2019

odoo EXPERIENCE

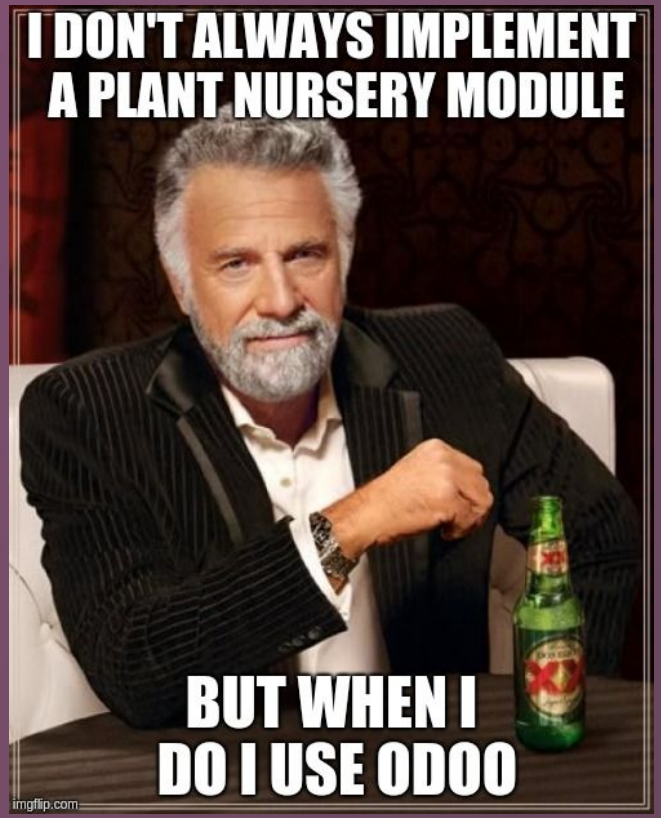
Develop an App with the Odoo Framework

Or how to implement a plant nursery in a few minutes.

Yannick TIVISSE · Software Engineer, RD4HR Team Leader

1. Classy Cool Dev introduction
2. Structure of a module
3. Complex views
4. Relations between models
5. ORM interactions
6. Some other classy cool stuffs

The use case:
A Plant Nursery



— Classy Cool Dev

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Thanks Classy Cool Dev!

But how could you be so sure Odoo is the perfect choice ?

Architecture

- Three-tier client/server/database
- Webclient in Javascript
- Server and backend modules in Python
  - MVC framework
  - ORM to interact with database

Architecture

- **Three-tier client/server/database**
- Webclient in Javascript
- Server and backend modules in Python
  - MVC framework
  - ORM to interact with database

Three-tier

- Presentation Layer (Client): HTML5, JavaScript, CSS
- Application Layer (Server): Python3
- Data Layer (database): PostgreSQL

Architecture

- Three-tier client/server/database
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Architecture

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  - MVC framework
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MVC framework

- Model: data logic
- View: UI logic
- Controller: Interface

Architecture

- Three-tier client/server/database
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- **Server and backend modules in Python**
  - MVC framework
  - ORM to interact with database

ORM: Example

- Bridge the gap between python and postgreSQL
- Model definition :

```
class MyAwesomeCharacter(models.Model):
    _name = 'my.awesome.character'

    name = fields.Char(string="name", required=True)
    friend = fields.Many2one('my.awesome.character', string='Best Friend')
```

ORM: Example

- Bridge the gap between python and postgreSQL
- Table definition :

```
                                    Table "public.my_awesome_character"
   Column    |            Type             | Collation | Nullable |                    Default
-------------+-----------------------------+-----------+----------+-----------------------------------------------
 id          | integer                     |           | not null | nextval('my_awesome_character_id_seq'::regclass)
 name        | character varying           |           | not null |
 friend      | integer                     |           |          |
 create_uid  | integer                     |           |          |
 create_date | timestamp without time zone |           |          |
 write_uid   | integer                     |           |          |
 write_date  | timestamp without time zone |           |          |
Indexes:
    "my_awesome_character_pkey" PRIMARY KEY, btree (id)
Foreign-key constraints:
    "my_awesome_character_create_uid_fkey" FOREIGN KEY (create_uid) REFERENCES res_users(id) ON DELETE SET NULL
    "my_awesome_character_friend_fkey" FOREIGN KEY (friend) REFERENCES my_awesome_character(id) ON DELETE SET NULL
    "my_awesome_character_write_uid_fkey" FOREIGN KEY (write_uid) REFERENCES res_users(id) ON DELETE SET NULL
Referenced by:
    TABLE "my_awesome_character" CONSTRAINT "my_awesome_character_friend_fkey"
    FOREIGN KEY (friend) REFERENCES my_awesome_character(id) ON DELETE SET NULL
```

ORM

- Bridge the gap between python and postgreSQL
- Pros
  - Less SQL
  - Abstracts the DB
  - Advanced Features (cache, security, ...)
  - Better SQL queries

ORM

- Bridge the gap between python and postgreSQL
- Cons
  - Performances ?
  - Training
  - Initial config
  - Less deep understanding

The Feature

- Manage a plant nursery:
  - List of plants
  - Manage orders
  - Keep a customers list

Technically

- You will learn:
  - Structure of a module
  - Definition of data models
  - Definition of views and menus

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Structure of an **Odoo Module**

An Odoo module is:

- A manifest file
- Python code (models, logic)
- Data files, XML and CSV (base data, views, menus)
- Frontend resources (Javascript, CSS)

