Lecture 15: Inheritance

2/27/2015

Guest Lecturer: Marvin Zhang

Some (a lot of) material from these slides was borrowed from John DeNero.

Announcements

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- Homework 5 due Wednesday 3/4 @ 11:59pm

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  - Similar to homework 5
- Guerrilla section this Sunday 3/1 on mutation

Inheritance

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class <new class>(<base class>):
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- The new class *shares* attributes with the base class, and *overrides* certain attributes

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```
class <new class>(<base class>):
    ...
```

- The new class *shares* attributes with the base class, and *overrides* certain attributes
- Implementing the new class is now as simple as specifying how it's *different* from the base class

Inheritance Example

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class Account:
    """A bank account."""
    ...
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class CheckingAccount(Account):
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class CheckingAccount(Account):
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    def withdraw(self, amount):
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Inheritance vs Composition (demo)

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class SavingsAccount(Account):
    deposit_fee = 2
    def deposit(self, amount):
        return Account.deposit(
                self, amount - self.deposit_fee)
```

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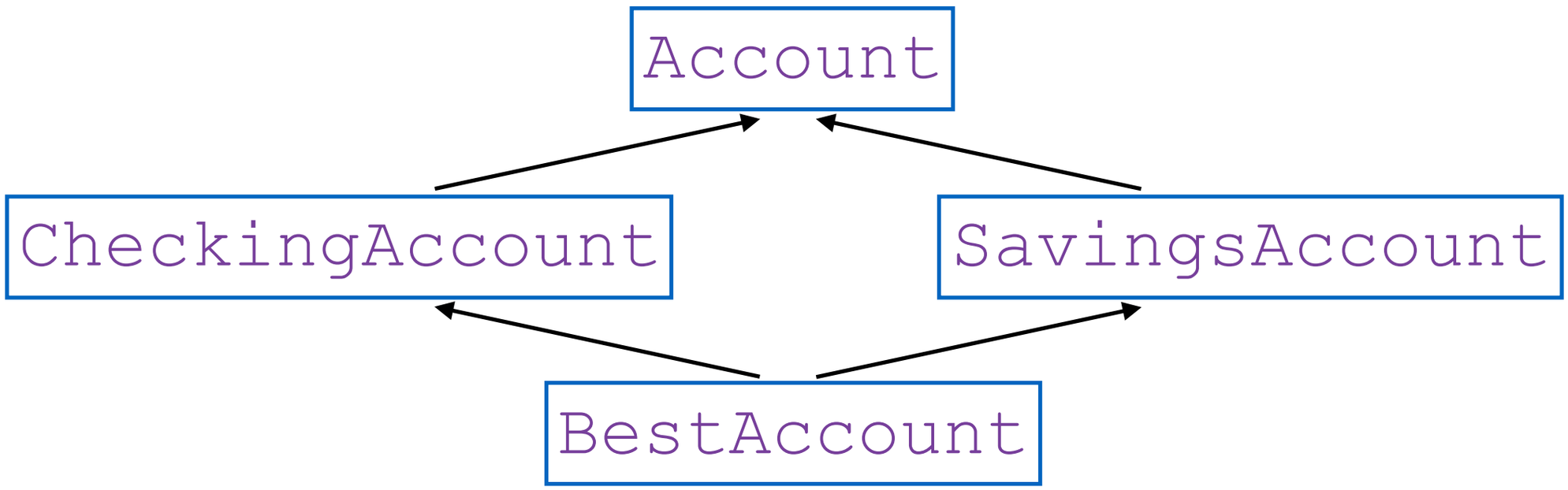
```
class BestAccount(CheckingAccount, SavingsAccount):
    def __init__(self, account_holder):
        self.holder = account_holder
        self.balance = 1  # best deal ever
```

Multiple Inheritance Example



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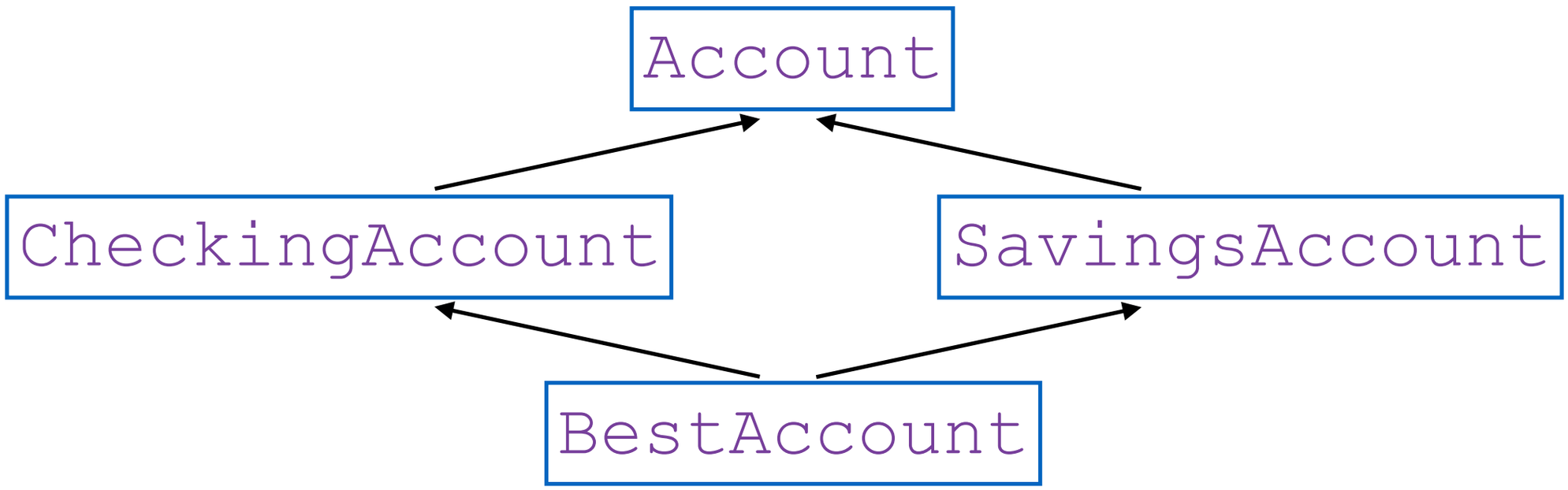


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>>> such_a_deal = BestAccount('Marvin')
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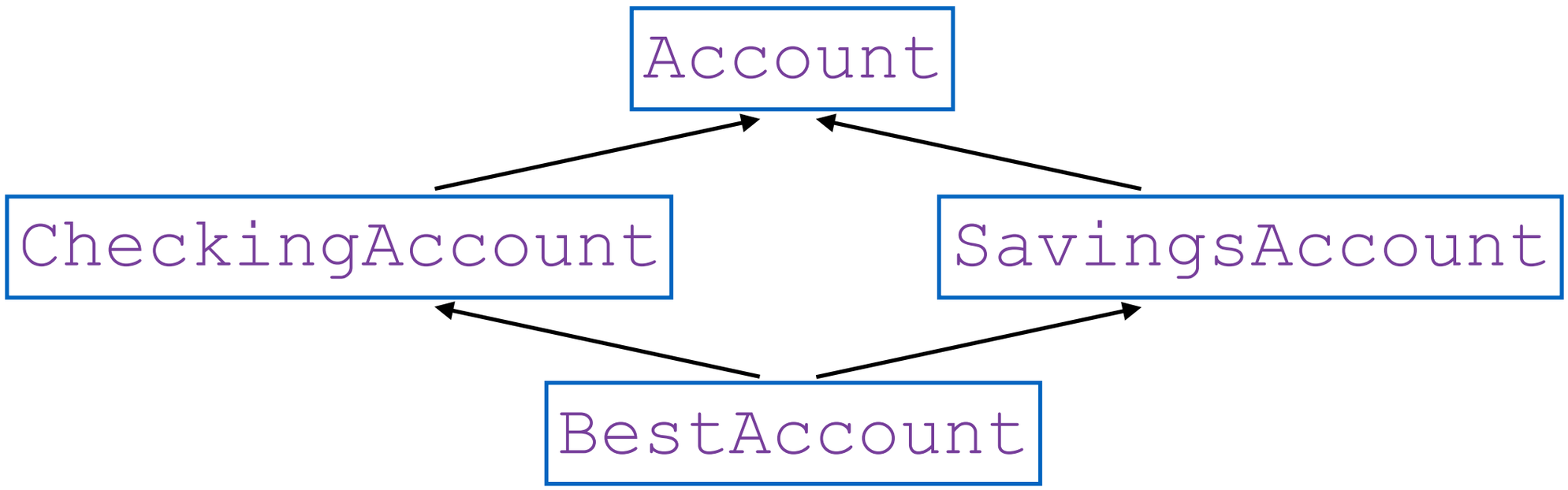


