99		
Total Inventory	2,000		
Created By	vaishali kunchur, 10/30/2012 1:50 AM	Last Modified By	vaishali kunchur, 10/30/2012 1:50 AM

Demo

Lab 1:
Creating a Custom Objects

5.2: Custom Fields
Custom Fields

The limit on the number of custom fields varies with your Salesforce edition

Deleted fields are stored for 15 days after deletion

- Recovering the field definition will also recover the old field data

Custom fields support a number of data types

ID	Name	Owner	Custom 1	Custom 2	Custom 3	…

5.2: Custom Fields Data Types

Numeric Field Data Types

- Number
- Currency
- Percent

- Calendar Data Types
  - Date
  - Date/Time

- Limited Option Data Types
  - Checkbox
  - Picklist
  - Picklist (Multi-Select)

- Formatted Text Data Types
  - Email
  - Phone
  - URL

5.2: Custom Fields
Data Types (cont.)

Text Data Types

Text – single line (255)

Text Area – multi line (255)

Text Area (Long) – multiline (32000)

Text Area (Rich) – (32768) multi line + embed images

Encrypted

Calculation Data Types

- Auto-Number
  - Select the display format
  - Increment by 1
- Formula
  - Perform calculations on a record
  - Can span across objects
- Roll-Up Summary
  - Created on a master
  - Allow calculations on details

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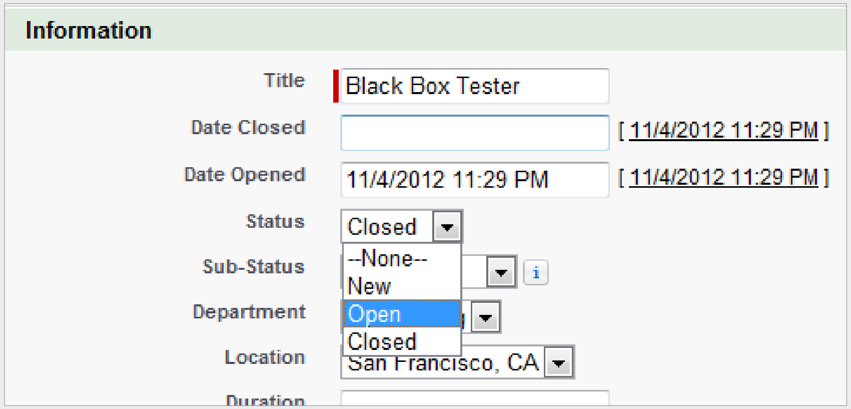
5.2: Create Fields
Field Dependencies

A field dependency is a set up between a controlling picklist or checkbox and a dependent picklist. The values in the dependent picklist will vary based on the value of the controlling field.



Information

Title: Black Box Tester

Date Closed: [11/4/2012 11:29 PM]

Date Opened: 11/4/2012 11:29 PM [11/4/2012 11:29 PM]

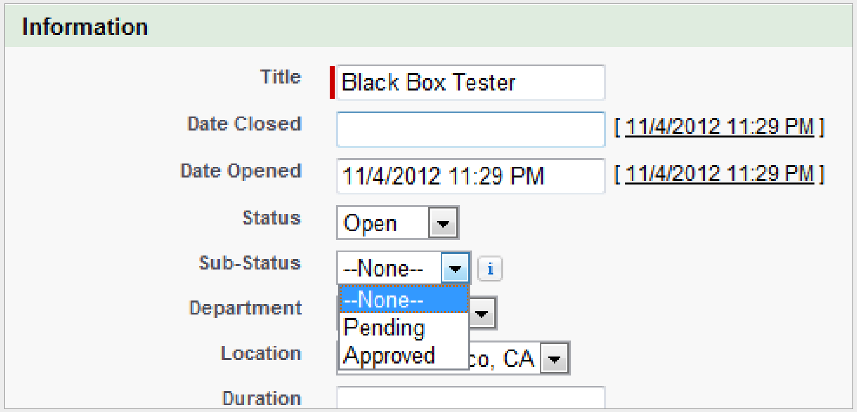
Status: Closed

Sub-Status:

Department:

Location: San Francisco, CA

Duration



Information

Title: Black Box Tester

Date Closed: [11/4/2012 11:29 PM]

Date Opened: 11/4/2012 11:29 PM [11/4/2012 11:29 PM]

Status: Open

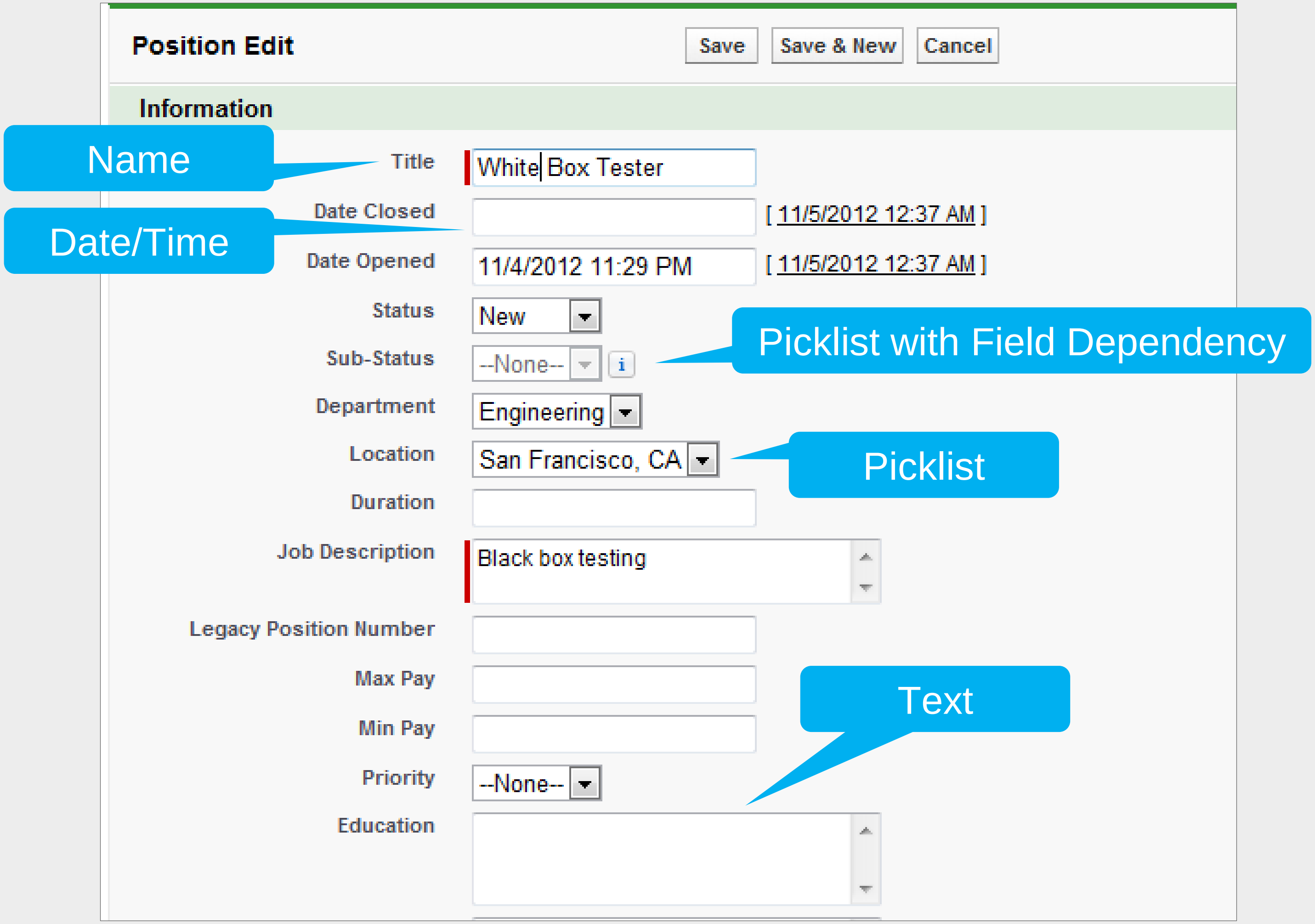
Sub-Status: --None--

Department:

Location: ...co, CA

Duration

5.2: Create Fields
Custom Field Types



Position Edit

Information

Title	White Box Tester
Date Closed	[11/5/2012 12:37 AM]
Date Opened	11/4/2012 11:29 PM [11/5/2012 12:37 AM]
Status	New
Sub-Status	--None--
Department	Engineering
Location	San Francisco, CA
Duration	
Job Description	Black box testing
Legacy Position Number	
Max Pay	
Min Pay	
Priority	--None--
Education	

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5.2: Create Fields
Custom Field Properties

Name: the programmatic name used in Web Service API, formulas, etc.

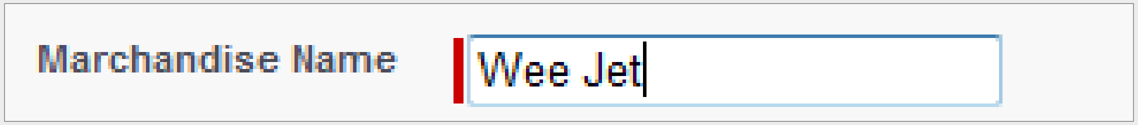
- Disallows spaces and certain special characters
- "__c" always automatically appended to end
- Eg. Department__c

Label: the label of the field as displayed in the user interface

- Multilingual support

Required: always require a value in this field in order to save a record to the database

- Enforce for records entered both through the UI and the API



Marchandise Name: Wee Jet

5.2: Create Fields
Custom Field Properties

Unique: disallows duplicate values

- Can select whether you want uniqueness to be enforced as case sensitive or case insensitive

External ID: denotes a field that stores a key from an external system – text , number, email

Default Value: a formula to generate a pre-populated field value

Help Text: provides a mouse-over text box to provide clarification to users

Demo

Lab 2:
Creating a Custom Fields

5.3: Object Relationships
Object Relationships

Link two objects:

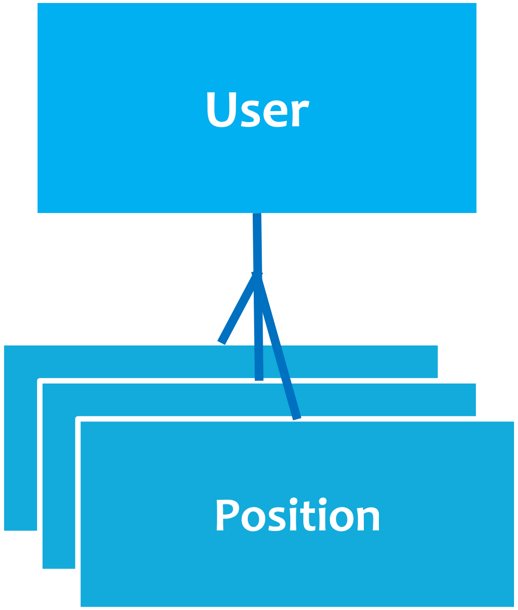
- Parent-to-child
- One-to-many

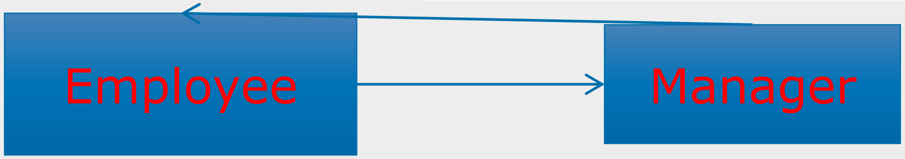
Two main types

- Lookup
- Master-Detail

Two special types

- Self
- Many-to-Many





5.3: Object Relationships
Lookup Relationships

Independent ownership & sharing

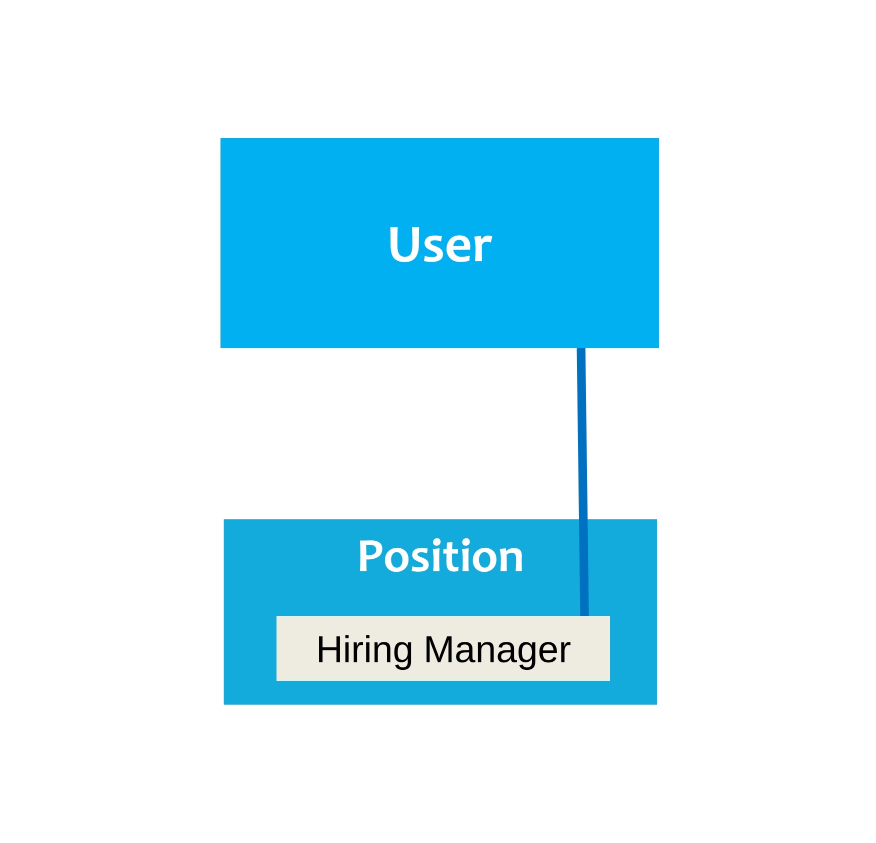
Maximum 40 lookup relationships per child

Lookup field on child is optional

- Specify 1 of 3 delete behaviors

Lookup field value on child is required

- parent specified in lookup field cannot be deleted

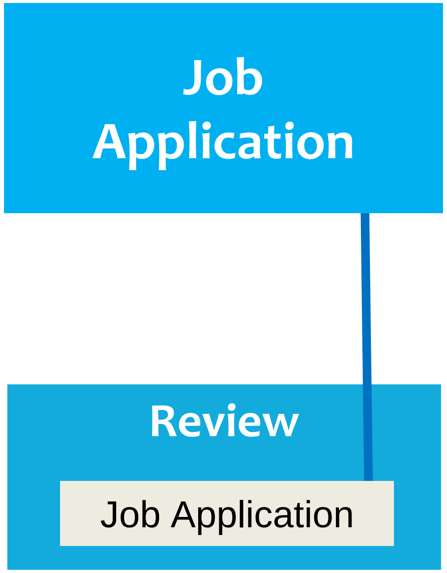


5.3: Object Relationships
Master-Detail Relationships

Tightly coupled

- Lookup field value on child is always required
- Cascade delete
- Inherited ownership & sharing