Plant Nursery

The manifest file __manifest__.py

```
# -*- coding: utf-8 -*-
# Part of Odoo. See LICENSE file for full copyright and licensing details.
{
    'name': 'Plant Nursery',
    'version': '1.0',
    'category': 'Tools',
    'summary': 'Plants and customers management',
    'depends': ['web'],
    'data': [
        'security/ir.model.access.csv',
        'data/data.xml',
        'views/views.xml',
    ],
    'demo': [
        'data/demo.xml',
    ],
    'css': [],
    'installable': True,
    'auto_install': False,
    'application': True,
}
```

Describe the models

plant_nursery/models.py

```
from odoo import fields, models


class Plants(models.Model):
    _name = 'nursery.plant'

    name = fields.Char("Plant Name")
    price = fields.Float()


class Customer(models.Model):
    _name = 'nursery.customer'

    name = fields.Char("Customer Name", required=True)
    email = fields.Char(help="To receive the newsletter")
```

https://www.odoo.com/documentation/master/reference/orm.html

Define the security

plant_nursery/security/ir.model.access.csv

```
id,name,model_id:id,group_id:id,perm_read,perm_write,perm_create,perm_unlink
access_nursery_plant,access_nursery_plant,plant_nursery.model_nursery_plant,base.group_user,1,1,1,1
access_nursery_customer,access_nursery_customer,plant_nursery.model_nursery_customer,base.group_user,1
,1,1,1
```

Define the action

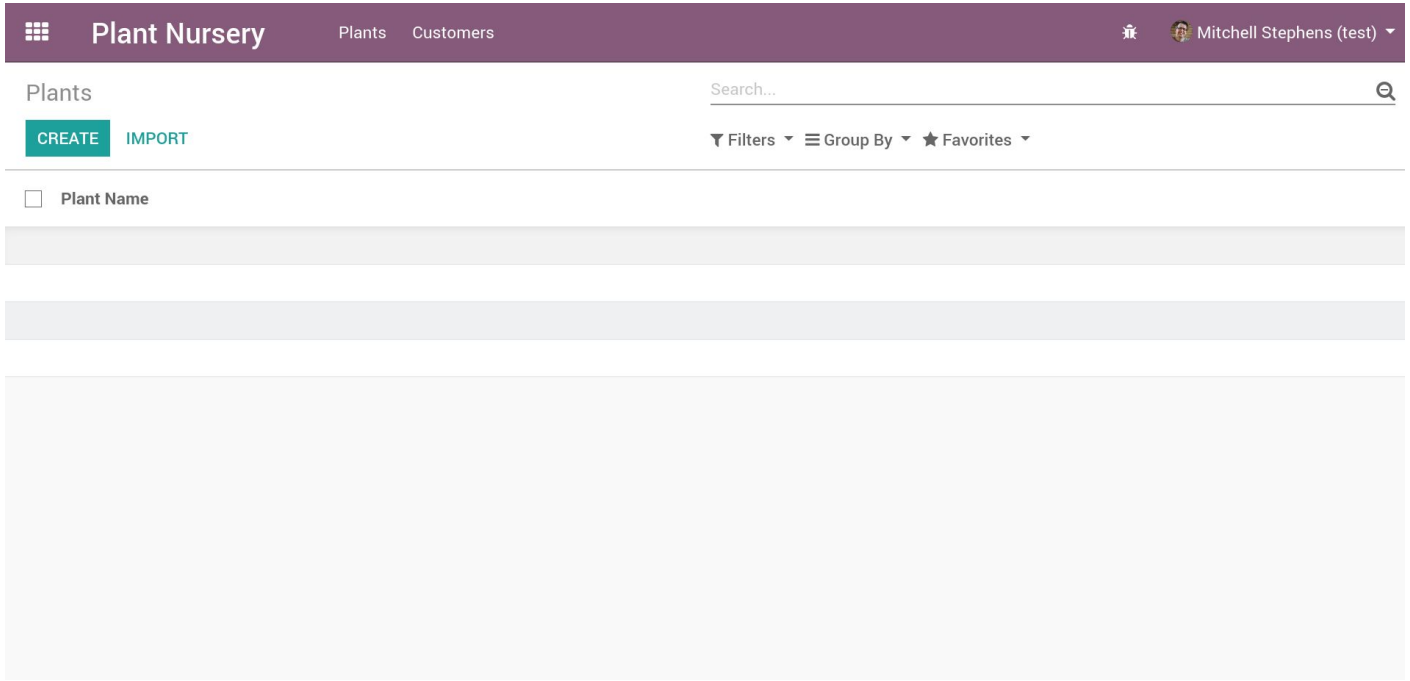
plant_nursery/views/nursery_views.xml

```xml
<?xml version="1.0" encoding="UTF-8"?>
<odoo>
    <record model="ir.actions.act_window" id="action_nursery_plant">
        <field name="name">Plants</field>
        <field name="res_model">nursery.plant</field>
        <field name="view_mode">tree,form</field>
    </record>

    <menuitem name="Plant Nursery" id="nursery_root_menu"
              web_icon="plant_nursery,static/description/icon.png"/>

    <menuitem name="Plants" id="nursery_plant_menu"
              parent="nursery_root_menu"
              action="action_nursery_plant"
              sequence="1"/>
</odoo>
```

