bool types and if statements

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Basic program control flow in Python

List of Basic Datatypes

We have already seen three of the basic data types in Python:

- Integers (`int type`)
  - $\ldots, -3, -2, -1, 0, 1, 2, 3, \ldots$
- Floating-point (decimal/fractional) numbers (`float type`)
  - $1.5, -1.5, 1.0, ...$
- Strings (words and sentences) (`str type`)
  - `"Tyler"`, `"hello world"`, `"%#()*"`, `"1.0"`

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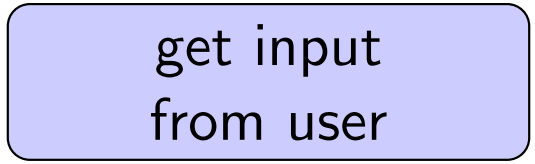
- Strings (words and sentences) (`str type`)
  - `"Tyler"`, `"hello world"`, `"%#()*"`, `"1.0"`

One more type in the future:

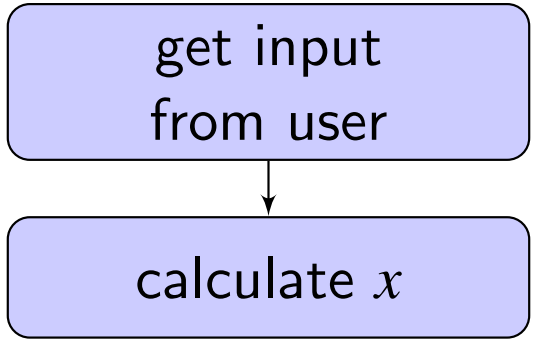
- **Boolean (`bool type`)**
  - `True`, `False`

