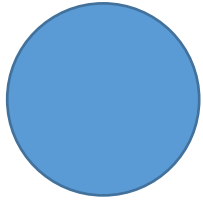


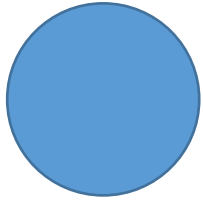
# Functions

# Intuition



Radius = 1 cm

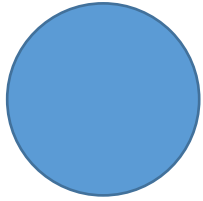
# Intuition



Radius = 1 cm

Area?

# Intuition



Radius = 1 cm



## Pseudo-Code:

Area of Circle:

Task 1. Take radius 1

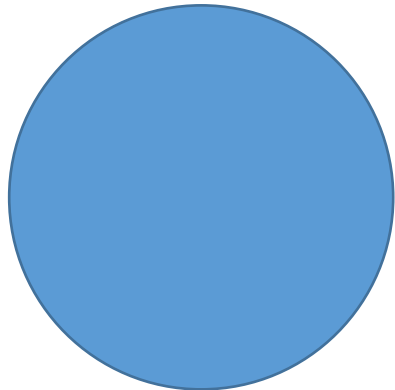
Task 2. Calculate  $1*1$

Task 3. Multiply 3.14 by  $1*1$

# Intuition



Radius = 1 cm



Radius = 3 cm

## Pseudo-Code:

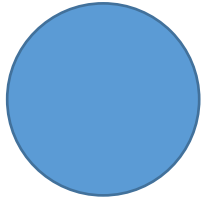
Area of Circle:

Task 1. Take radius 1

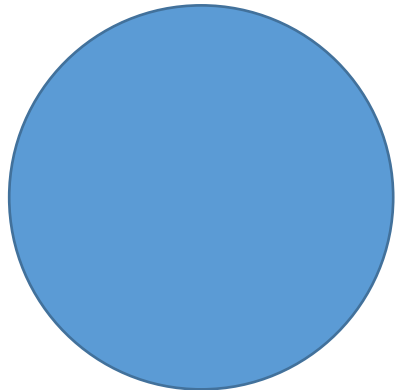
Task 2. Calculate  $1*1$

Task 3. Multiply 3.14 by  $1*1$

# Intuition



Radius = 1 cm



Radius = 3 cm

Area?

## Pseudo-Code:

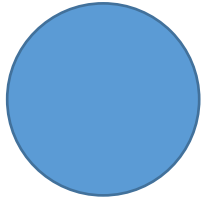
Area of Circle:

Task 1. Take radius 1

Task 2. Calculate  $1*1$

Task 3. Multiply 3.14 by  $1*1$

# Intuition



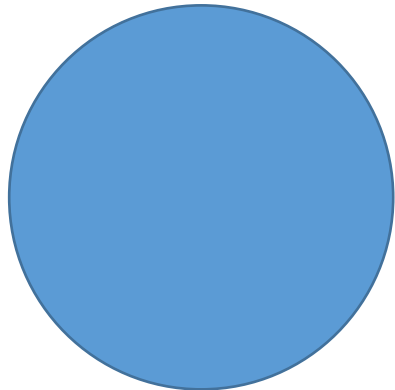
Radius = 1 cm



## Pseudo-Code:

Area of Circle:

- Task 1. Take radius 1
- Task 2. Calculate  $1*1$
- Task 3. Multiply 3.14 by  $1*1$



Radius = 3 cm

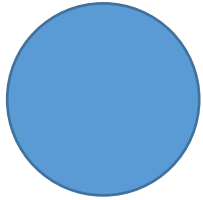


## Pseudo-Code:

Area of Circle:

- Task 1. Take radius 3
- Task 2. Calculate  $3*3$
- Task 3. Multiply 3.14 by  $3*3$

# Intuition



Radius = 1 cm

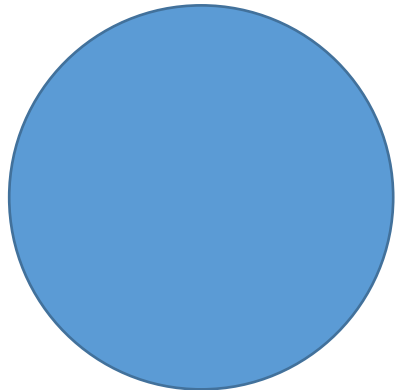


## Pseudo-Code:

Area of Circle:

- Task 1. Take radius 1
- Task 2. Calculate  $1*1$
- Task 3. Multiply 3.14 by  $1*1$

**Multiple Circles of different Radius!!?**



Radius = 3 cm



## Pseudo-Code:

Area of Circle:

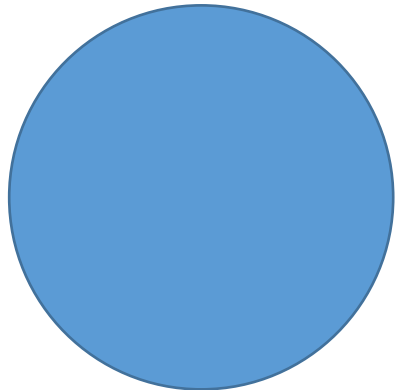
- Task 1. Take radius 3
- Task 2. Calculate  $3*3$
- Task 3. Multiply 3.14 by  $3*3$



# Solution #1: Looping



Radius = 1 cm



Radius = 3 cm

**Pseudo-Code:**

list of radius

for r in radius\_list:

Area of Circle:

Task 1. Take radius r

Task 2. Calculate  $r*r$

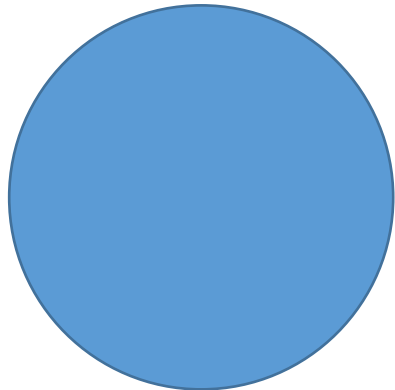
Task 3. Multiply 3.14 by  $r*r$

Task 4. You get the area

# Solution #1: Looping



Radius = 1 cm



Radius = 3 cm

**Pseudo-Code:**

list of radius

```
for r in radius_list:
```

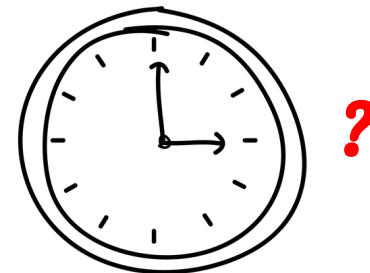
Area of Circle:

Task 1. Take radius r

Task 2. Calculate  $r*r$

Task 3. Multiply 3.14 by  $r*r$

Task 4. You get the area



# Intuition



Radius = 1 cm

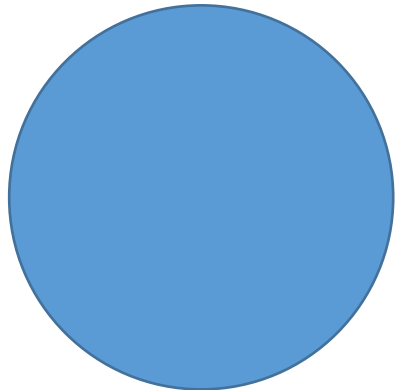


## Pseudo-Code:

Area of Circle:

- Task 1. Take radius 1
- Task 2. Calculate  $1*1$
- Task 3. Multiply 3.14 by  $1*1$

**Multiple Circles of different Radius!!?**



Radius = 3 cm



## Pseudo-Code:

Area of Circle:

- Task 1. Take radius 3
- Task 2. Calculate  $3*3$
- Task 3. Multiply 3.14 by  $3*3$

## Solution #2: Function



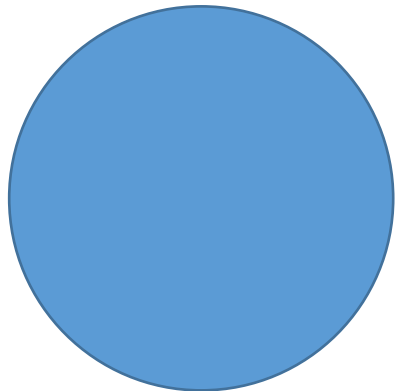
Radius = 1 cm



### Pseudo-Code:

Area of Circle:

- Task 1. Take radius 1
- Task 2. Calculate  $1*1$
- Task 3. Multiply 3.14 by  $1*1$



Radius = 3 cm

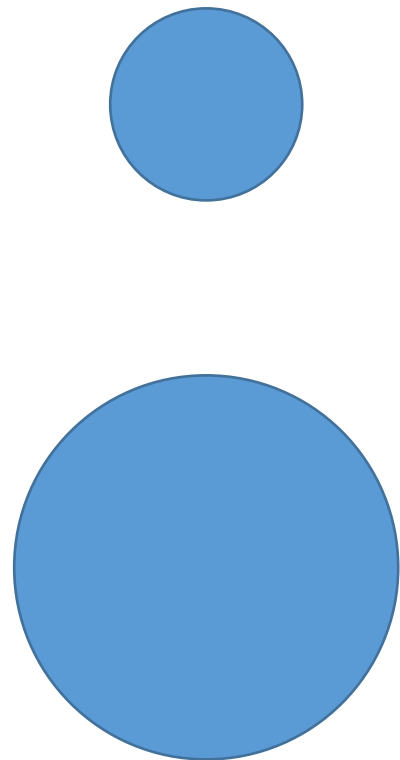


### Pseudo-Code:

Area of Circle:

- Task 1. Take radius 3
- Task 2. Calculate  $3*3$
- Task 3. Multiply 3.14 by  $3*3$

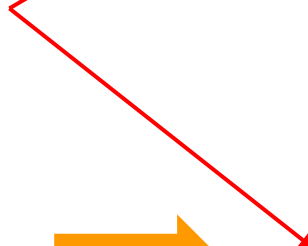
# Solution #2: Function



Radius = 1 cm



Same steps



Radius = 3 cm



## Pseudo-Code:

Area of Circle:

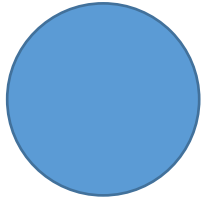
- Task 1. Take radius 1
- Task 2. Calculate  $1*1$
- Task 3. Multiply 3.14 by  $1*1$

## Pseudo-Code:

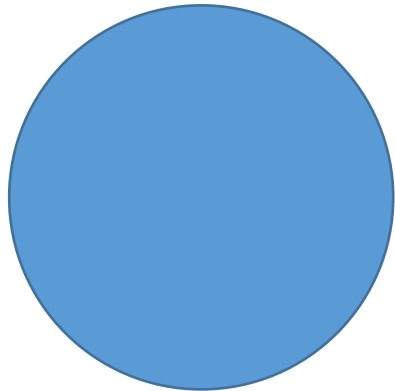
Area of Circle:

- Task 1. Take radius 3
- Task 2. Calculate  $3*3$
- Task 3. Multiply 3.14 by  $3*3$

## Solution #2: Function



Radius = 1 cm



Radius = 3 cm

### Pseudo-Code:

Area of Circle:

Task 1. Take radius  $r$

Task 2. Calculate  $r*r$

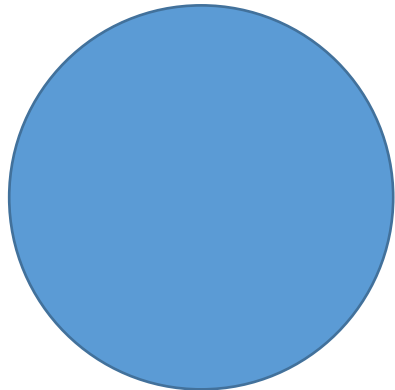
Task 3. Multiply 3.14 by  $r*r$

Task 4. You get the area

# Solution #2: Function



Radius = 1 cm



Radius = 3 cm

Function

**Pseudo-Code:**

Area of Circle:

Task 1. Take radius  $r$

Task 2. Calculate  $r*r$

Task 3. Multiply 3.14 by  $r*r$

Task 4. You get the area

# Function in Python

## Code:

```
def area_circle(r):  
    area = 3.14 * r * r  
    return area
```

## Pseudo-Code:

Area of Circle:

- Task 1. Take radius r
- Task 2. Calculate  $r*r$
- Task 3. Multiply 3.14 by  $r*r$
- Task 4. You get the area



# What are Functions?

What are functions?