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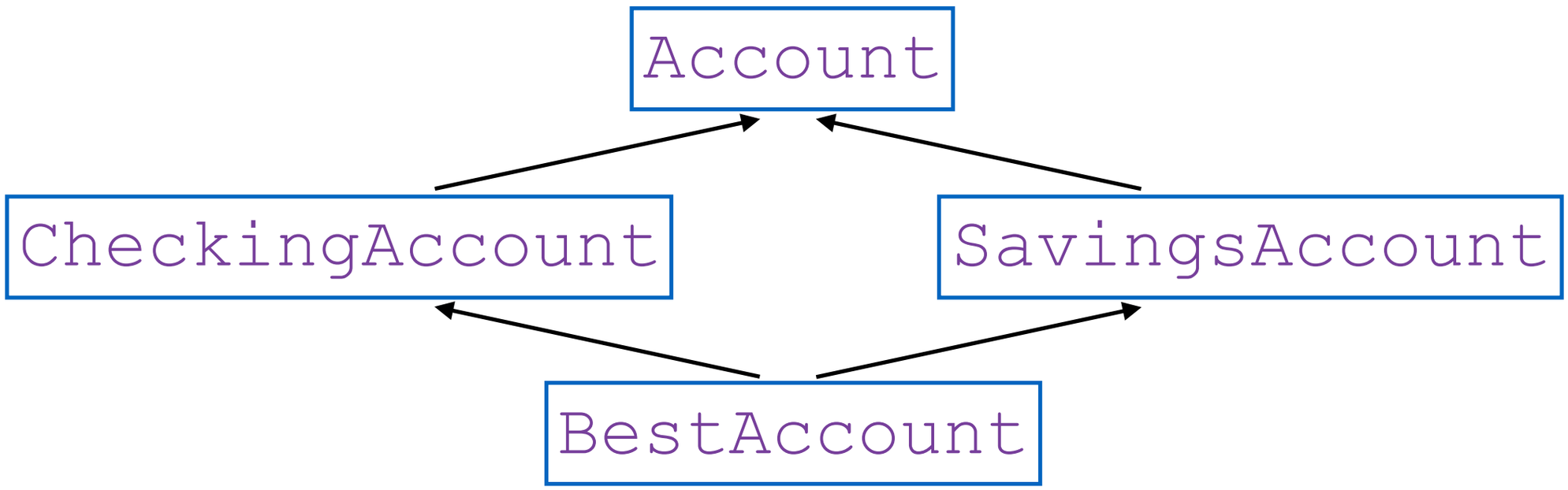


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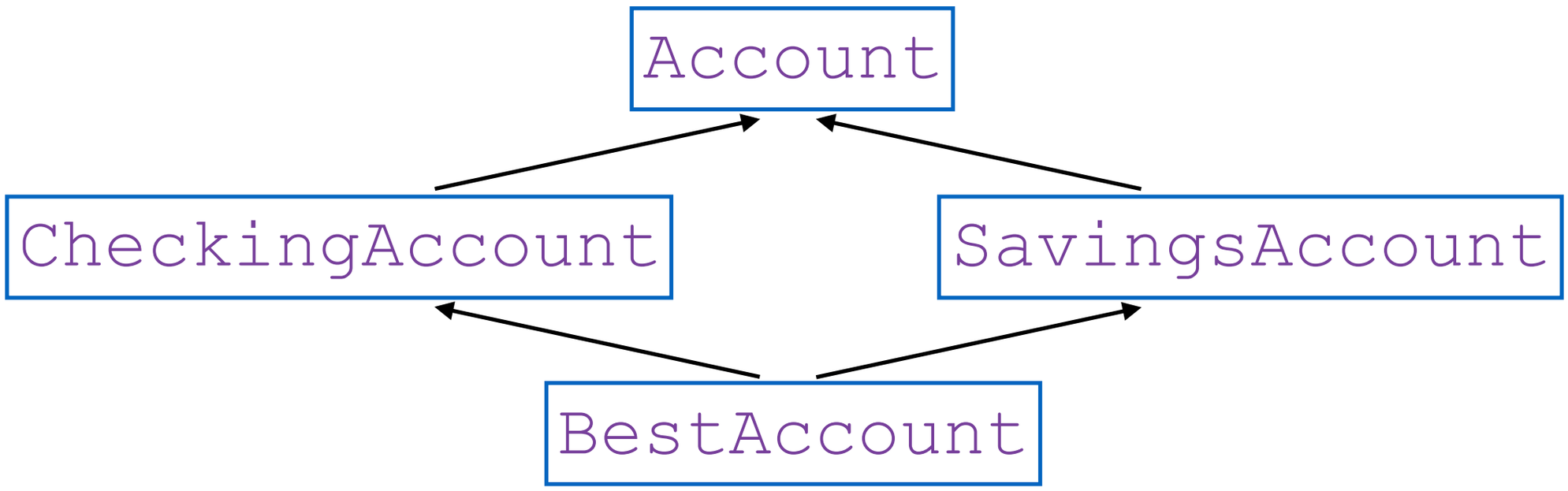


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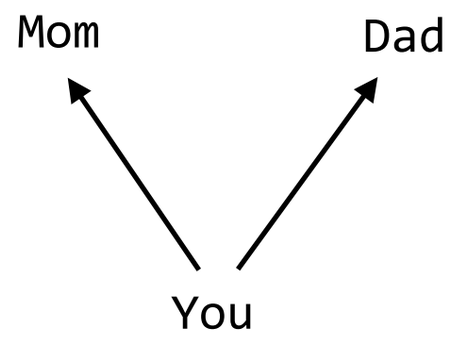

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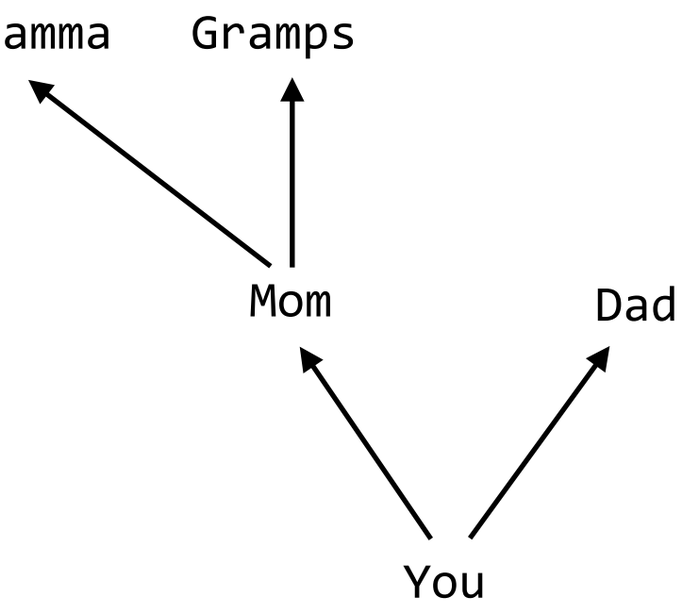