Linear Control Flow

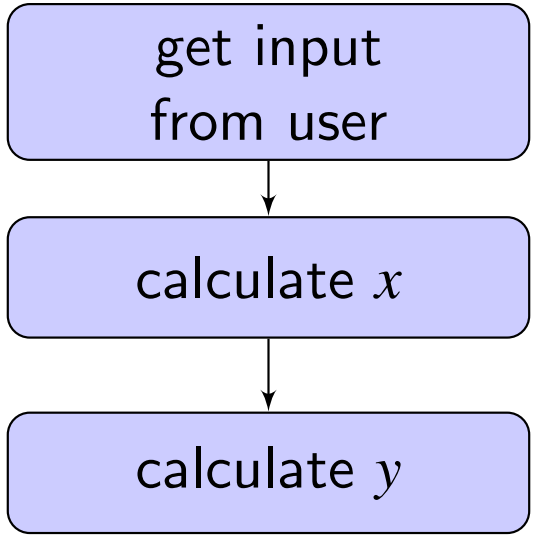
Linear Control Flow



Linear Control Flow



Linear Control Flow



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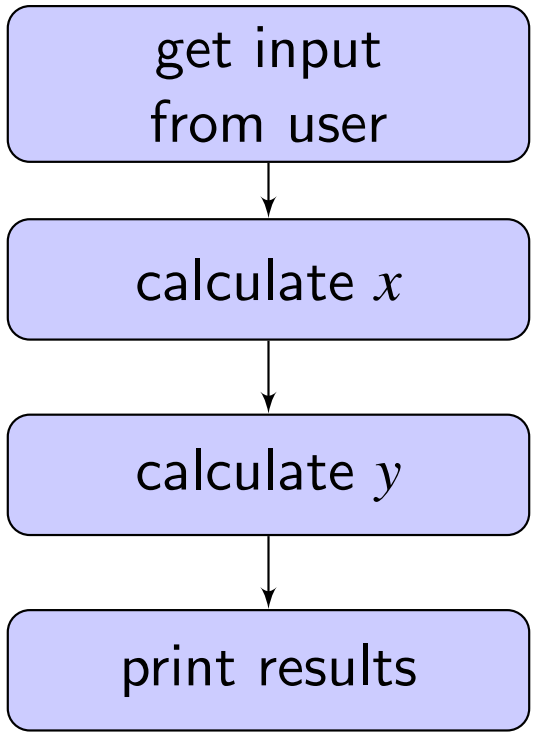
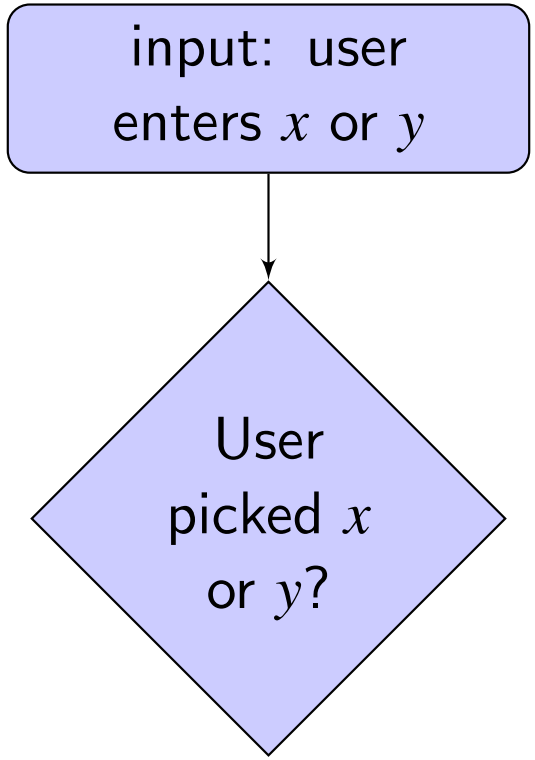