https://www.odoo.com/documentation/master/reference/orm.html#fields

Watch the result

Auto generated views



https://www.odoo.com/documentation/master/reference/orm.html#fields

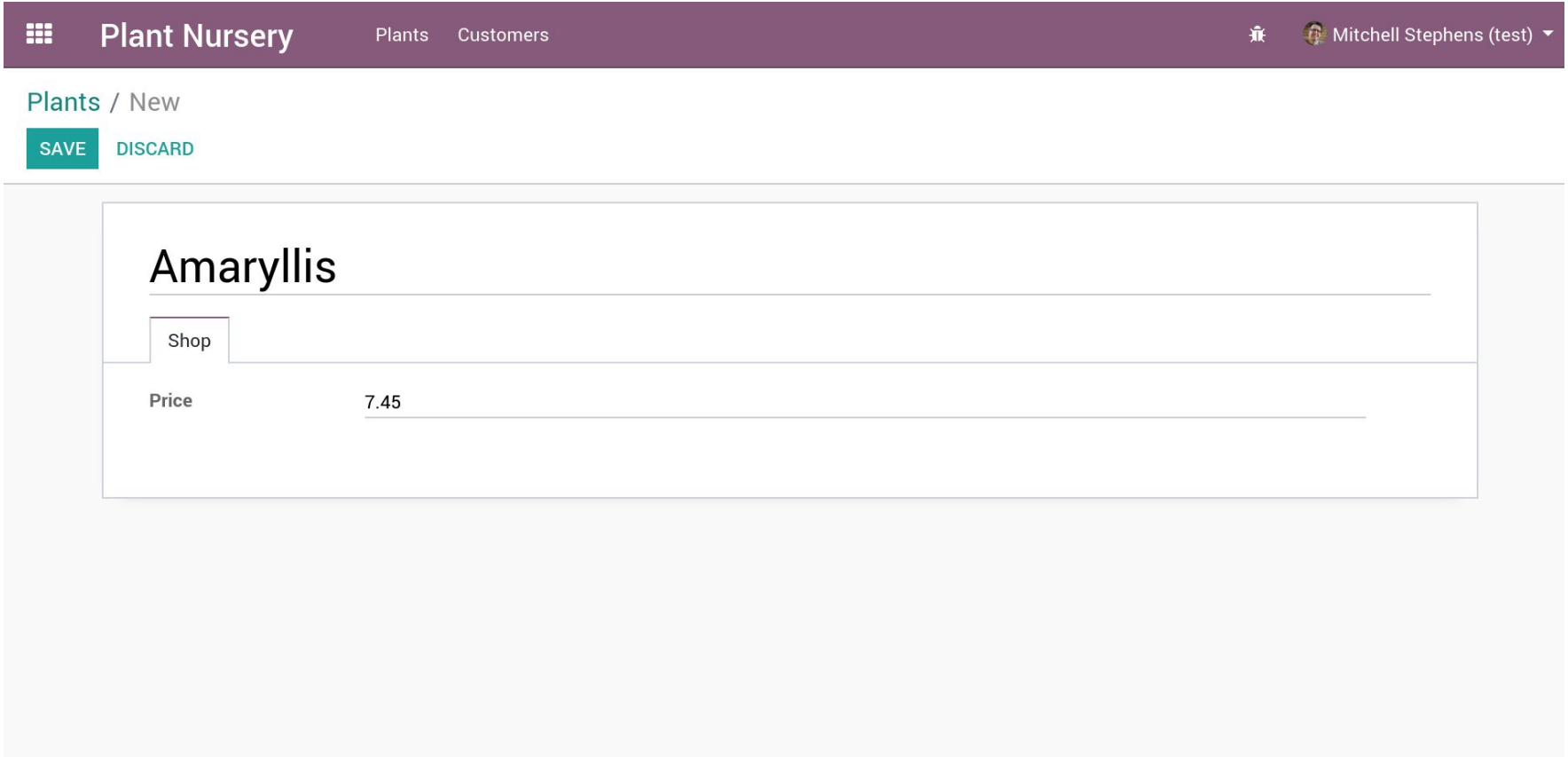
3 Complex Views

Define a form view

plant_nursery/views/nursery_views.xml

```xml
<record model="ir.ui.view" id="nursery_plant_view_form">
    <field name="name">nursery.plant.view.form</field>
    <field name="model">nursery.plant</field>
    <field name="arch" type="xml">
        <form string="Plant">
            <sheet>
                <h1>
                    <field name="name" placeholder="Plant Name"/>
                </h1>
                <notebook>
                    <page string="Shop">
                        <group>
                            <field name="price"/>
                        </group>
                    </page>
                </notebook>
            </sheet>
        </form>
    </field>
</record>
```

