

- Understanding for loops
  - Practice: Who's in my group?
- Conditionals (if, else, elif)
  - Practice: What's their ages?
- Building a list
  - List comprehension

# Basic structure

Name you create to refer  
to the items in the list

Your original list  
name; where the  
items are from

**for** <variable name> **in** <list name>:

 <do something>

Don't forget  
the colon (:)

Indentations indicate  
that the action is  
part of the loop

Tells python what  
to do with each  
item on the list

*creature* variable is created and used to identify items in list

Items refer to the list variable, *animals*

**for creature in animals:**

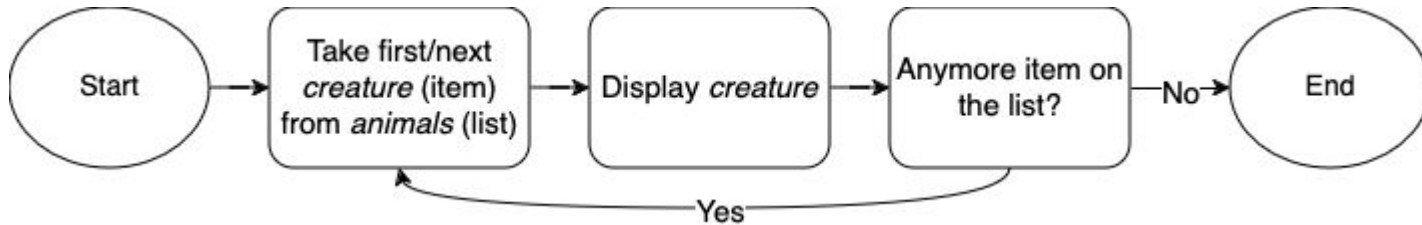
 **print(creature)**

Don't forget the colon (:)

Indentations

Displays each *creature* from the list of *animals*

```
animals = ["hippo", "whale", "hippo", "whale", "hippo", "whale", "hippo",  
           "whale", "dog", "monkey", "cat"]
```



# For Loops

```
animals = ['monkey', 'hippo', 'red panda', 'seal', 'horse', 'cat']
```

```
for creature in animals:
```

```
    print(creature)
```

## Practice: Who's in my group?

Using the list you created last Thursday, create a **for loop** that displays the names of each groupmate with the sentence “My groupmate is {name}.”

With conditionals



## For Loops: Conditionals (if/else, elif)

Conditionals allow us to finetune/add instructions to our for loop. A output is generated when the condition is satisfied.

- **if:** always the first in the conditional statements
- **else:** not always necessary; does not have conditions as it assumes items that did not fulfil other conditions will perform this behavior
- **elif:** for any other conditions; used between if/else statements
  - elif stands for *else if*

## For Loops: Conditionals (if/else, elif)

```
ages = [28, 19, 32, 30, 45, 52, 57, 45, 32, 33, 25, 22, 32]
```

```
for age in ages:
```

```
    if age > 32:
```

```
        print("Person is older than 32 years old")
```

```
    else:
```

```
        print("Person is younger than 32 years old")
```

# For Loops: Conditionals (if/else, elif)

```
for age in ages:
```

```
    if age > 32:
```

```
        print(f"Person is {age} and is older than me.")
```

```
    elif age < 32:
```

```
        print(f"Person is {age} and is younger than me.")
```

```
    else:
```

```
        print(f"Person is {age} and is the same age as me.")
```