Branching Control Flow

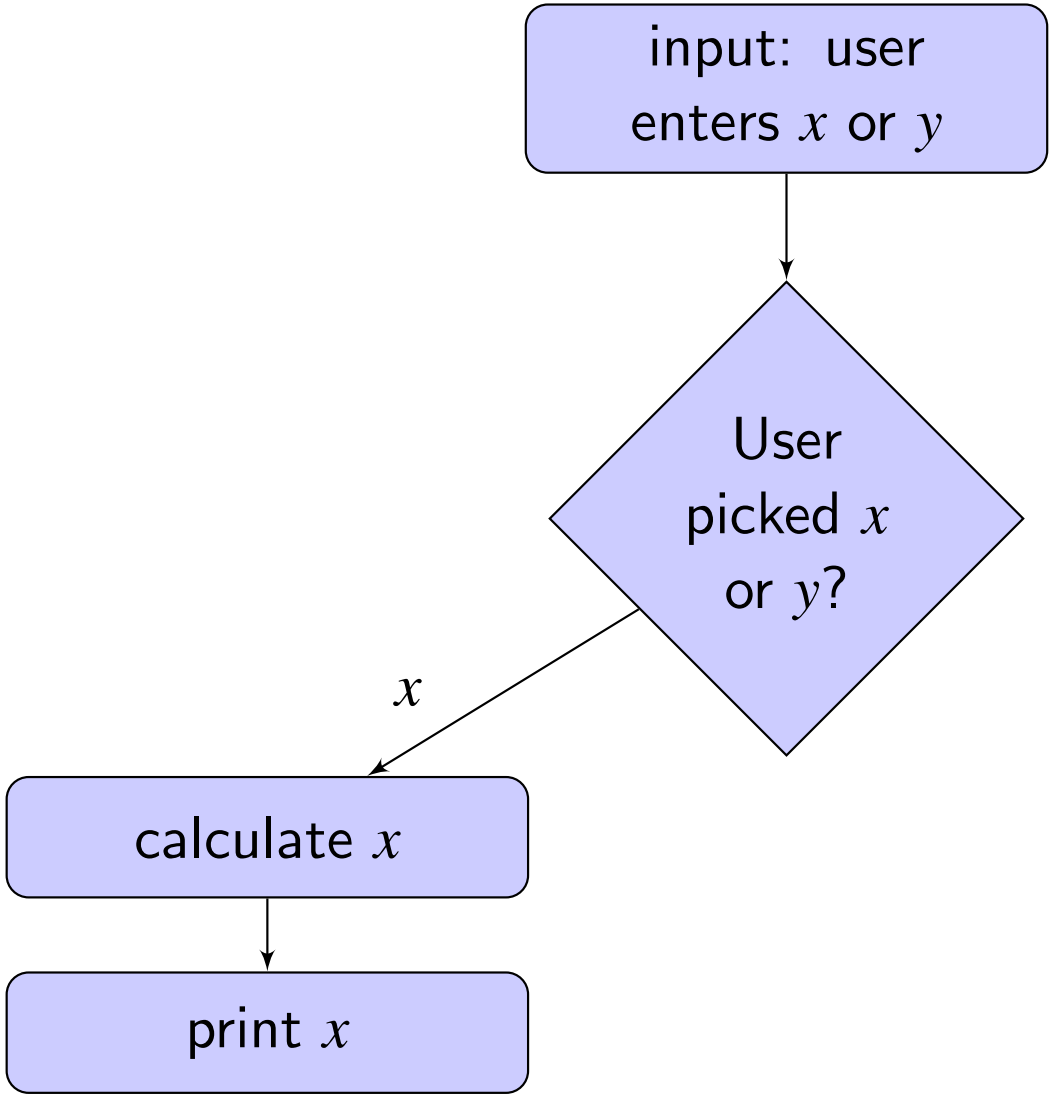
Branching Control Flow

input: user enters x or y

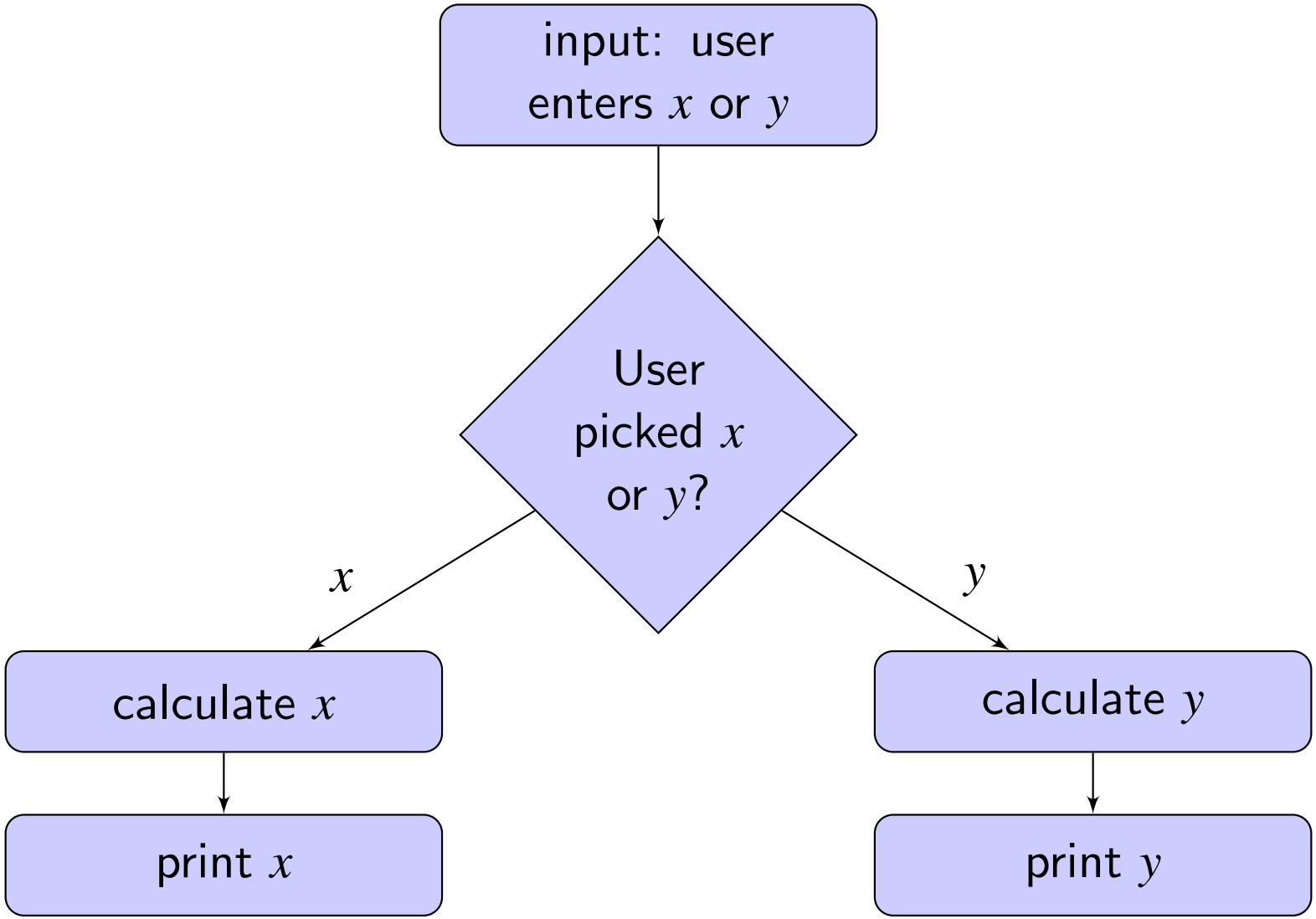