**Code:**

```
def area_circle(r):  
    area = 3.14 * r * r  
    return area
```

# What are Functions?

## What are functions?

- Reusable piece of code

### Code:

```
def area_circle(r):  
    area = 3.14 * r * r  
    return area
```

# What are Functions?

## What are functions?

- Reusable piece of code
- Created for solving specific problem

### Code:

```
def area_circle(r):  
    area = 3.14 * r * r  
    return area
```

# Function: Syntax

## Code:

```
def area_circle(r):  
    area = 3.14 * r * r  
    return area
```

## Pseudo-Code:

Area of Circle:

- Task 1. Take radius r
- Task 2. Calculate  $r*r$
- Task 3. Multiply 3.14 by  $r*r$
- Task 4. You get the area

# Function: Syntax

## Code:

```
def area_circle(r):  
    area = 3.14 * r * r  
    return area
```

## Pseudo-Code:

Area of Circle:

- Task 1. Take radius r
- Task 2. Calculate  $r*r$
- Task 3. Multiply 3.14 by  $r*r$
- Task 4. You get the area

# Function: Syntax

## Code:

```
def area_circle(r):  
    area = 3.14 * r * r  
    return area
```

## Pseudo-Code:

Area of Circle:

- Task 1. Take radius r
- Task 2. Calculate  $r*r$
- Task 3. Multiply 3.14 by  $r*r$
- Task 4. You get the area

# Function: Syntax

## Code:

```
def area_circle(r):  
    area = 3.14 * r * r  
    return area
```

## Pseudo-Code:

Area of Circle:

Task 1. Take radius r

Task 2. Calculate  $r*r$

Task 3. Multiply 3.14 by  $r*r$

Task 4. You get the area

# Function: Syntax

## Code:

```
def area_circle(r):  
    area = 3.14 * r * r  
    return area
```

## Pseudo-Code:

Area of Circle:

- Task 1. Take radius r
- Task 2. Calculate  $r*r$
- Task 3. Multiply 3.14 by  $r*r$
- Task 4. You get the area
- Task 5. Return the area



# Functions



Radius = 1 cm



`area_circle(1)`

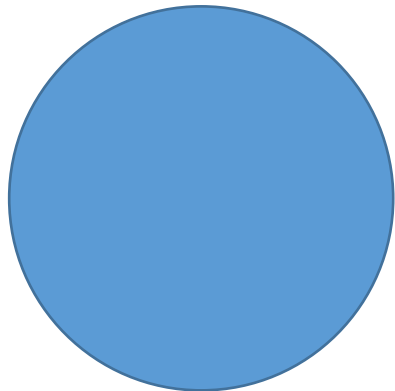
# Functions



Radius = 1 cm



`area_circle(1)`



Radius = 3 cm



`area_circle(3)`

·  
·  
·

Any radius!