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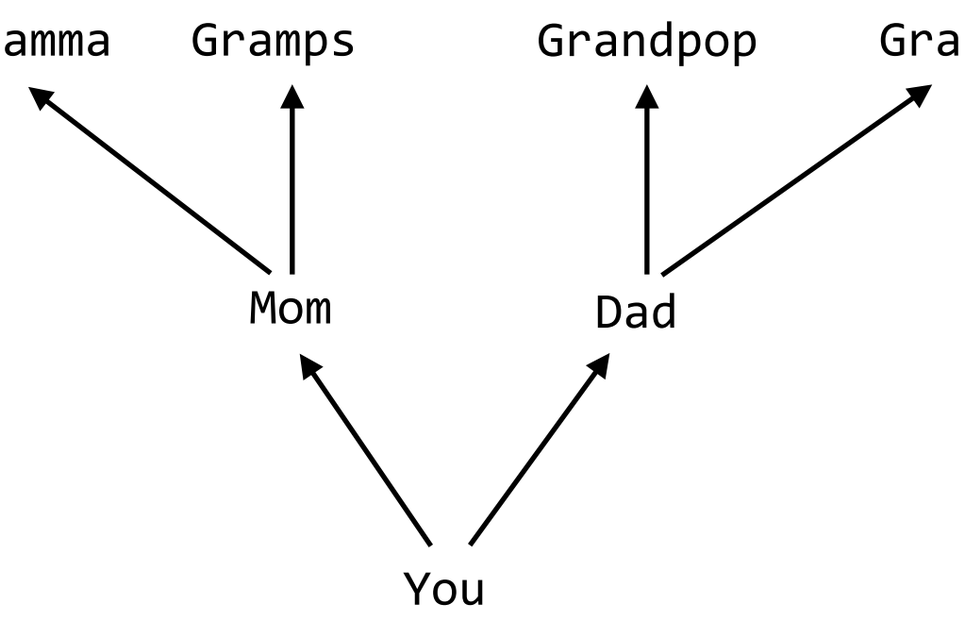

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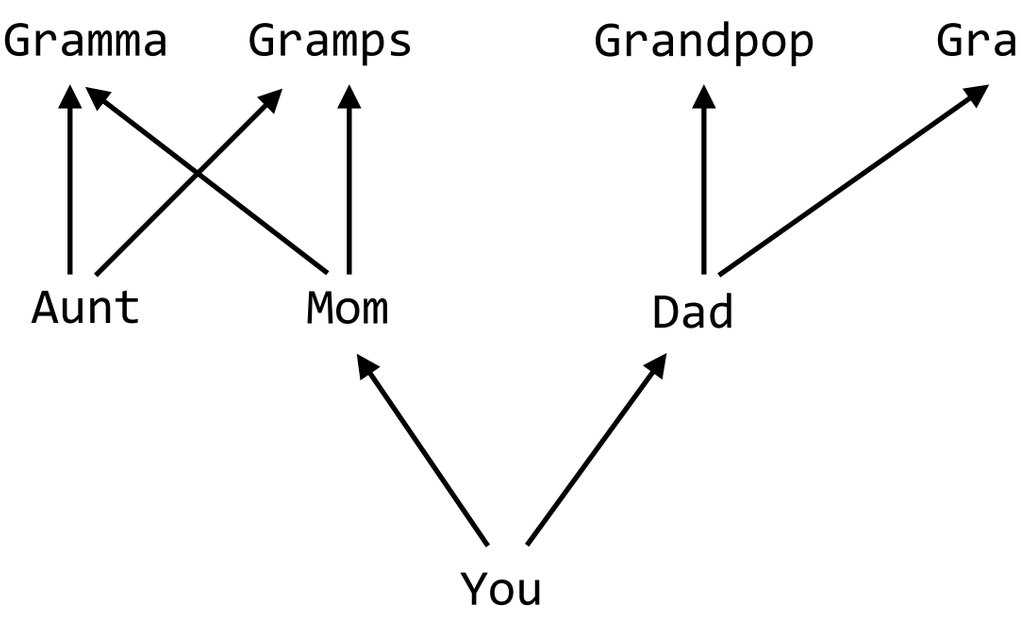

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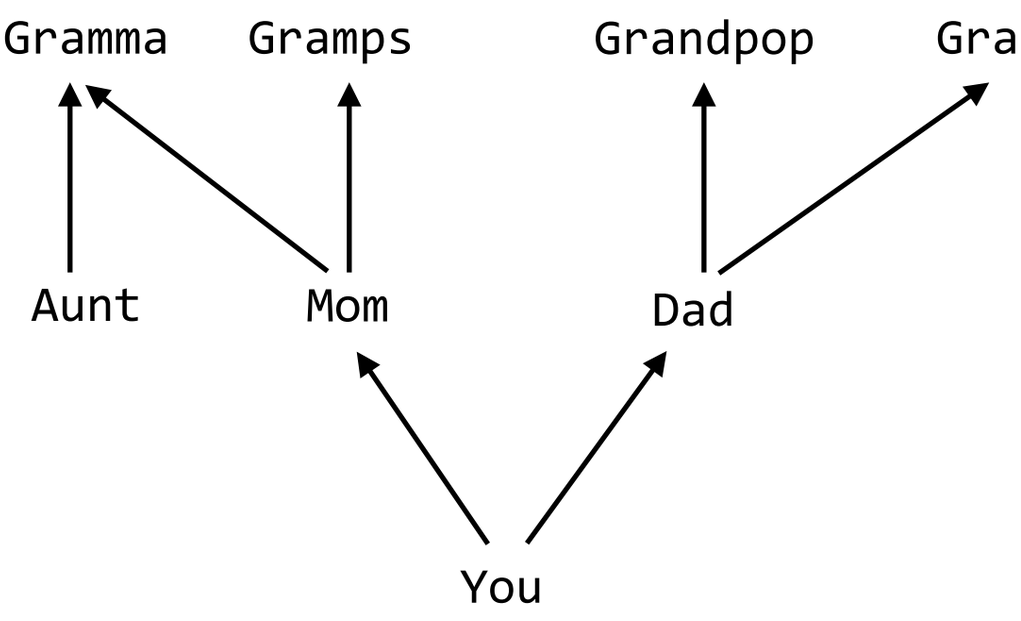

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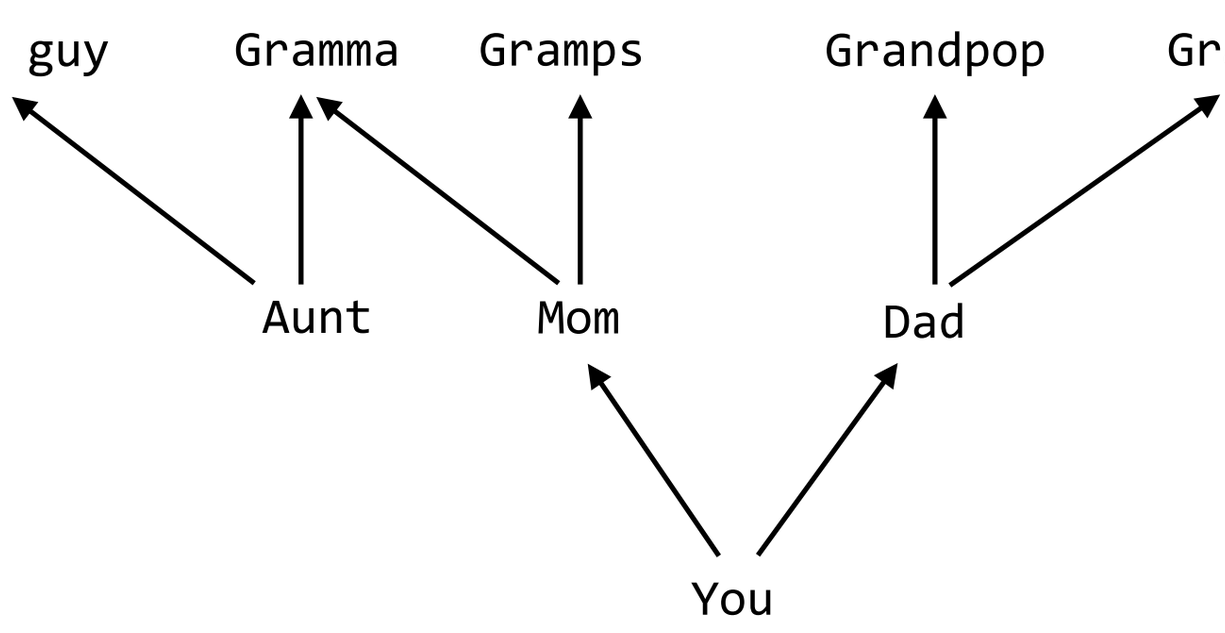