Watch the result



4 Relations between models

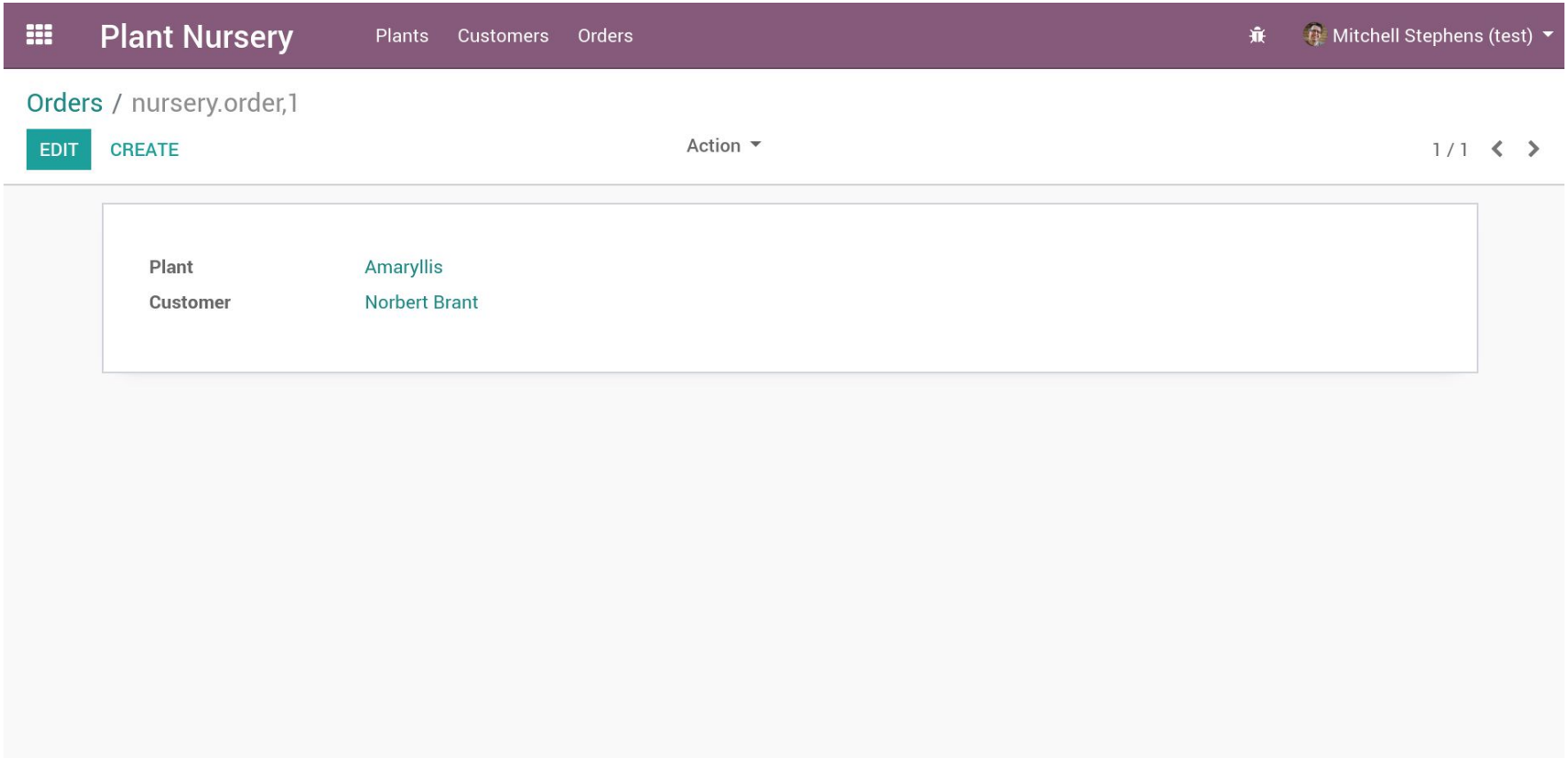
Relations

- Many2one
- One2many
- Many2many

Relations

```
class Order(models.Model):
    _name = 'nursery.order'

    plant_id = fields.Many2one("nursery.plant", required=True)
    customer_id = fields.Many2one("nursery.customer")


class Plants(models.Model):
    _name = 'nursery.plant'

    order_ids = fields.One2many("nursery.order", "plant_id", string="Orders")
```

Watch the result



5 ORM Interactions

Basic Operations

- Read
- Write
- Create
- Unlink
- Search

ORM Interactions

```
class Order(models.Model):
    _name = 'nursery.order'

    name = fields.Datetime(default=fields.Datetime.now)
    plant_id = fields.Many2one("nursery.plant", required=True)
    customer_id = fields.Many2one("nursery.customer")
    state = fields.Selection([
        ('draft', 'Draft'),
        ('confirm', 'Confirmed'),
        ('cancel', 'Canceled')
    ], default='draft')
    last_modification = fields.Datetime(readonly=True)
```