# Types of Functions

## Functions in Python

# Types of Functions

## Functions in Python

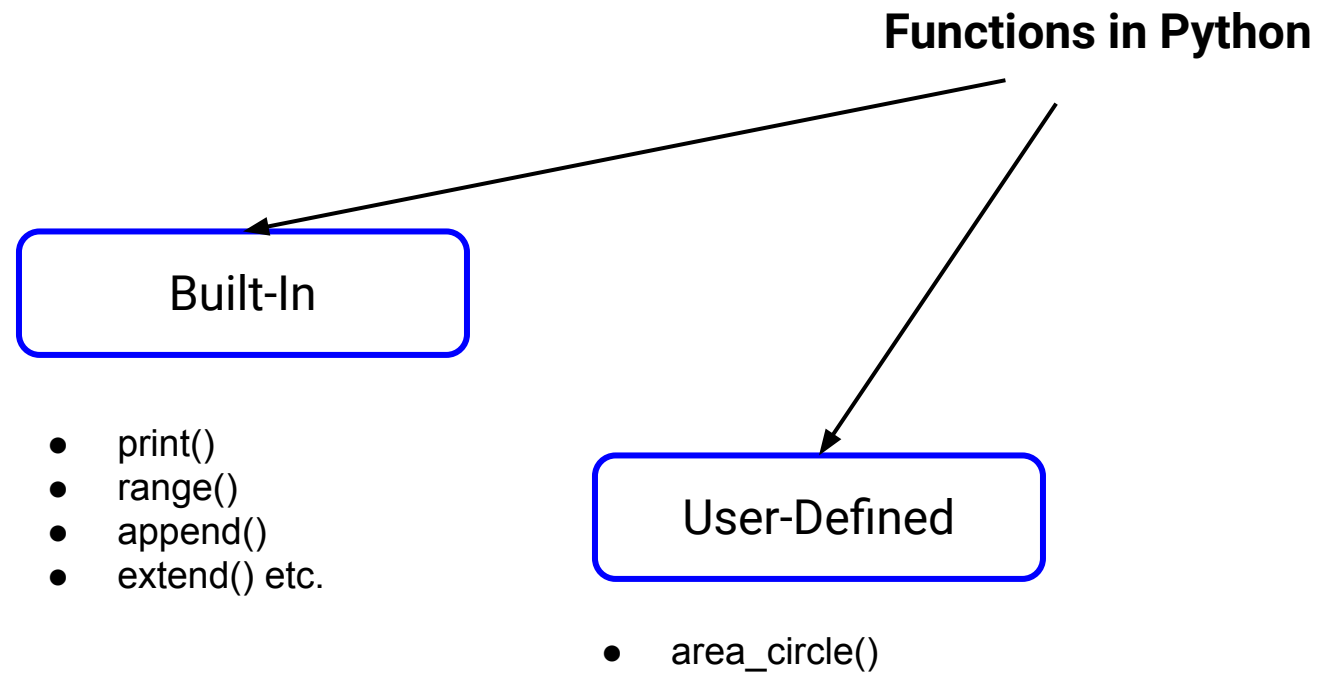


```
graph TD; A[Functions in Python] --> B[Built-In];
```