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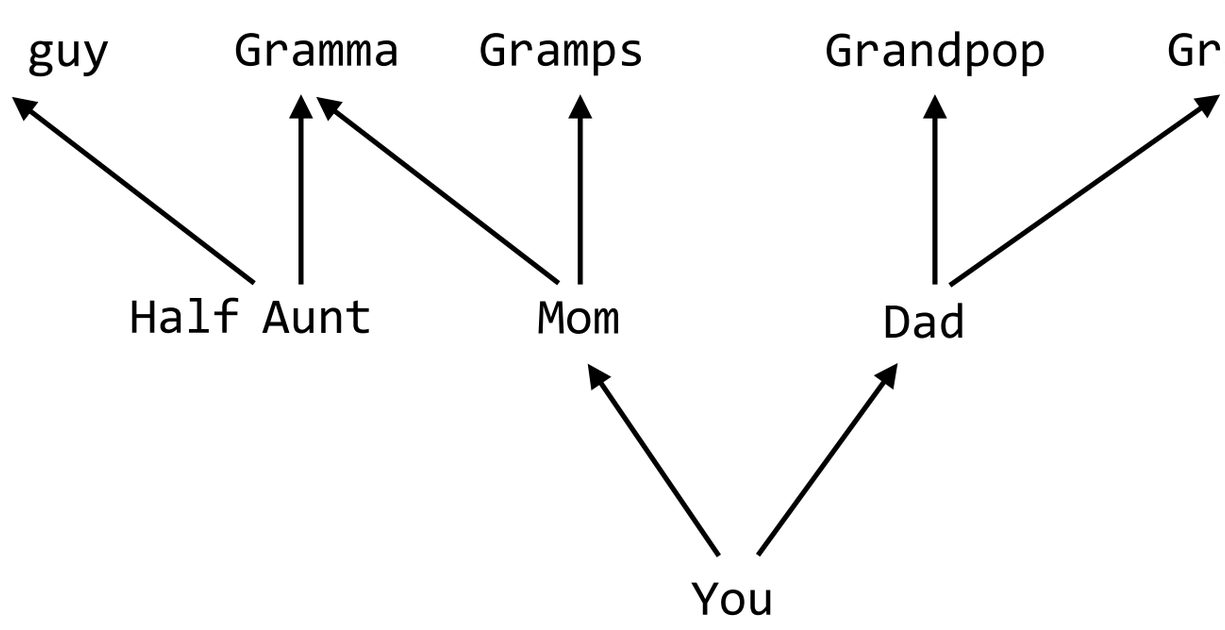

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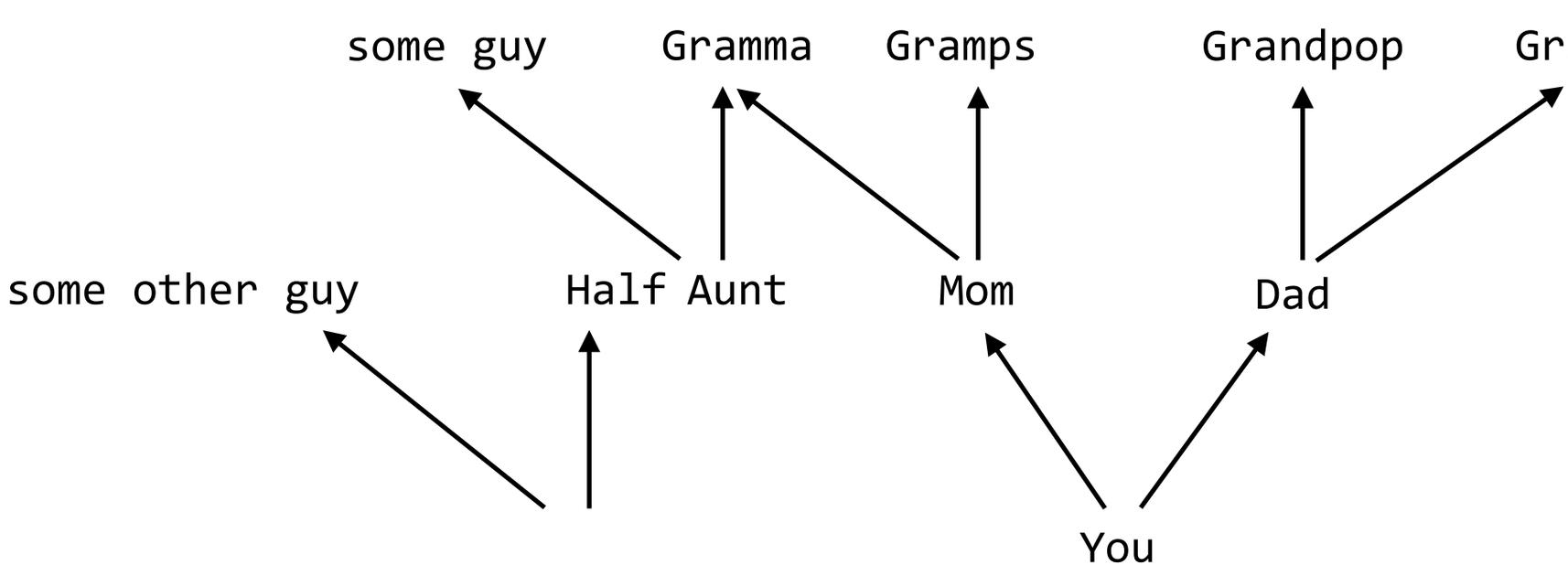

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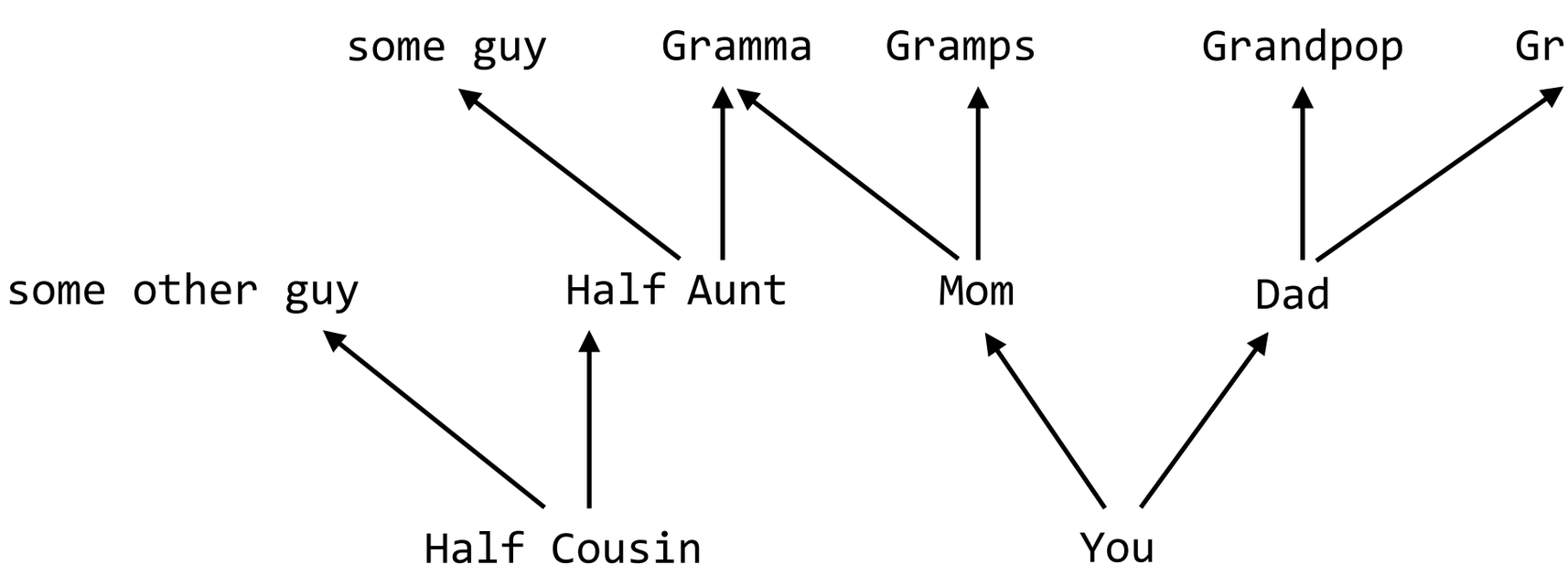