Maximum 2 master relationships per detail object



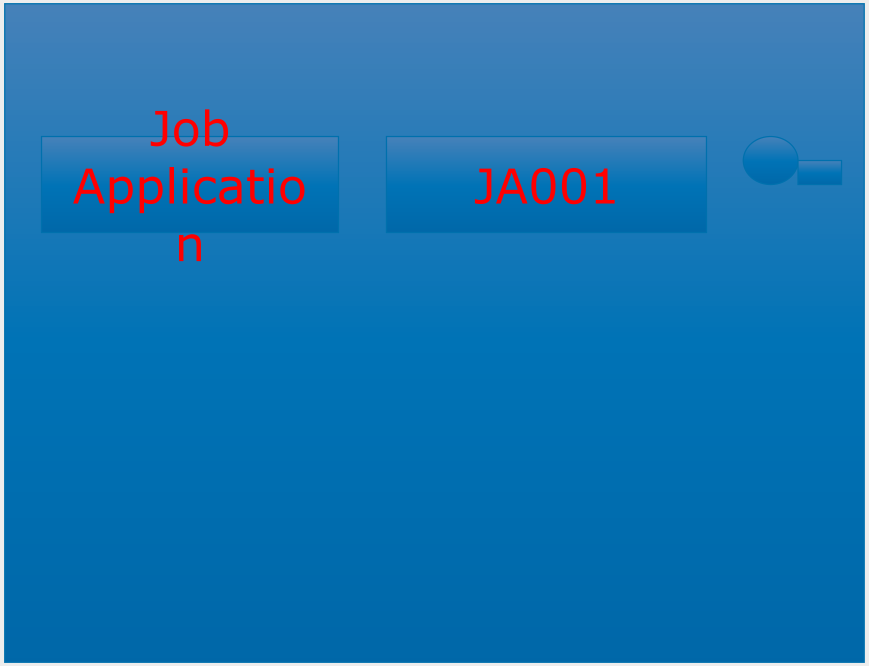
5.3: Object Relationships
Compare Lookup and Master-Detail Relationships

Lookup Relationship	Master-Detail Relationship
Up to 40 allowed per object	Up to 2 allowed per object
Parent field on child can be required or optional	Parent field on child is required
No impact on security and access	Access to parent determines access to children
If parent field is required, you cannot delete parent when referenced by child. If parent is optional, choose one of three delete behavior	Deleting parent automatically deletes children