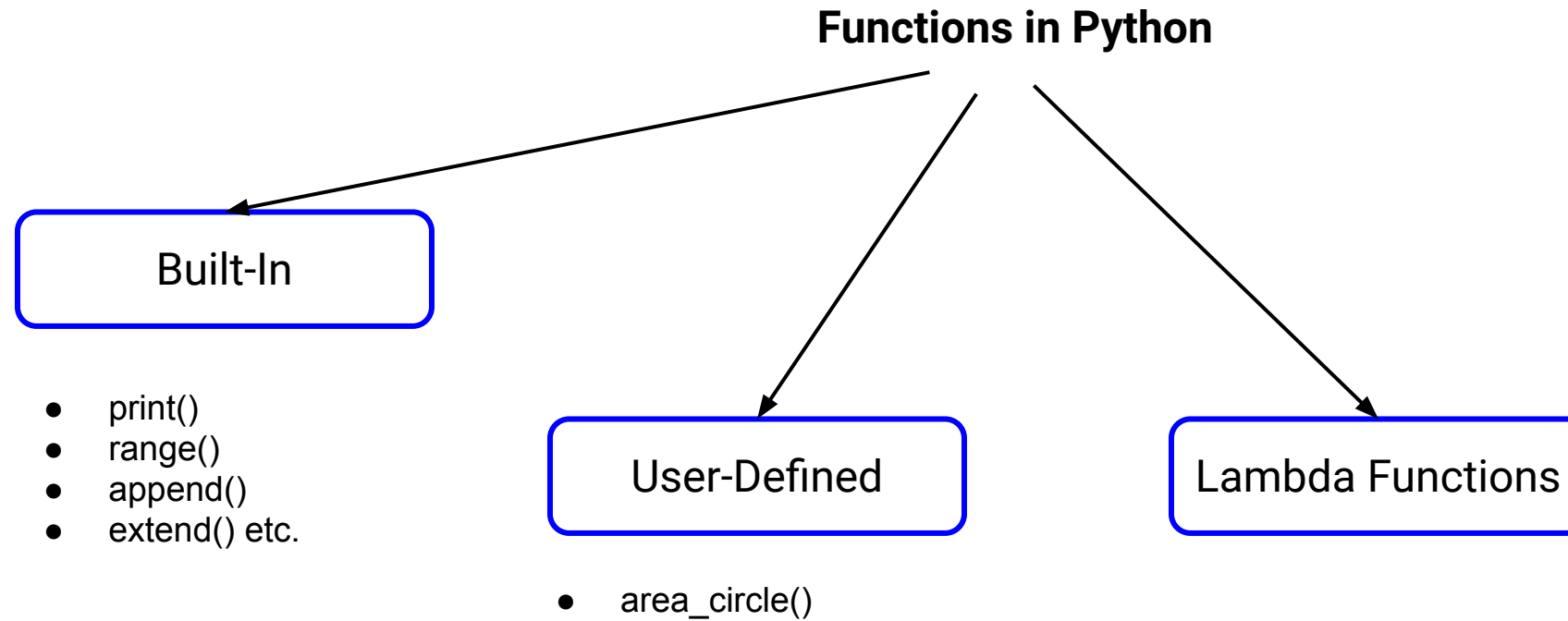
### Built-In

- print()
- range()
- append()
- extend() etc.

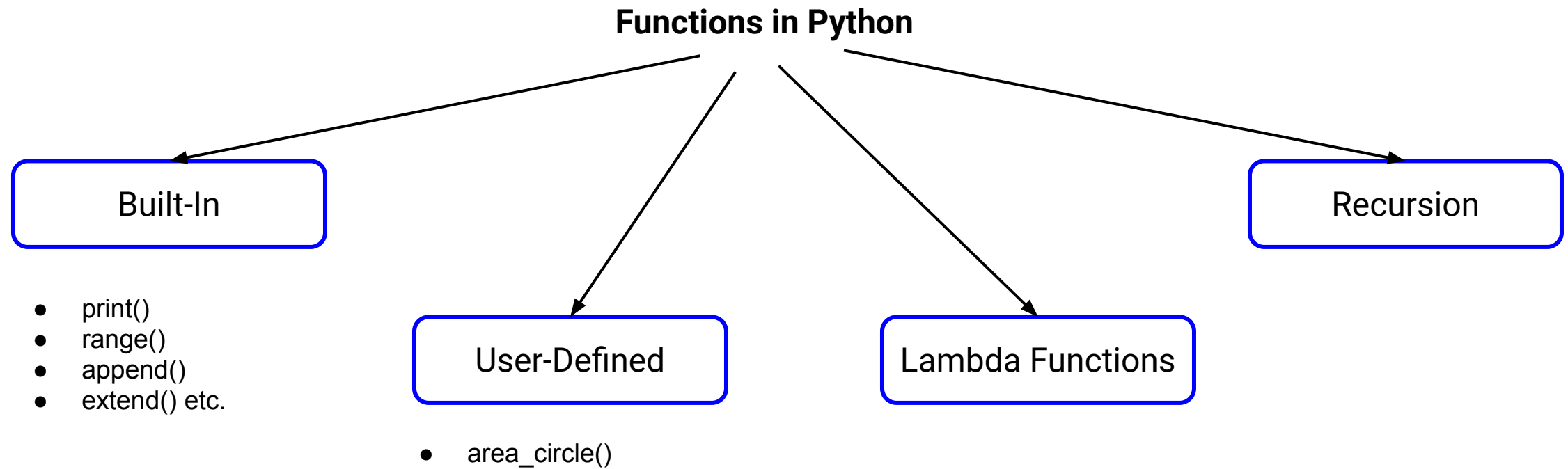
# Types of Functions



# Types of Functions



# Types of Functions



Thank You



# Intuition

**Repeated tasks:**



# Intuition

Repeated tasks:



Getting ready for school

# Intuition

## Repeated tasks:

- Wake up in the morning



Getting ready for school

# Intuition

## Repeated tasks:

- Wake up in the morning
- Have breakfast



Getting ready for school

# Intuition

## Repeated tasks:

- Wake up in the morning
- Have breakfast
- Take a shower



Getting ready for school

# Intuition

## Repeated tasks:

- Wake up in the morning
- Have breakfast
- Take a shower
- Go to school



Getting ready for school

# Intuition

## Pseudo-Code:

Getting ready for school:

- Task 1. Brush your teeth
- Task 2. Take a shower
- Task 3. Dress yourself
- Task 4. Eat your breakfast



Getting ready for school

# Intuition

## Pseudo-Code:

Getting ready for school:

Task 1. Brush your teeth

Task 2. Take a shower

Task 3. Dress yourself

Task 4. Eat your breakfast

## Code:

```
def get_ready_school():  
    print("Brush your teeth")  
    print("Take a shower")  
    print("Dress yourself")  
    print("Eat your breakfast")
```