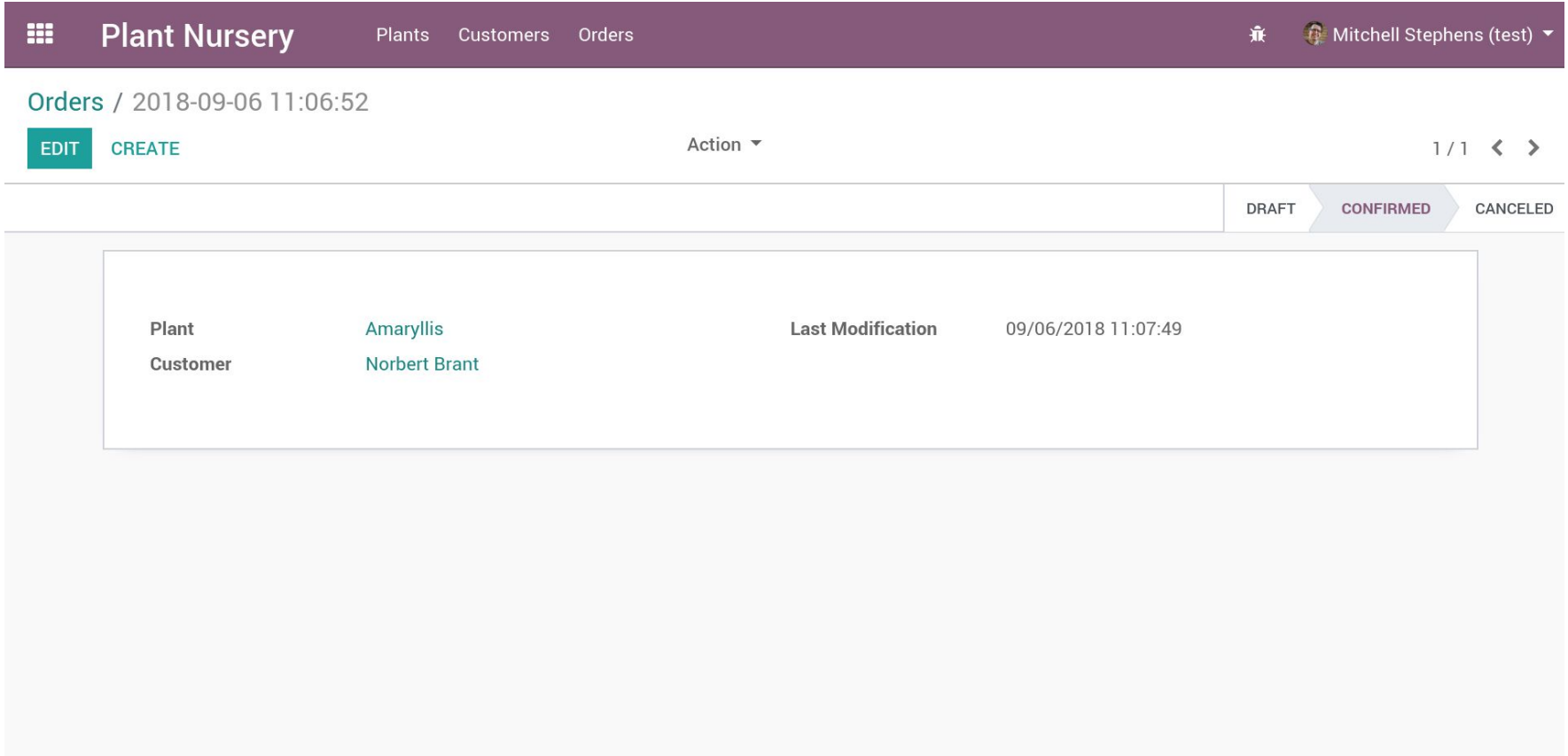
ORM Interactions

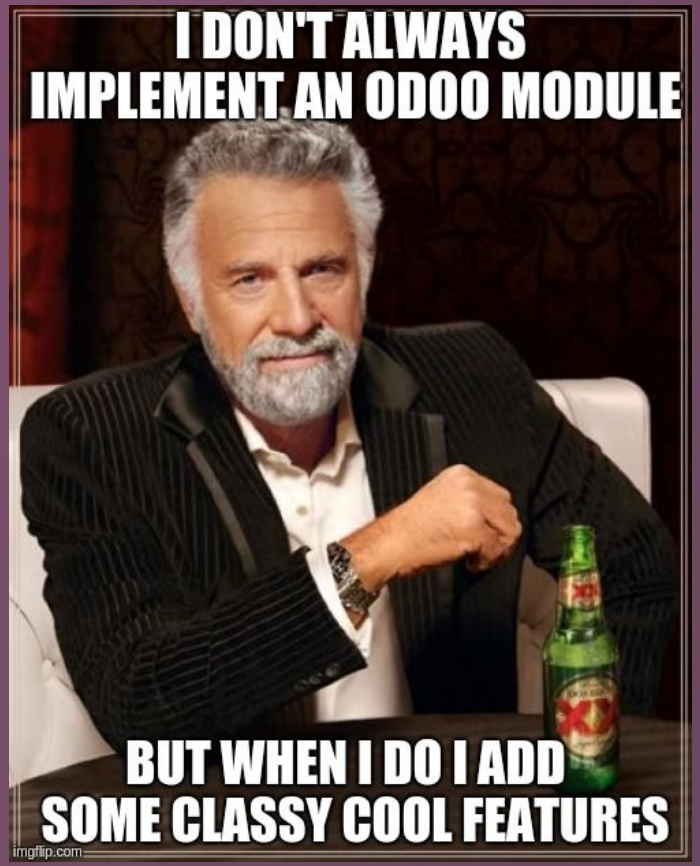
```
class Order(model.Models):
    _name = 'nursery.order'

    def write(self, values):
        # helper to "YYYY-MM-DD"
        values['last_modification'] = fields.Datetime.now()

        return super(Order, self).write(values)

    def unlink(self):
        # self is a recordset
        for order in self:
            if order.state == 'confirm':
                raise UserError("You can not delete confirmed orders")

        return super(Order, self).unlink()
```

ORM Interactions

```xml
<record model="ir.ui.view" id="nursery_order_form">
    <field name="name">Order Form View</field>
    <field name="model">nursery.order</field>
    <field name="arch" type="xml">
        <form string="Plant Order">
            <header>
                <field name="state" widget="statusbar" options="{'clickable': '1'}"/>
            </header>
            <sheet>
                <group col="4">
                    <group colspan="2">
                        <field name="plant_id" />
                        <field name="customer_id" />
                    </group>
                    <group colspan="2">
                        <field name="last_modification" />
                    </group>
                </group>
            </sheet>
        </form>
    </field>
</record>
```

Watch the result





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Thanks Classy Cool Dev!

What else could you show us ?

Computed Fields

- For complex values
- Trigger for recompute
- Stored or not in database

Computed Fields

```
class Plants(models.Model):
    _name = 'nursery.plant'

    order_count = fields.Integer(compute='_compute_order_count',
                                 store=True,
                                 string="Total sold")

    @api.depends('order_ids')
    def _compute_order_count(self):
        for plant in self:
            plant.order_count = len(plant.order_ids)
```

Model Constraints

- Triggered after every creation or modification
- Instead of overriding create & write

Model Constraints

```
class Plants(models.Model):
    _name = 'nursery.plant'

    number_in_stock = fields.Integer()

    @api.constrains('order_count', 'number_in_stock')
    def _check_available_in_stock(self):
        for plant in self:
            if plant.number_in_stock and \
              plant.order_count > plant.number_in_stock:
                raise UserError("There is only %s %s in stock but %s were sold"
                      % (plant.number_in_stock, plant.name, plant.order_count))
```

Kanban View

- Display information in a tile
- Add a picture of the plant
- Aggregated view to visualize the flow (will need a search view)