Can be multiple layers deep	Can only be multiple layers deep, the number depends on whether master object is a standard or custom object
Lookup field is on page layout depends on required/optional choice	Lookup field on page layout is required
Roll-up summary field not allowed	Roll-up summary fields allowed

5.3: Object Relationships
What will the user see?

Both relationship types look almost the same on a page layout: both include a lookup field for the one side and related list for the many side

Review



Demo

Lab 3:

Creating Lookup Relationships

Creating Master-Detail Relationships

5.3: Object Relationships
Self Relationships

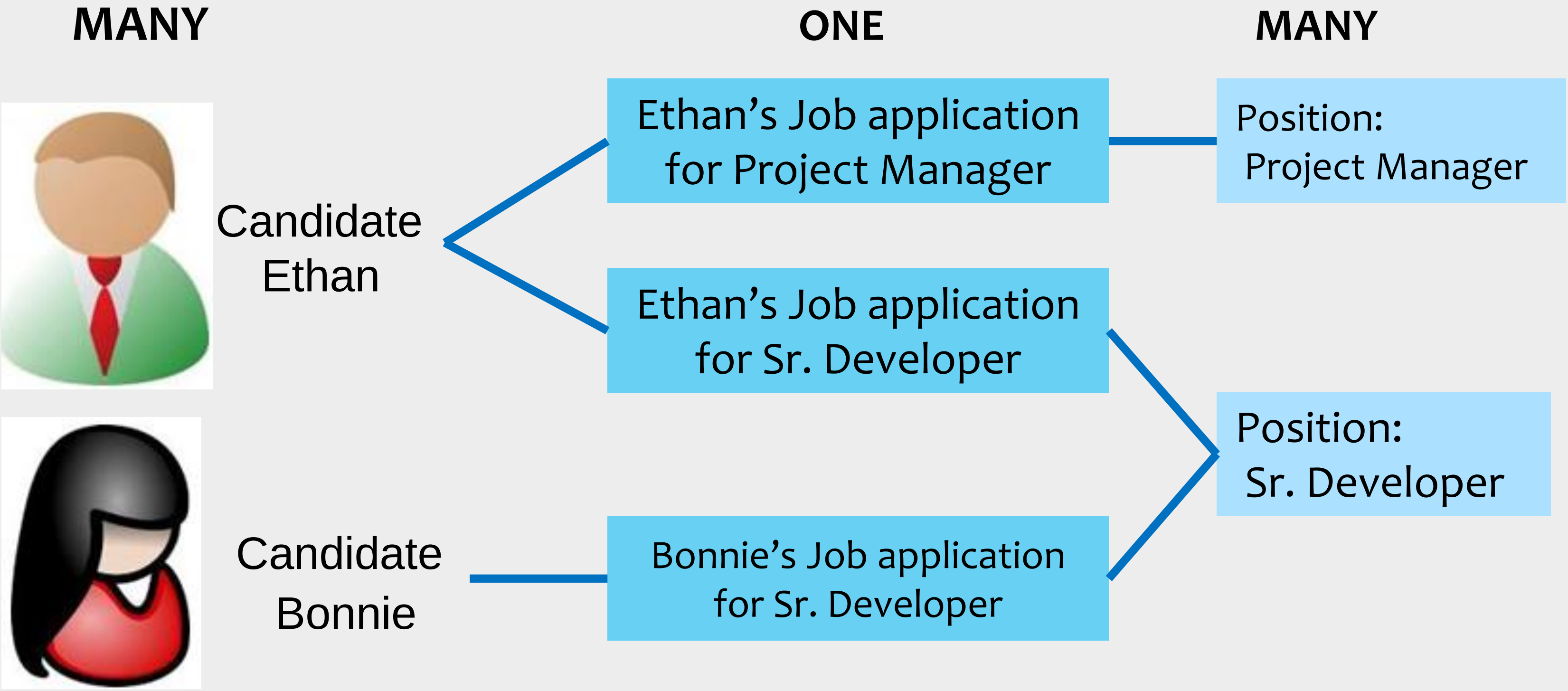
A self relationship is a lookup relationship to the same object