Branching Control Flow



Branching Control Flow



Branching Control Flow



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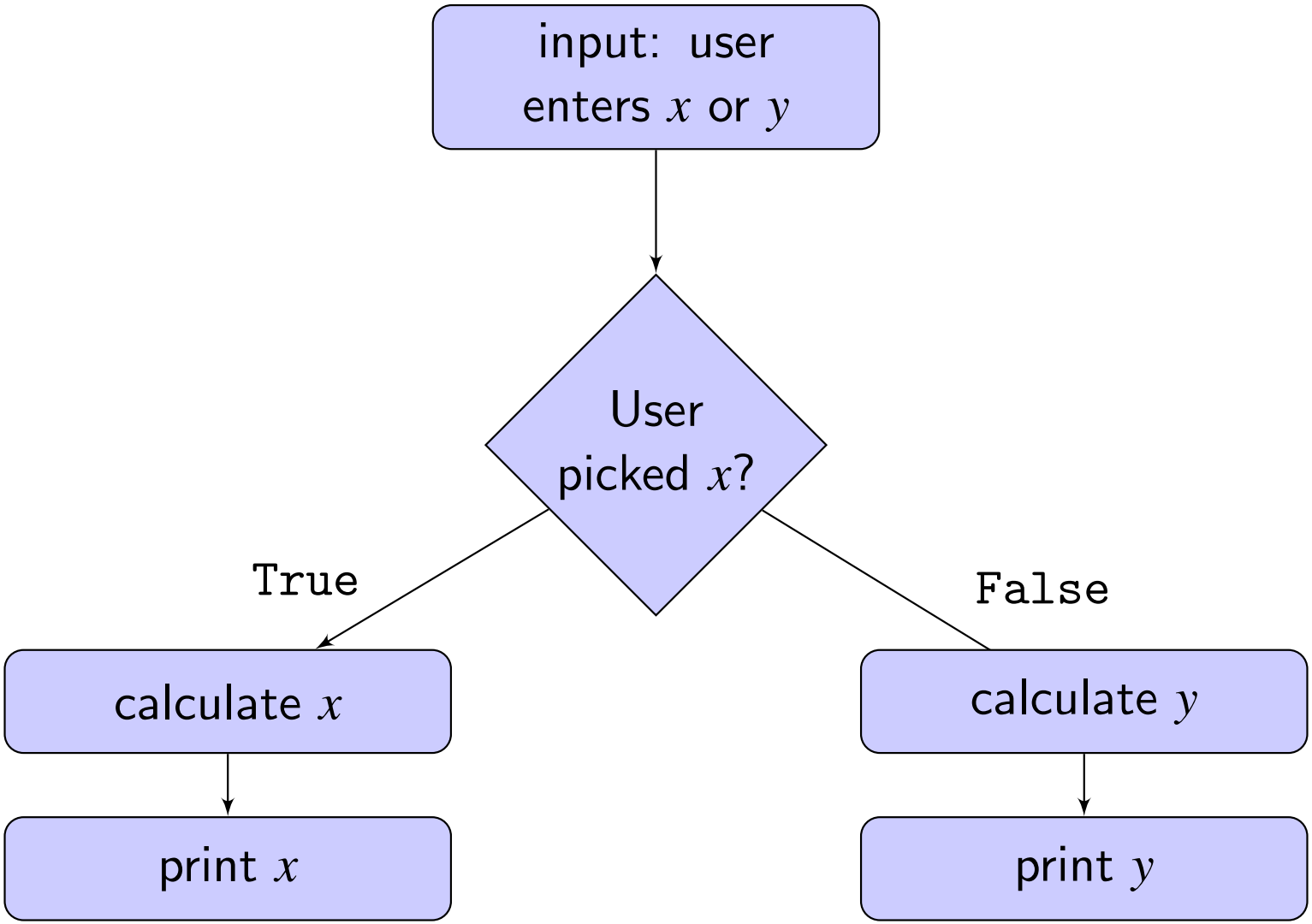