Define a Kanban View

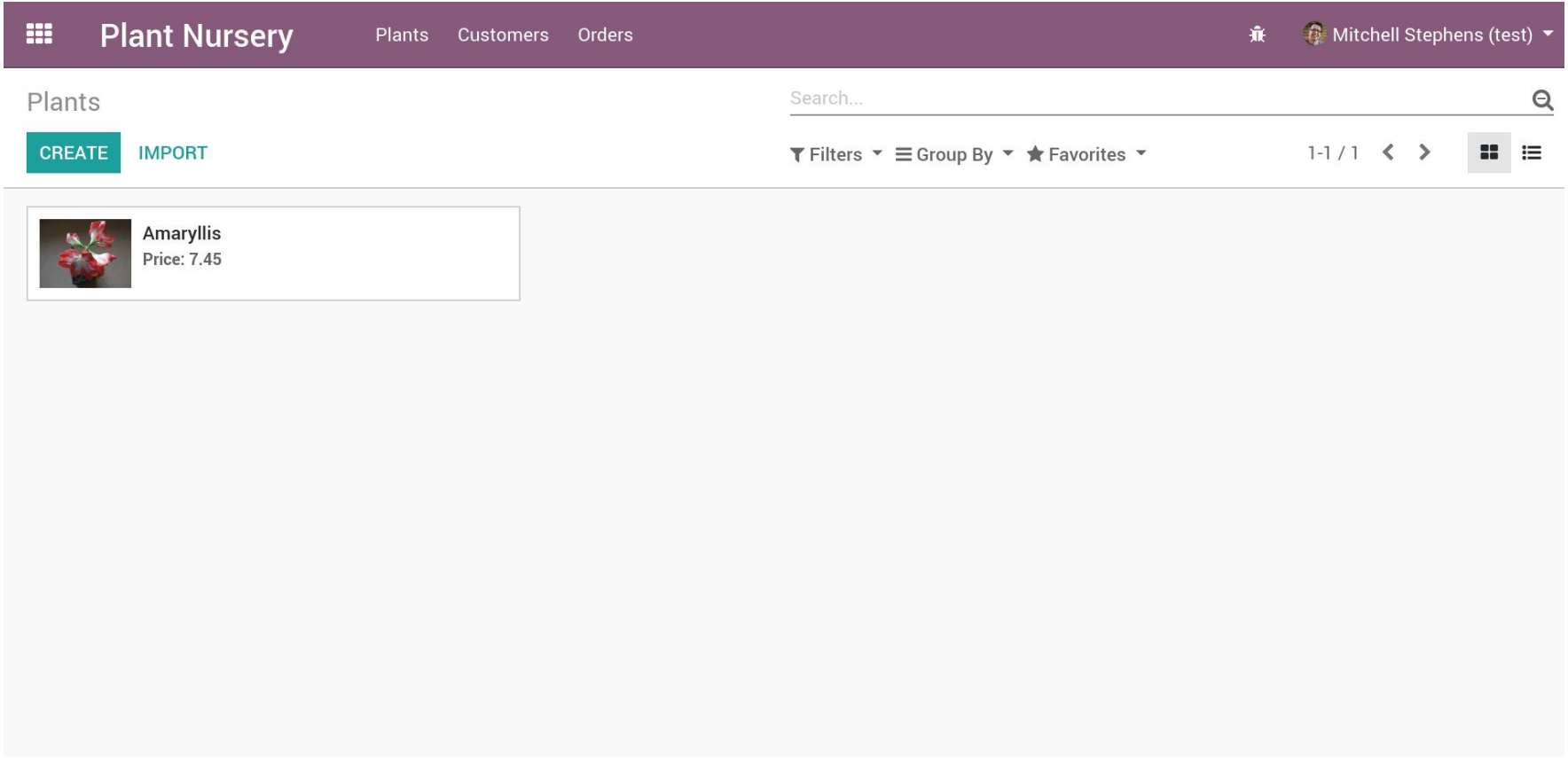
```python
class Plants(models.Model):
    _name = 'nursery.plant'

    image = fields.Binary("Plant Image", attachment=True)
```

```xml
<record model="ir.actions.act_window" id="action_nursery_order">
    <field name="name">Orders</field>
    <field name="res_model">nursery.order</field>
   <field name="view_mode">kanban,tree,form</field>
</record>
```