- Example: it is possible to create a lookup relationship from Position to Position.
- The User object has a special type of lookup relationship: the hierarchy relationship. For example, a hierarchy relationship allows developer to create a Manager field on the User object to relate another user.

5.3: Object Relationships
Many to Many Relationships

Allow for the relationships of two objects in a many to many fashion

- Candidates may apply for many positions by submitting a job application for each position
- A position may have many candidates apply
- Implementing a many to many relationship requires a third junction object



MANY

ONE

MANY

Candidate Ethan

Candidate Bonnie

Ethan’s Job application for Project Manager

Ethan’s Job application for Sr. Developer

Bonnie’s Job application for Sr. Developer

Position: Project Manager

Position: Sr. Developer

5.3: Object Relationships
Junction Objects

When modeling a many-to-many relationship, you use a junction object to connect the to objects you want to relate to each other

A junction object is a custom object with two relationships

When creating a junction object, consider the following:

- Name the object with a label that indicates its purpose
- Use the auto-number data type

Demo

Creating custom junction object

5.3: Object Relationships
Lookup Filters

Limit search results for users
Create on lookup, master detail and hierarchical fields
Compare fields to static values or to other fields
Can be required
Define informal messages

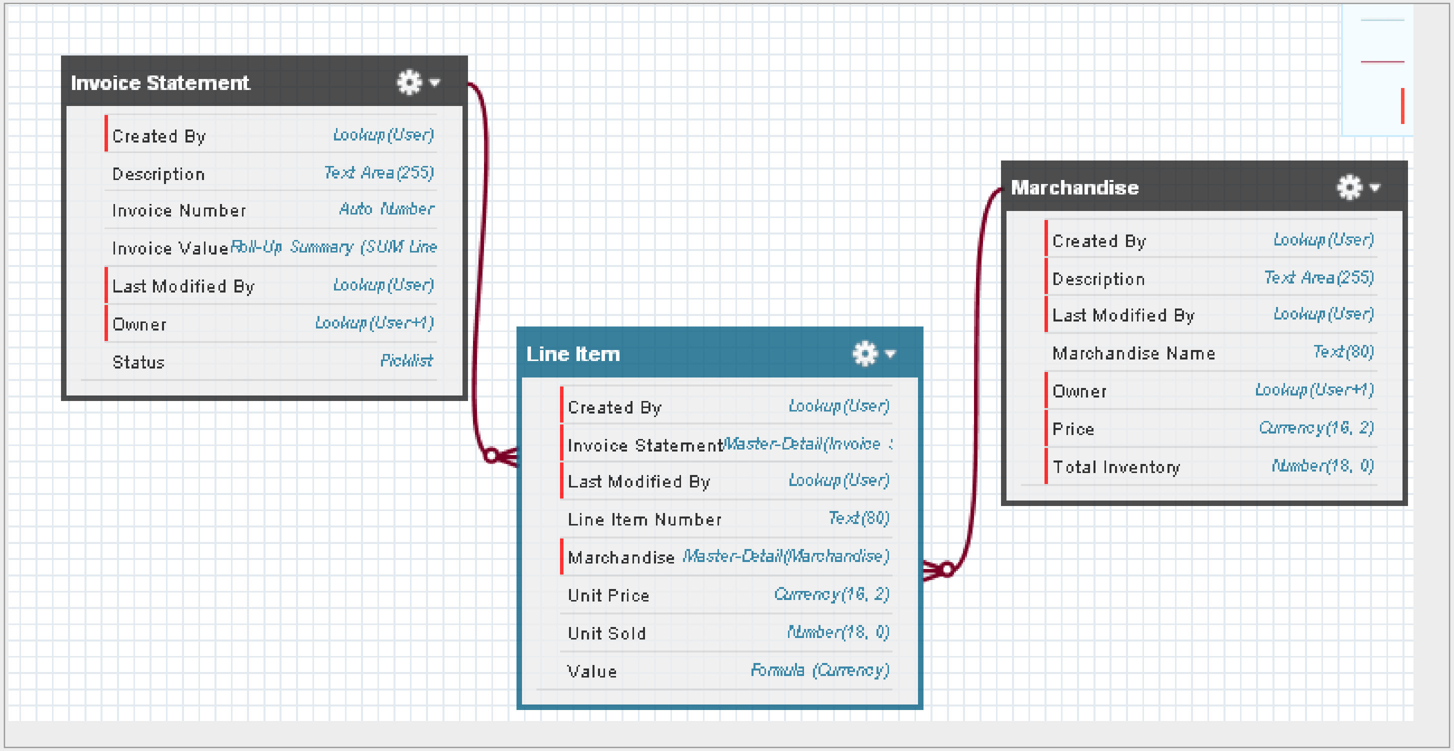
Demo

Lab 4:
Creating custom Lookup filter

5.4: Schema Builder
Schema Builder

The Schema builder is a graphical tool to create and modify custom:

- Objects
- Fields
- Relationships



Invoice Statement

Created By	Lookup(User)
Description	Text Area(255)
Invoice Number	Auto Number
Invoice Value	Roll-Up Summary (SUM Line
Last Modified By	Lookup(User)
Owner	Lookup(User+1)
Status	Picklist