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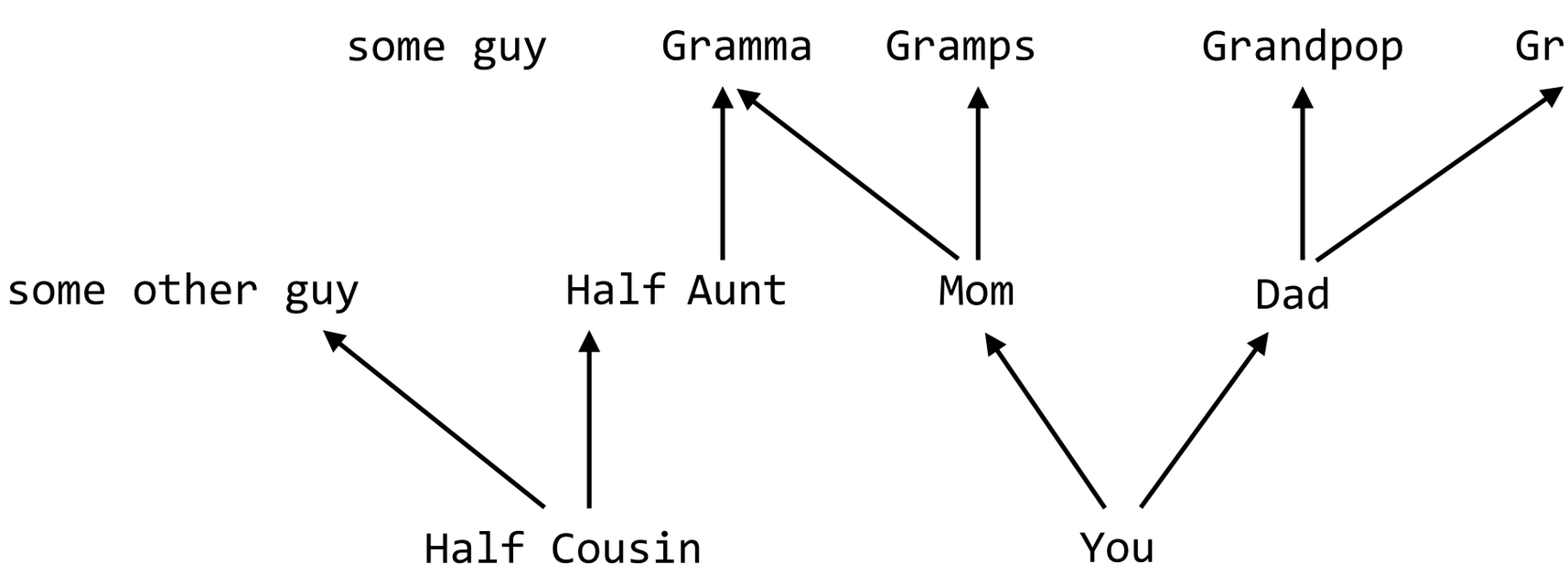

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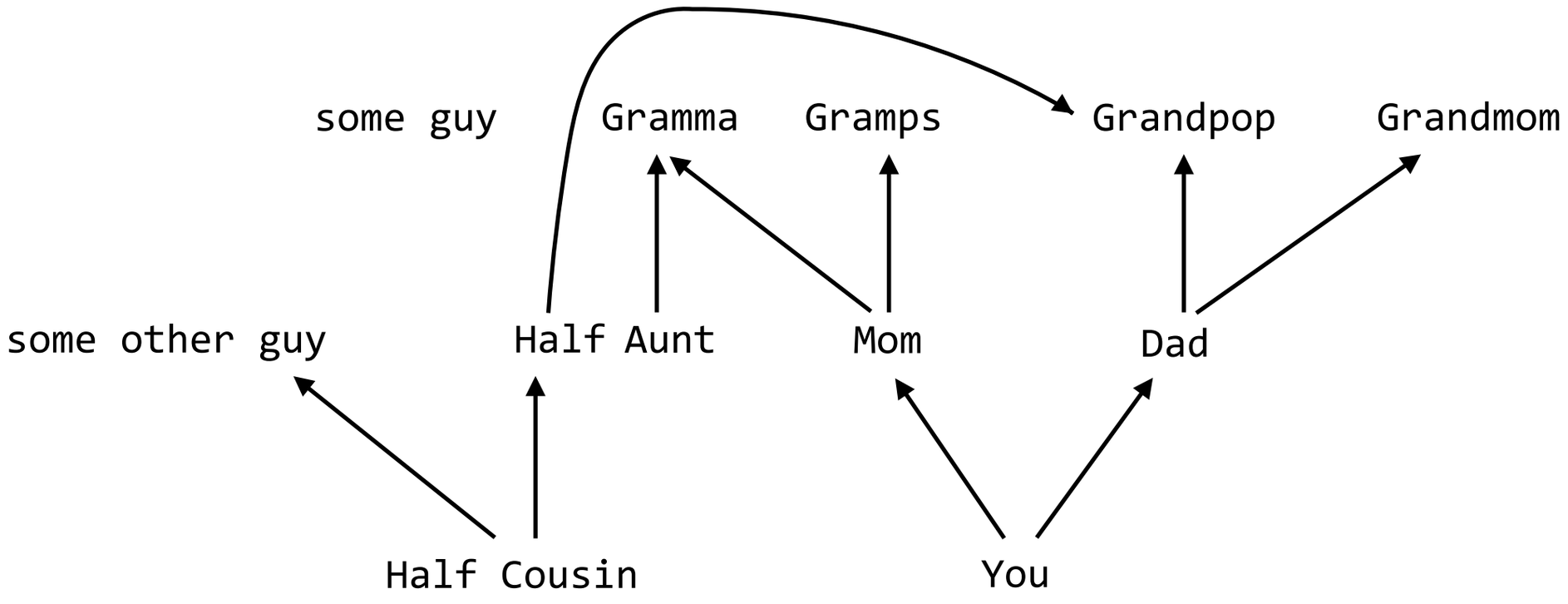