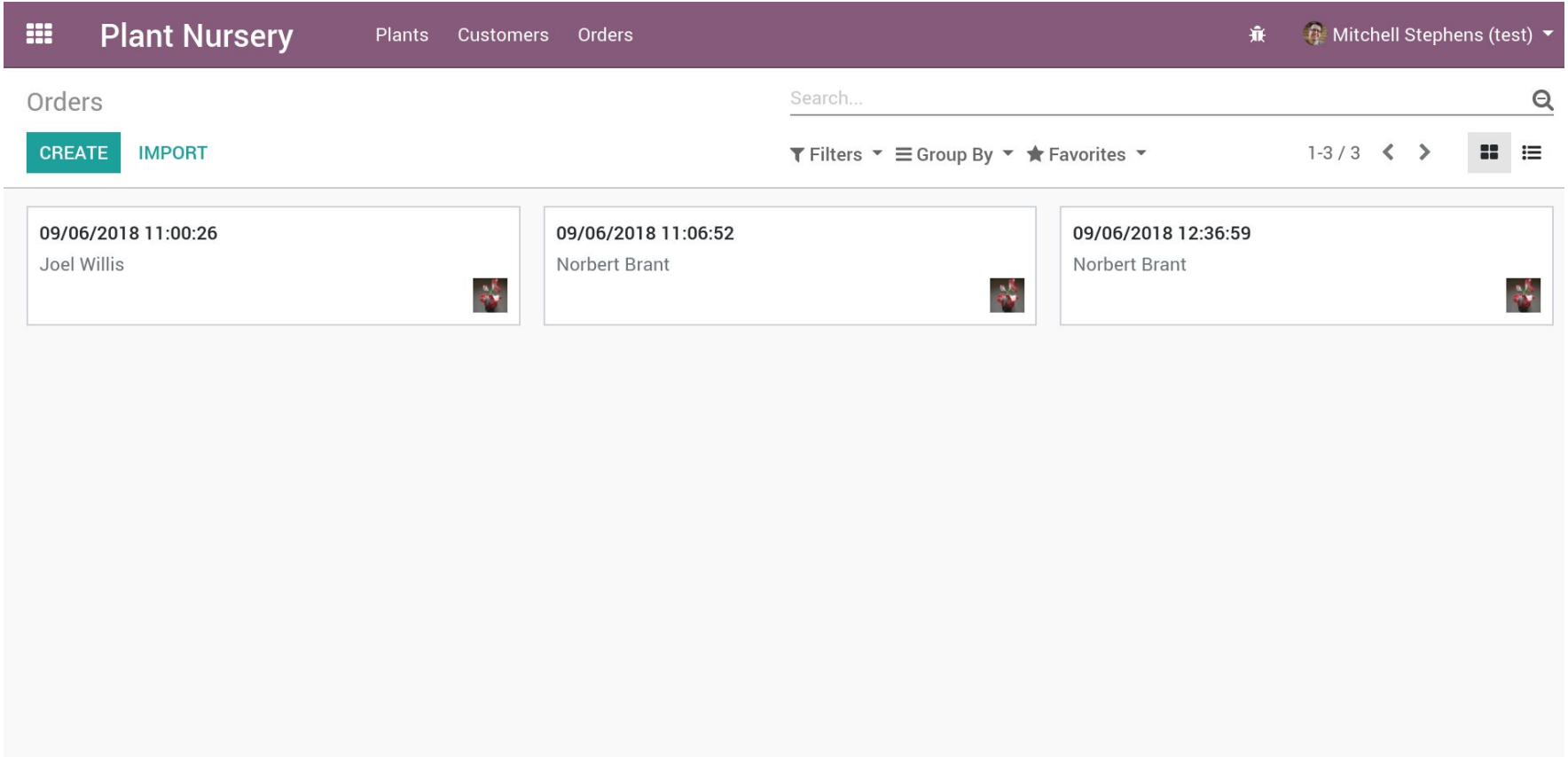
Define a Kanban View

```
<record id="nursery_plant_view_kanban" model="ir.ui.view">
    <field name="name">nursery.plant.view.kanban</field>
    <field name="model">nursery.plant</field>
    <field name="arch" type="xml">
        <kanban>
            <field name="id"/>
            <field name="image"/>
            <templates>
                <t t-name="kanban-box">
                    <div class="oe_kanban_global_click">
                        <div class="o_kanban_image">
                            <img t-att-src="kanban_image('nursery.plant', 'image', record.id.raw_value)"/>
                        </div>
                        <div class="oe_kanban_details">
                            <strong class="o_kanban_record_title"><field name="name"/></strong>
                            <ul><li><strong>Price: <field name="price"></field></strong></li</ul>
                        </div>
                    </div>
                </t>
            </templates>
        </kanban>
    </field>
</record>
```

Watch the result



Watch the result



Define a Search View

```
<record id="nursery_order_view_search" model="ir.ui.view">
    <field name="name">nursery.order.view.search</field>
    <field name="model">nursery.order</field>
    <field name="arch" type="xml">
        <search string="Search Orders">
            <field name="plant_id" string="Plant"/>
            <field name="customer_id" string="Customer"/>
            <field name="state"/>
            <filter string="Confirmed" name="confirmed"
                    domain="[('state', '=', 'confirm')]"/>
            <separator />
            <group expand="0" string="Group By">
                <filter string="State" name="group_by_state"
                        domain="[]" context="{'group_by':'state'}"/>
            </group>
        </search>
    </field>
</record>
```