bool Variables

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`x = 3` *tells* the computer: "assign the variable x the value 3"

`x == 3` *asks* the computer: "is x equal to 3? Say `True` if so!"

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- `str1 > str2` – True if `str1` after `str2` in ASCII
- `str1 >= str2` – True if `str1 > str2`, *or* `str1 == str2`

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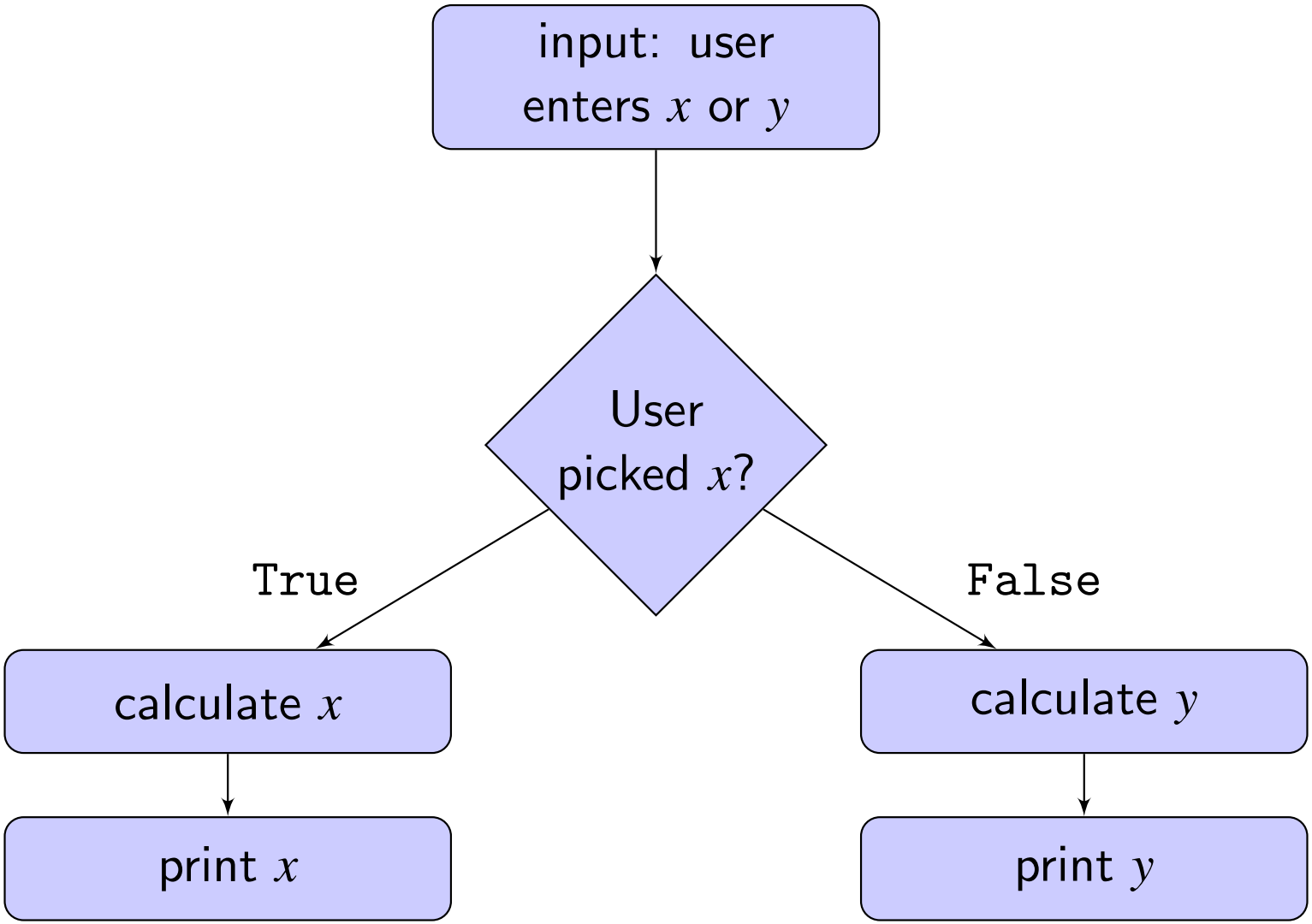
```
>>> Z < a
True
```