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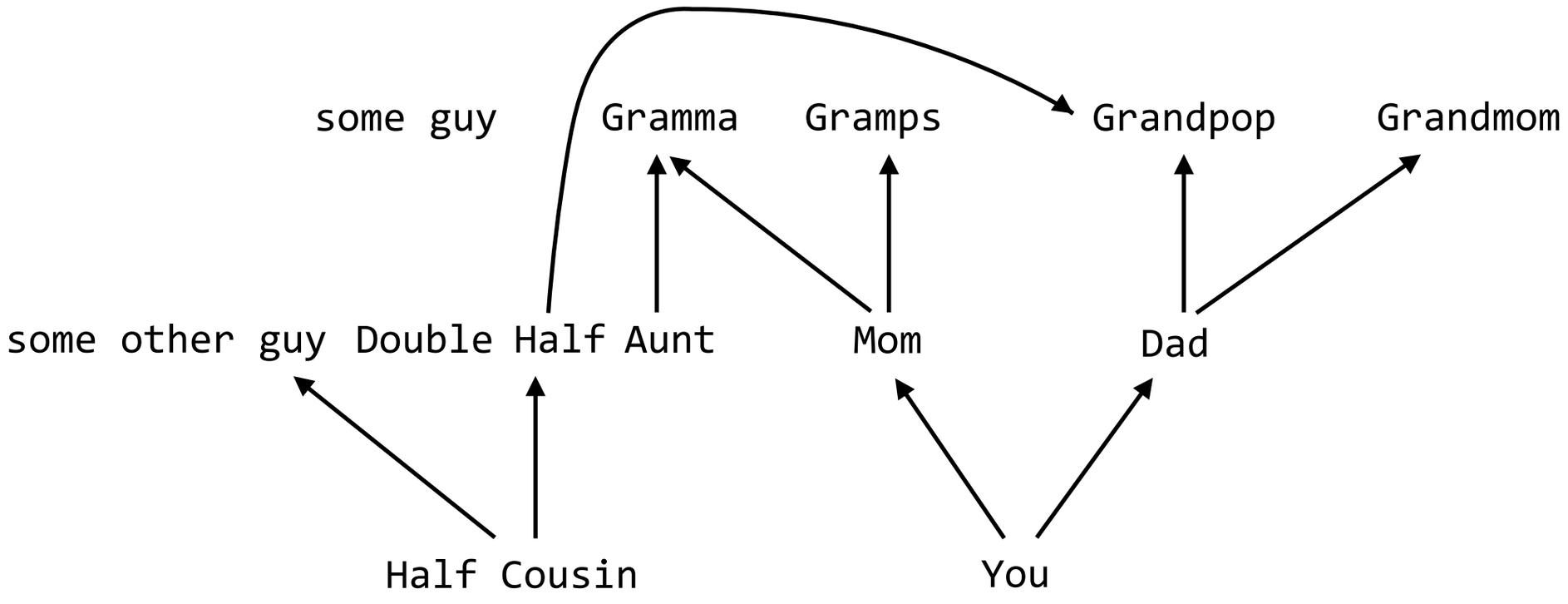

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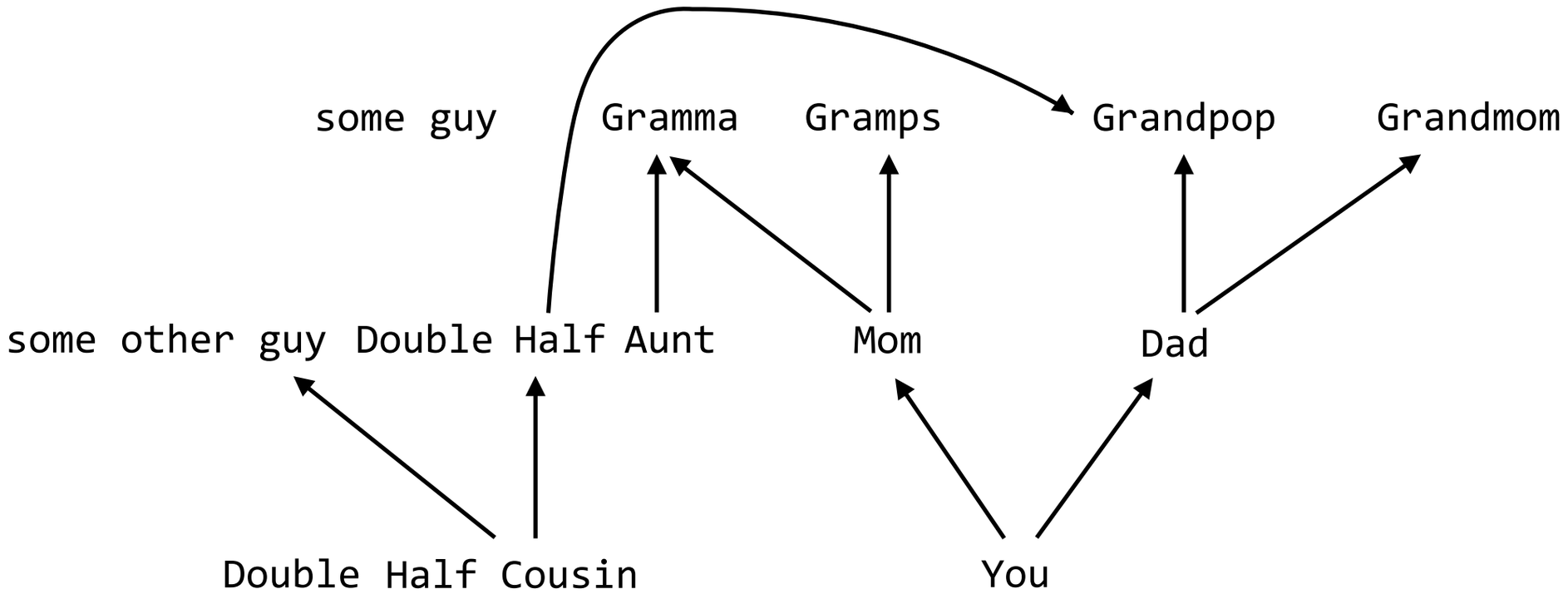

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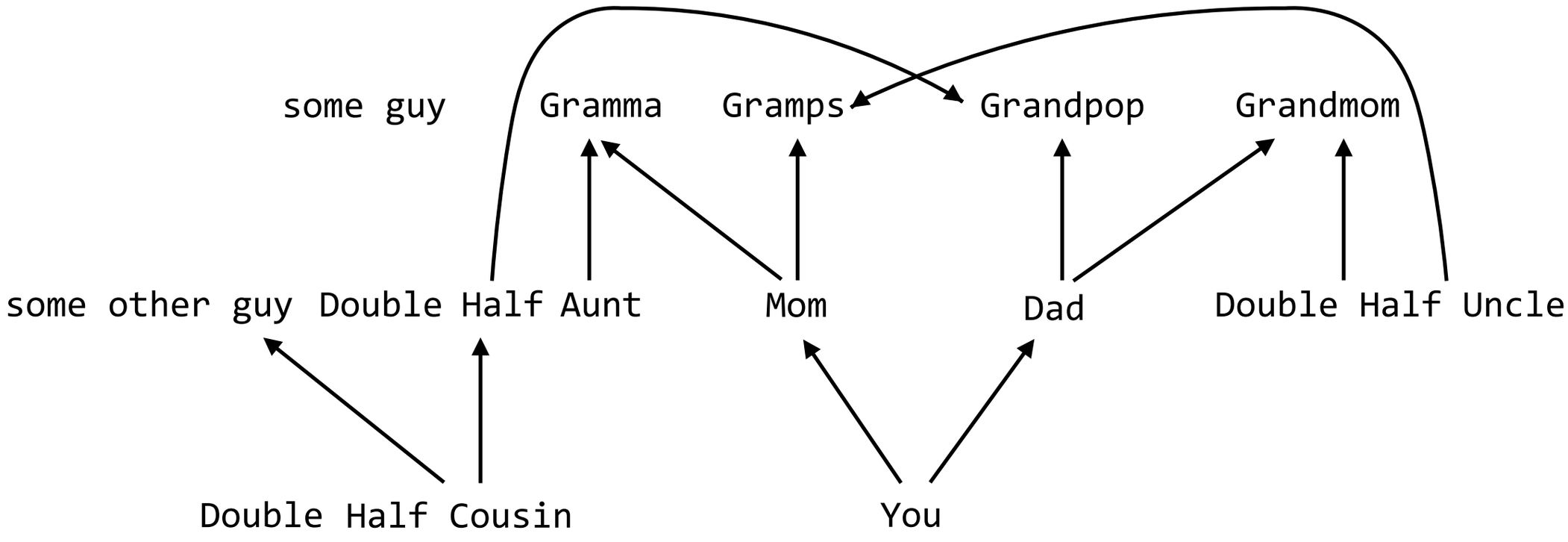

