"Code Smells" Review

Instructions

Name these symptoms of poor code.

Write the name of the "code smell" *exactly* as written
on `refactoring.guru`.

`https://refactoring.guru/refactoring/catalog`

The *Code Smell Category*
is shown at the bottom of each slide.

#1

```python
class Choice(models.Model):
    """A Choice on a poll question."""
    choice_text = CharField(length=80)
    _votes = IntField()

    @property
    def votes(self):
        self._votes = self.vote_set.count()
        return self._votes
```
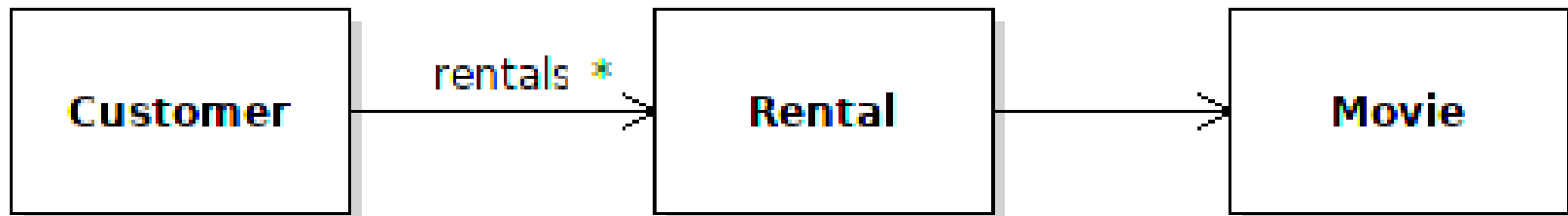
Category: O-O Abusers

#2

```python
def roots(a, b, c):
    """Find the real roots of a quadratic
        polynomial a*x^2 + b*x + c.
    """

    if b*b - 4*a*c >= 0:
        x1 = (-b + sqrt(b*b - 4*a*c))/(2*a))
        x2 = (-b - sqrt(b*b - 4*a*c))/(2*a))
        return (x1, x2)
    # no real roots
    return None
```

Category: Dispensables

#3

title = rental.get_movie().get_title()

Customer → rentals * → Rental → Movie

Category: Couplers

#4

```python
def print_rental(title, days_rented, price,
                  rental_pts):
    print("{:40s} {:6d} {:8.2f} {:2d}"
        .format(title, days_rented, price, rental_pts))

# Usage:
r = Rental("Oppenheimer", 3)
print_rental(r.get_title(), r.get_days_rented(),
             r.get_price(), r.get_rental_points())
```

Bloaters, but <u>not</u> "Long Parameter List"
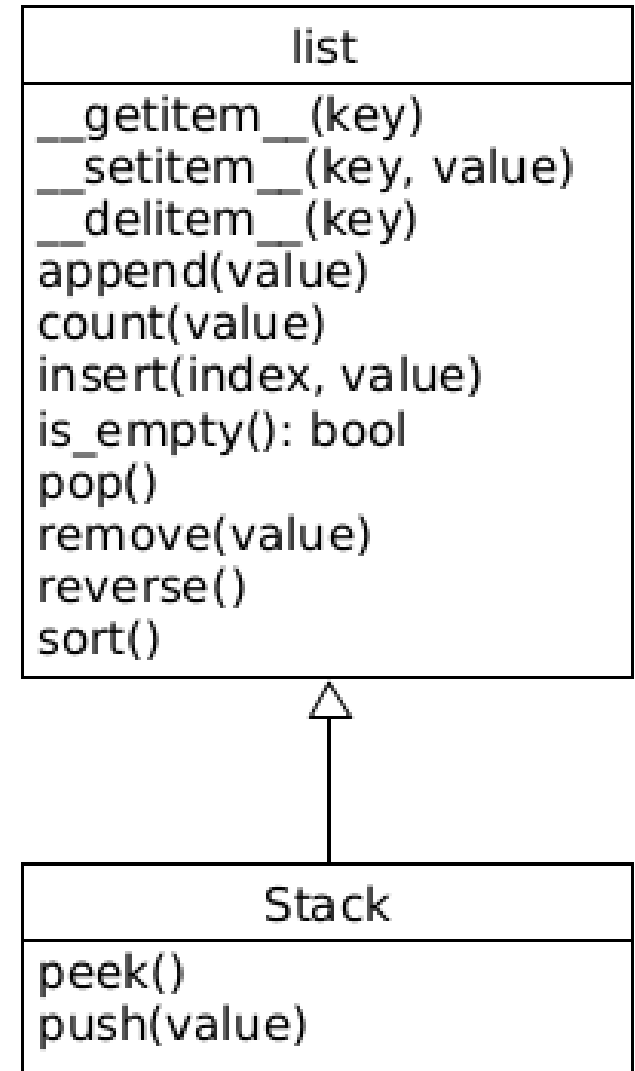
A `Stack` data structure requires only these methods:

peek()

pop()

push()

is_empty()

```
                    list
__getitem__(key)
__setitem__(key, value)
__delitem__(key)
append(value)
count(value)
insert(index, value)
is_empty(): bool
pop()
remove(value)
reverse()
sort()
```

```
                   Stack
peek()
push(value)
```

Category: O-O Abusers

Why <u>Not</u> Stack extends List?

O-O Basics:

- Fails the "*is a*" test. A Stack *is not* a List.

- Liskov Substitution Principle -
    can not substitute a Stack for a List in any usage

Design Principles:

- *Prefer Composition over Inheritance*, also called

- *Prefer Delegation over Inheritance*