Concept Check!

Evaluate each of the following:

1. `>>> 3 == 3`
2. `>>> 3.0 == 3.00000001`
3. `>>> 3.0 != 3.00000001`
4. `>>> 3.0 < 3.00000001`
5. `>>> 3 < 3`
6. `>>> 3 <= 3`
7. `>>> 3 > 4`
8. `>>> 3 > 3`
9. `>>> 3 >= 3`
10. `>>> "tom" < "tyler"`
11. `>>> "tom" < "Tyler"`
12. `>>> "tyler" == " tyler"`

Branching Control Flow



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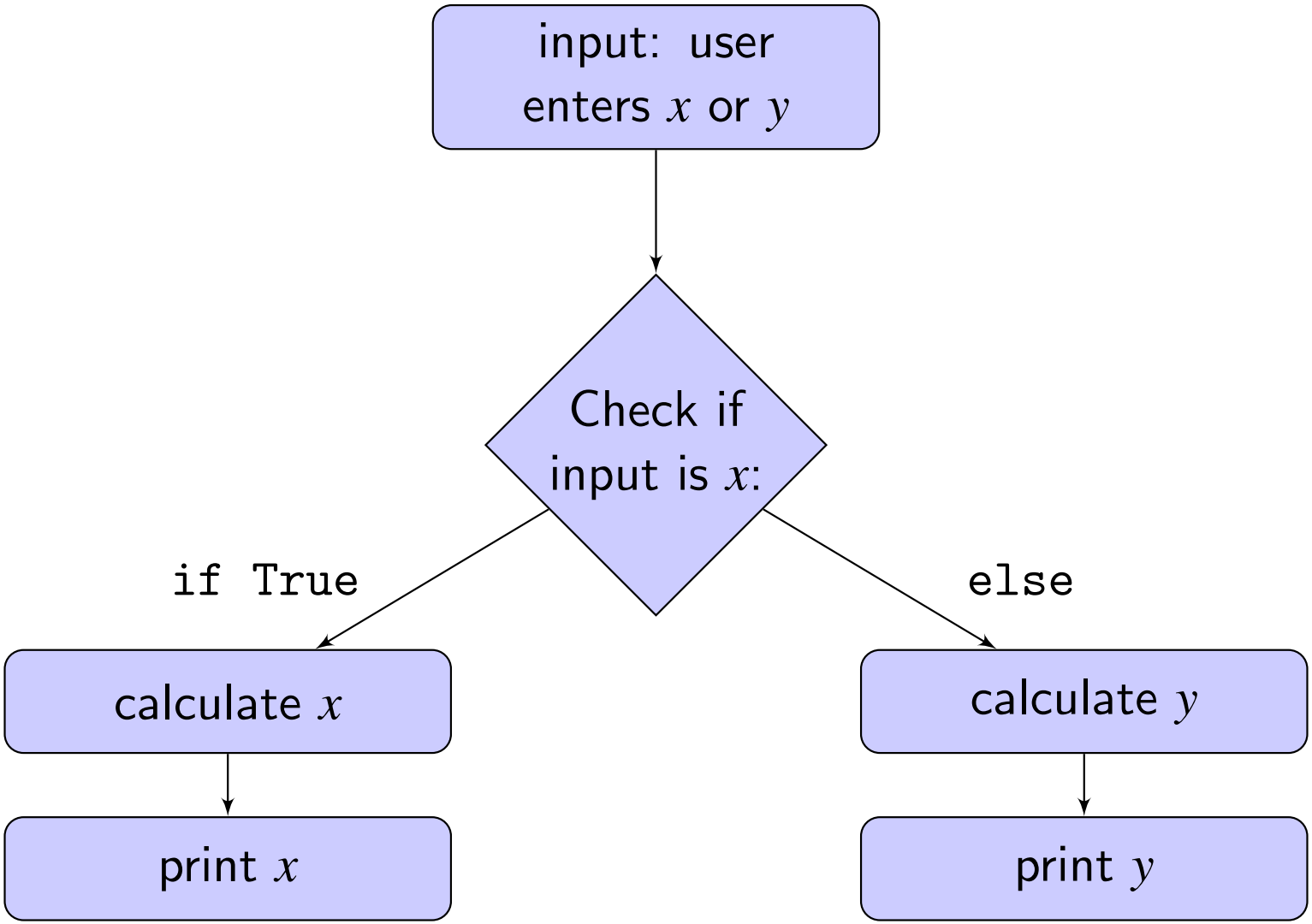