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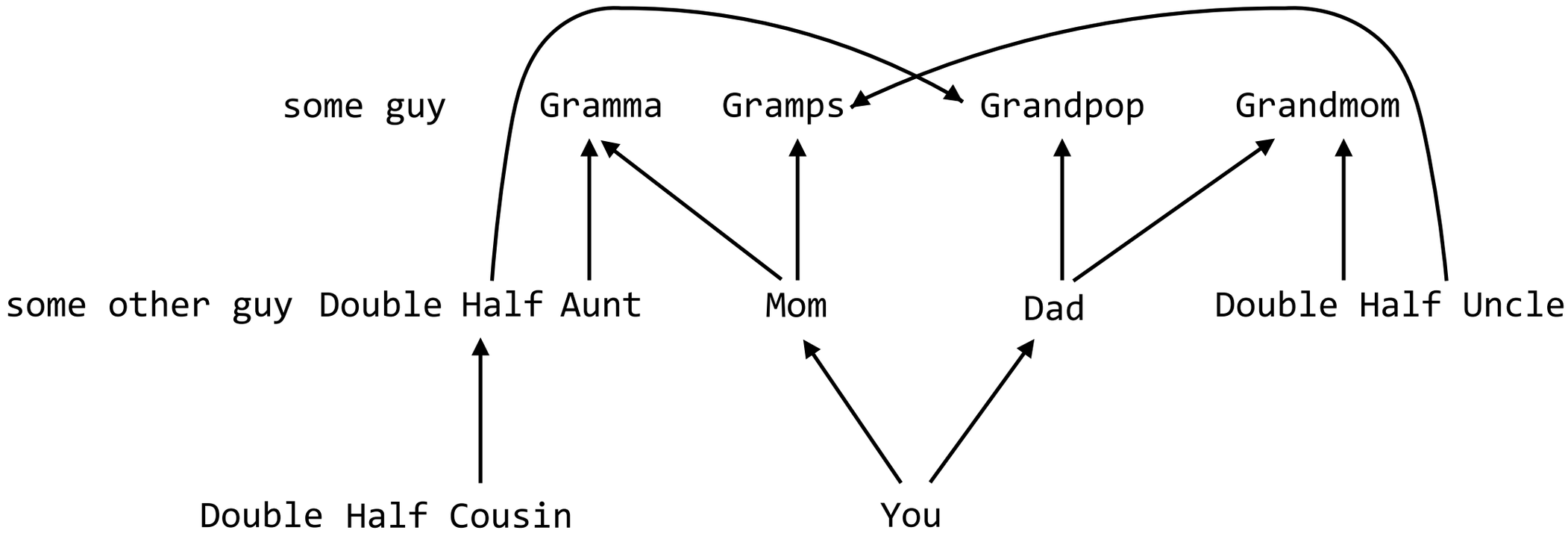

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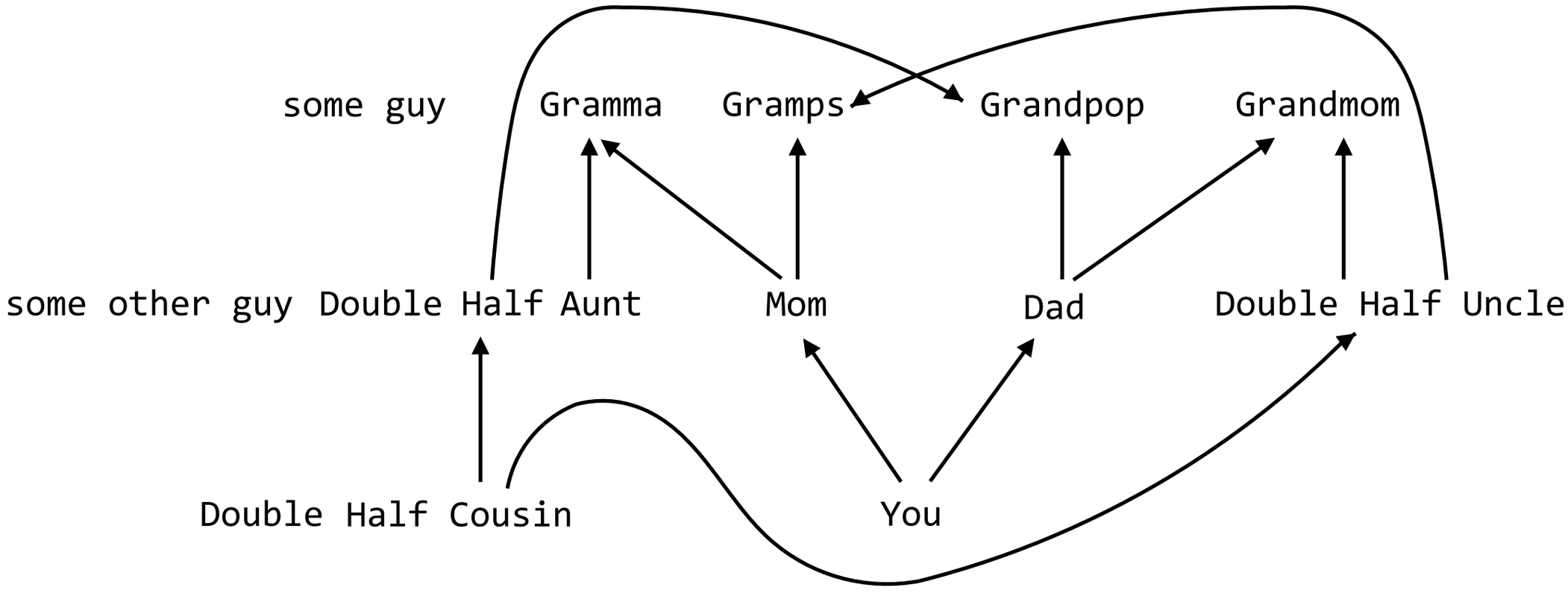