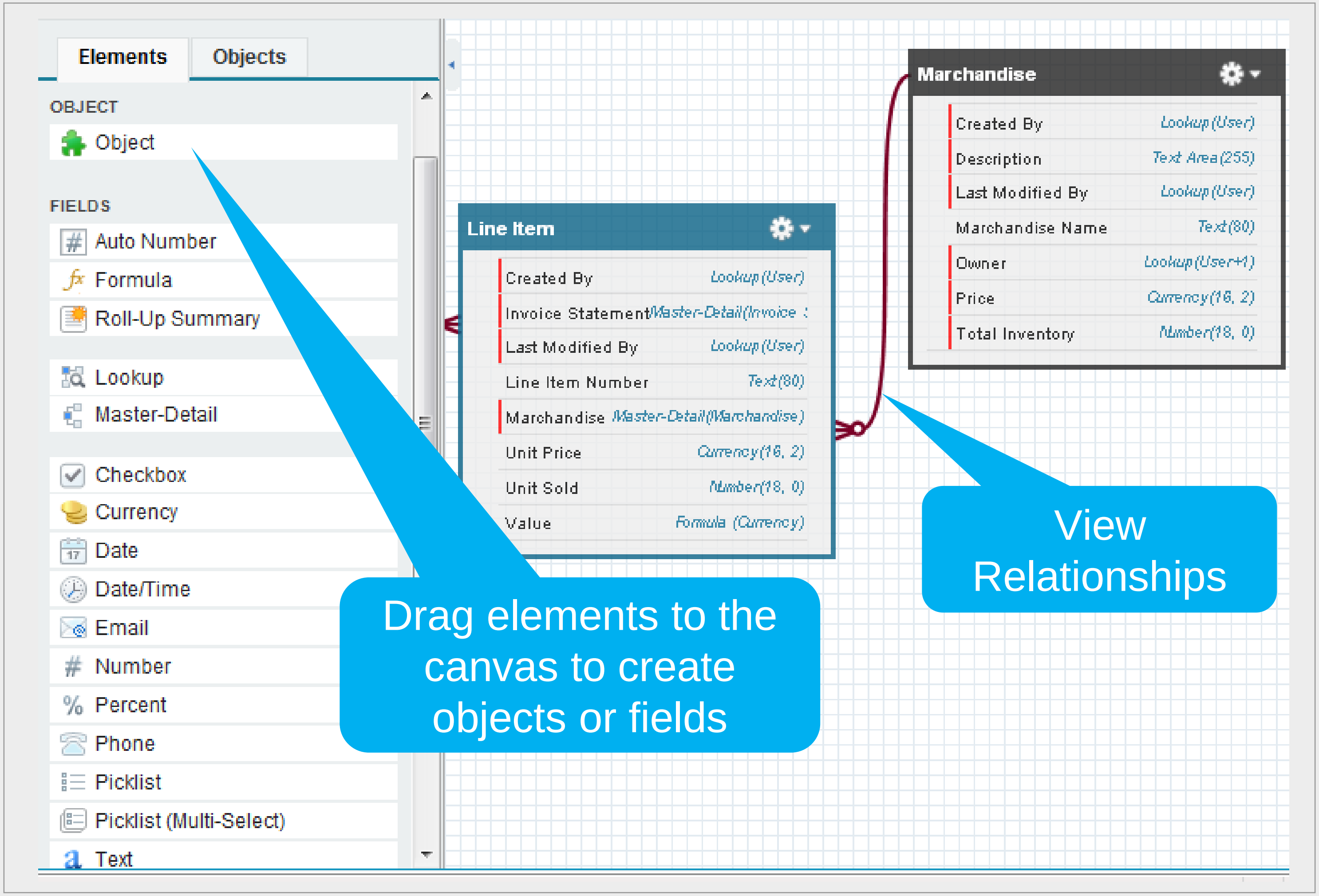
Line Item

Created By	Lookup(User)
Invoice Statement	Master-Detail(Invoice :
Last Modified By	Lookup(User)
Line Item Number	Text(80)
Marchandise	Master-Detail(Marchandise)
Unit Price	Currency(16, 2)
Unit Sold	Number(18, 0)
Value	Formula (Currency)

Marchandise

Created By	Lookup(User)
Description	Text Area(255)
Last Modified By	Lookup(User)
Marchandise Name	Text(80)
Owner	Lookup(User+1)
Price	Currency(16, 2)
Total Inventory	Number(18, 0)

5.4: Schema Builder
Schema Builder (cont.)



Line Item

Created By	Lookup(User)
Invoice Statement	Master-Detail(Invoice :
Last Modified By	Lookup(User)
Line Item Number	Text(80)
Marchandise	Master-Detail(Marchandise)
Unit Price	Currency(16, 2)
Unit Sold	Number(18, 0)
Value	Formula (Currency)

Marchandise

Created By	Lookup(User)
Description	Text Area(255)
Last Modified By	Lookup(User)
Marchandise Name	Text(80)
Owner	Lookup(User+1)
Price	Currency(16, 2)
Total Inventory	Number(18, 0)

Drag elements to the canvas to create objects or fields

View Relationships

Summary

In this lesson, you have learnt:
Create Objects
Custom Fields
Object Relationships
Schema Builder

Review Question

Question 1: What is a custom object?

Question 2: List examples of custom field types.

Question 3: If a field is set to “universally required”, users will be required to populate it when loading data through the API.

True or False?

Question 4: What are the different types of custom relationships?