## Practice: What's their age?

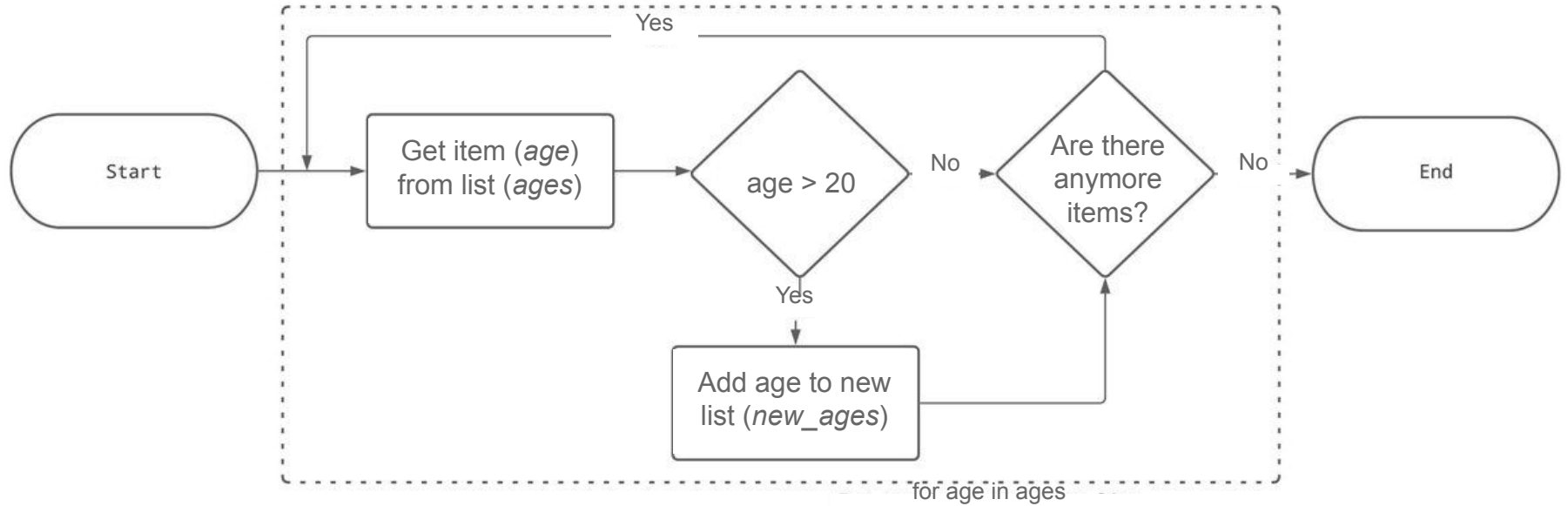
Create a for loop that checks your age against your groupmates and mine. You will need:

- A list variable of ages
- Conditional statements that sorts your groupmates as *younger*, *same age*, or *older* than you

# Building a list

## For Loop: Building a list

- To create a new list, we need to first create a variable that is an empty list
- What are we sorting/saving into the new list?
  - Conditionals that we will need (if/else)
- Recall the list method *.append*. We will use it to add items to the empty list.
- We can also check the new list length with the function *len()*.



# Practice: Who's younger or older than me?

Choose and build a new list of ages for ages that are either older or younger than you. You will need:

- An empty list variable
- Conditional statement to sort those younger or older than you
- Append the sorted ages to the empty list
- Check length of new list and print new list



# Practice: Who's younger or older than me?

Choose and build a new list of ages for ages that are either older or younger than you. You will need:

- An empty list variable
  - `new_ages = []`
- Conditional statement to sort those younger or older than you
  - `if age > 20`
- Append the sorted ages to the empty list
  - `new_ages.append(age)`
- Check length of new list and print new list
  - `len(new_ages)`
  - `print(new_ages)`

# List comprehensions

- Compact way of building a new list
  - One condition:
    - `empty_list = [creature for creature in creatures if creature == "hippo"]`

Name of item from original list; what variable are you storing in your new list?

Condition item has to fulfil before it can be added to the new list

```
empty_list = [creature for creature in animals if creature == 'hippo']
```

Variable name for new list

for loop

Indicates new list

## List comprehensions

- Translate the for loop you created in *Who's younger or older than me?*

# List comprehensions

- More than one condition:
  - `empty_list = [creature for creature in creatures if creature == "hippo" or creature == "whale"]`

# Counting items

# Counting items

- Import module, **Counter**, from package collections
  - from collections import Counter
- Count how many times an item appears (frequency)
  - Counter(ages)
    - This collection is another data type called a *dictionary*

# Most common items

- Create new variable with counter
  - `ages_tally = Counter(ages)`
- Display items from most common to least common
  - `ages.most_common()`
    - `ages.most_common(3)` → lists top 3 common items



# Most common items

- Display least common item by slicing the list of `most_common()` from the back
  - `ages.most_common()[-1:]` → least common item
  - `ages.most_common()[-3:]` → 3 least common items