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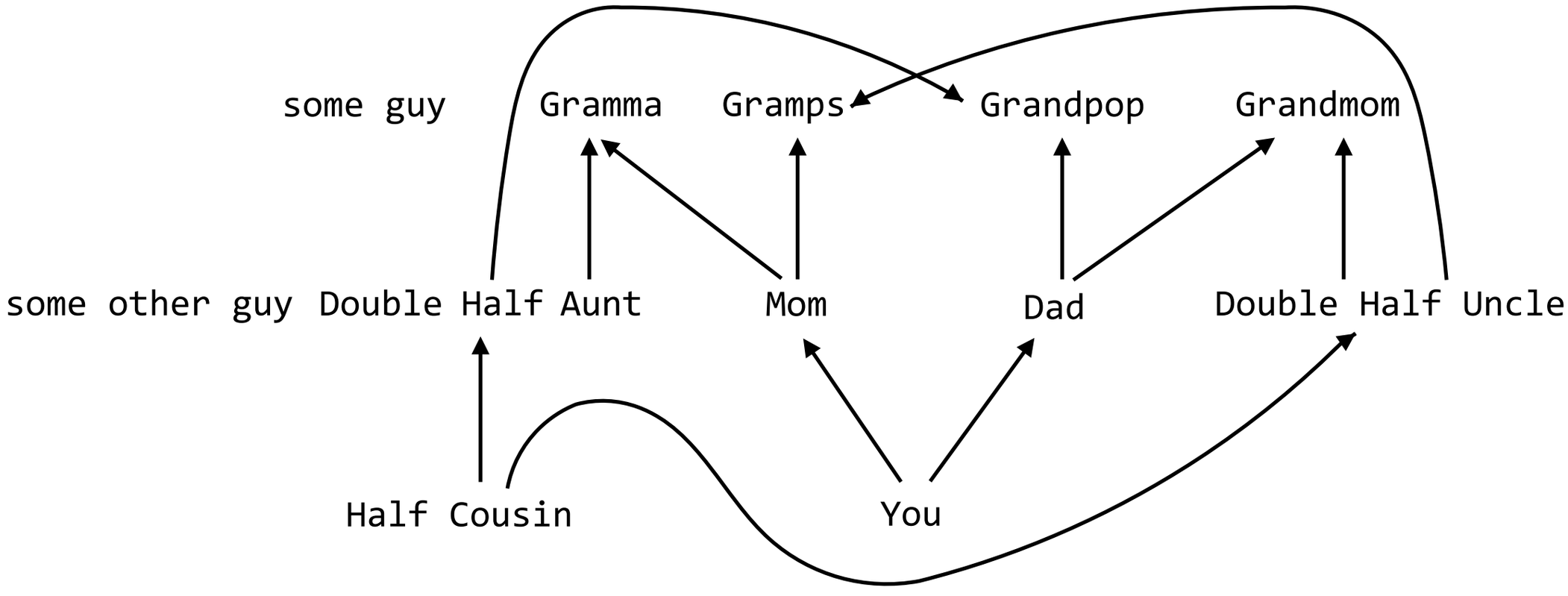

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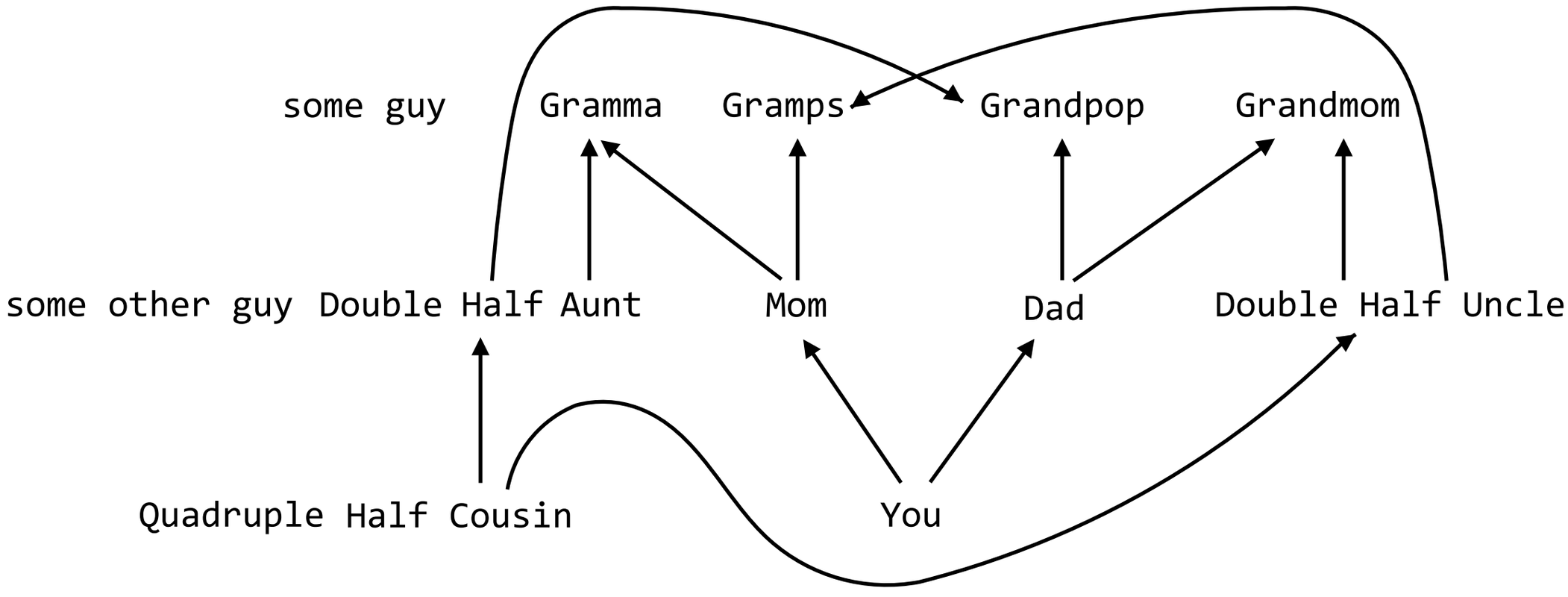

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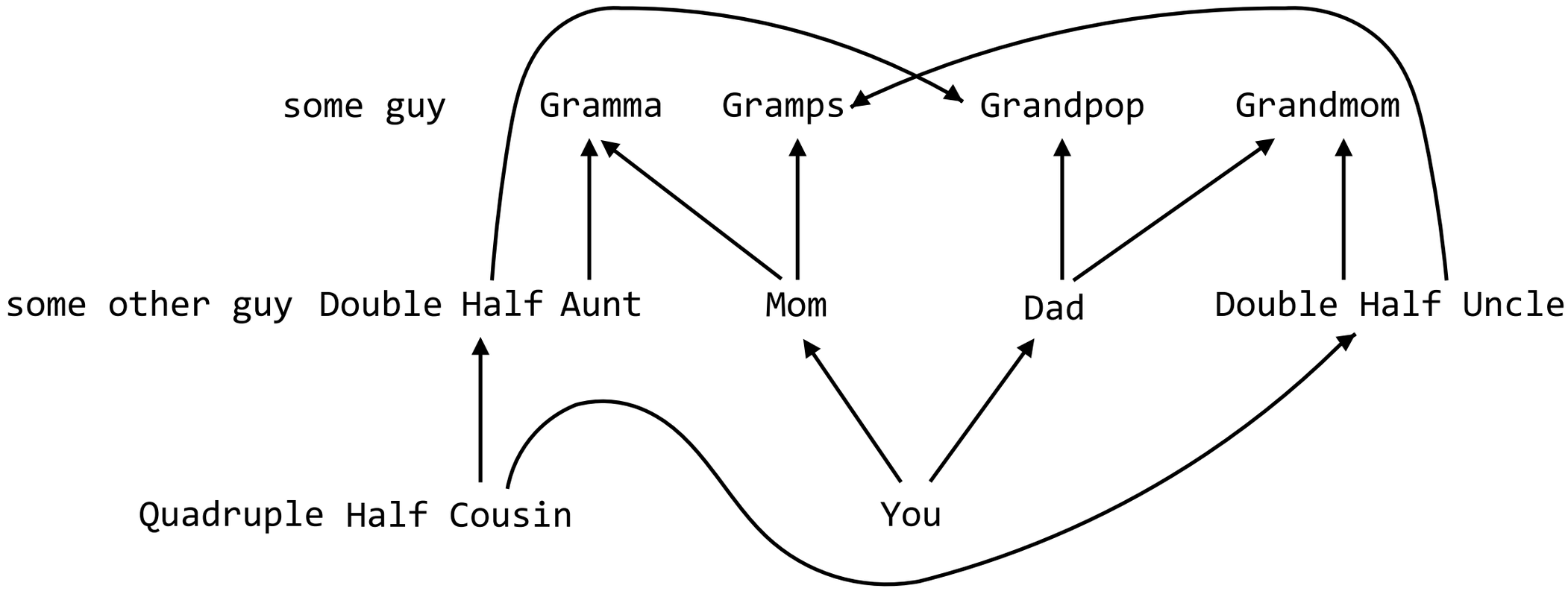

Moral of the story: inheritance (especially multiple inheritance) is complicated and weird. Use it carefully!