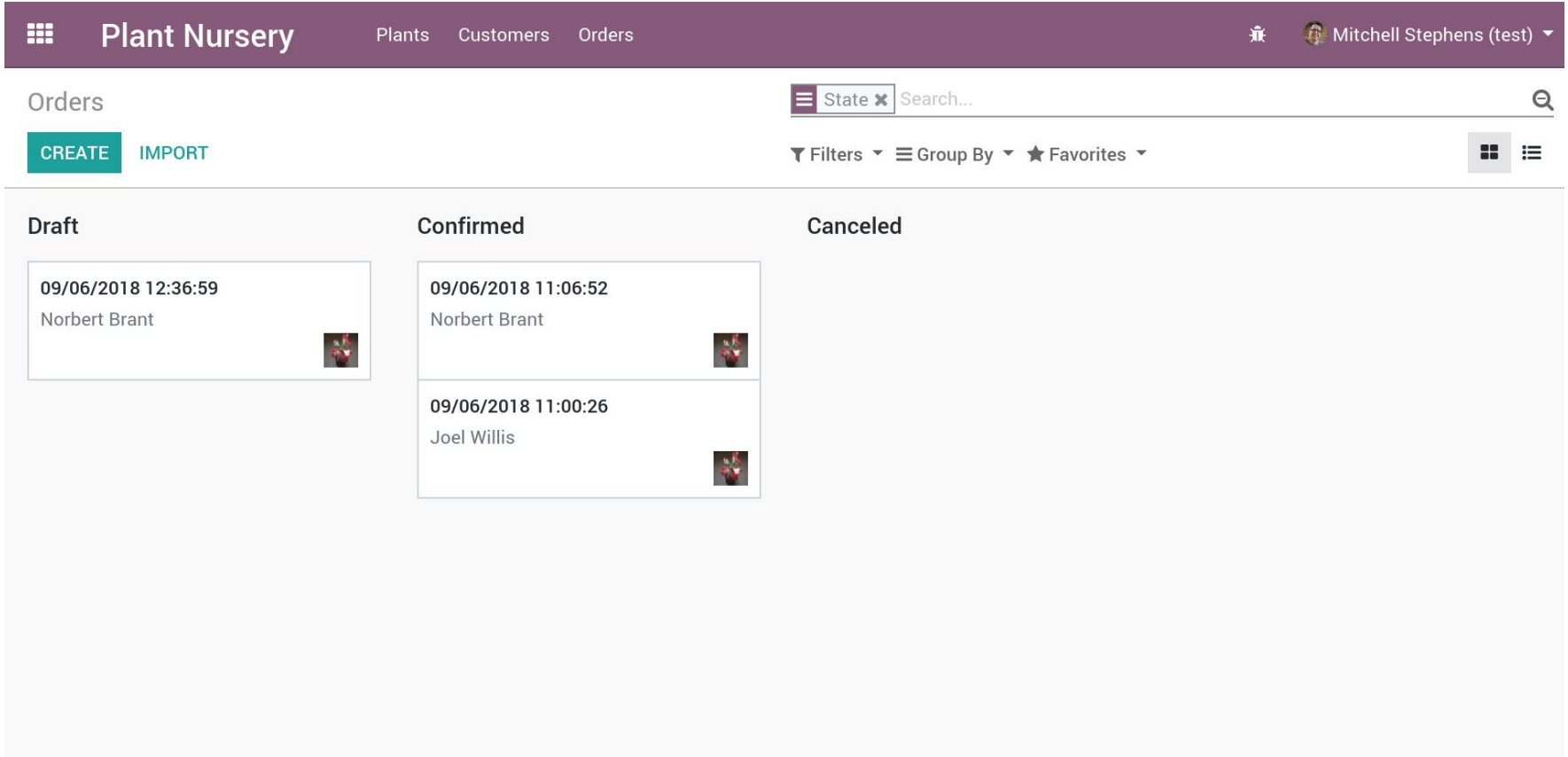
Display all the states

```
class Order(models.Model):
    _name = 'nursery.order'

    state = fields.Selection([
        ('draft', 'Draft'),
        ('confirm', 'Confirmed'),
        ('cancel', 'Canceled')
    ], default='draft', group_expand="_expand_states")

    def _expand_states(self, states, domain, order):
        return [key for key, val in type(self).state.selection]
```

Always group by state

```
<record model="ir.actions.act_window" id="action_nursery_order">
    <field name="name">Orders</field>
    <field name="res_model">nursery.order</field>
    <field name="view_mode">kanban,tree,form</field>
    <field name="context">{'search_default_group_by_state': 1}</field>
</record>
```

Watch the result



Onchange methods

```
class Customer(models.Model):
    _name = 'nursery.customer'
    _description = 'Nursery Customer'

    name = fields.Char('Customer Name', required=True)
    email = fields.Char(help="To receive the newsletter")
    mobile = fields.Char('Mobile')
    image = fields.Binary('Photo', attachment=True)
    address = fields.Char('Address')
    country_id = fields.Many2one('res.country', string='Country')
    partner_id = fields.Many2one('res.partner', string='Customer Address')
```

Onchange methods

```
@api.onchange('partner_id')
def _onchange_partner_id(self):
    if self.partner_id:
        if self.partner_id.image_1920:
            self.image = self.partner_id.image_1920
        if self.partner_id.email:
            self.email = self.partner_id.email
        if self.partner_id.mobile:
            self.mobile = self.partner_id.mobile
        if self.partner_id.country_id:
            self.country_id = self.partner_id.country_id.id
        if not self.address:
            self.address =
self.partner_id.with_context(show_address_only=True,
address_inline=True)._get_name()
```

Watch the result

Plant Nursery Plants Customers Orders Mitchell Admin (test)

Customers / New

SAVE DISCARD

Norbert Brant

azure interior

Email	azure.Interior24@example.com	Address	Chaussée de Namur 40, Gd Rosiere, 1367 R
Mobile	048452	Country	United States
		Customer Address	Azure Interior

ir.sequence

```
<!-- Sequences for plant.orders -->
<record id="seq_plant_order" model="ir.sequence">
    <field name="name">Plant Orders</field>
    <field name="code">plant.order</field>
    <field name="prefix">Order</field>
    <field name="padding">3</field>
    <field name="company_id" eval="False"/>
</record>
```

ir.sequence

```
@api.model
def create(self, vals):
    if vals.get('name', _('New')) == _('New'):
        if 'company_id' in vals:
            vals['name'] = self.env['ir.sequence'].with_context(
                    force_company=vals['company_id']
                ).next_by_code('plant.order') or _('New')
        else:
            vals['name'] = self.env['ir.sequence'].next_by_code('plant.order') or _('New')
    return super(Order, self).create(vals)
```

Watch the result

Plant Nursery | Plants | Customers | Orders | Configuration | Mitchell Admin (test)

Orders / Order002

EDIT | CREATE | Action | 2 / 2

CONFIRM | DRAFT | OPEN | DONE | CANCELED

Order002

Responsible	Mitchell Admin	**Company**	YourCompany
Category		**Amount**	7.00 €
Customer	Norbert	Confirmation date	

Plant	Price
My Plant	7.00

2019

odoo

EXPERIENCE

Thank you.

https://github.com/tivisse/odoodays-2019

#odooexperience

Based on work from Thibault DELAVALLEE and Martin TRIGAUX, that was based on work from Damien BOUVY