if statement structure

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```
if  condition :
```

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`if` condition :

    This is the *body* – `print` or do something here

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if condition :
    This is the body – print or do something here
    Can have more than one statement here
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if  condition :
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Since this is not indented, do it either way

if statement example

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```
userInput = input("Are you sick?  (enter y or n)")
```

if statement example

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userInput = input("Are you sick?  (enter y or n)")
if userInput == "y":
```

if statement example

```
userInput = input("Are you sick?  (enter y or n)")
if userInput == "y":
    print("Stay home")
```

if statement example

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userInput = input("Are you sick?  (enter y or n)")
if userInput == "y":
    print("Stay home")
    print("Get well soon!")
```

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userInput = input("Are you sick?  (enter y or n)")
if userInput == "y":
    print("Stay home")
    print("Get well soon!")
else:
    print("You need to come to work tomorrow!")
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userInput = input("Are you sick?  (enter y or n)")
if userInput == "y":
    print("Stay home")
    print("Get well soon!")
else:
    print("You need to come to work tomorrow!")
print("Goodbye")
```

temperatures.py

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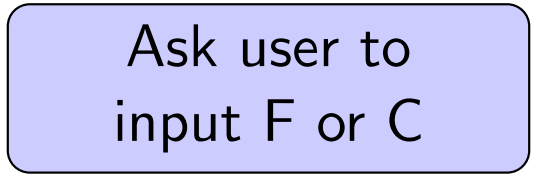

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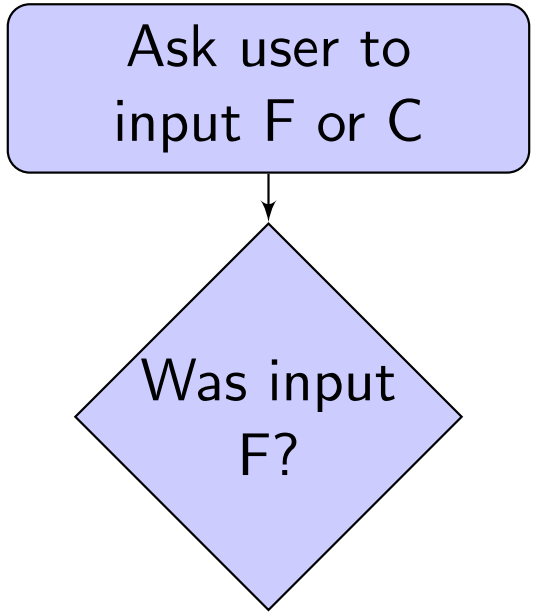

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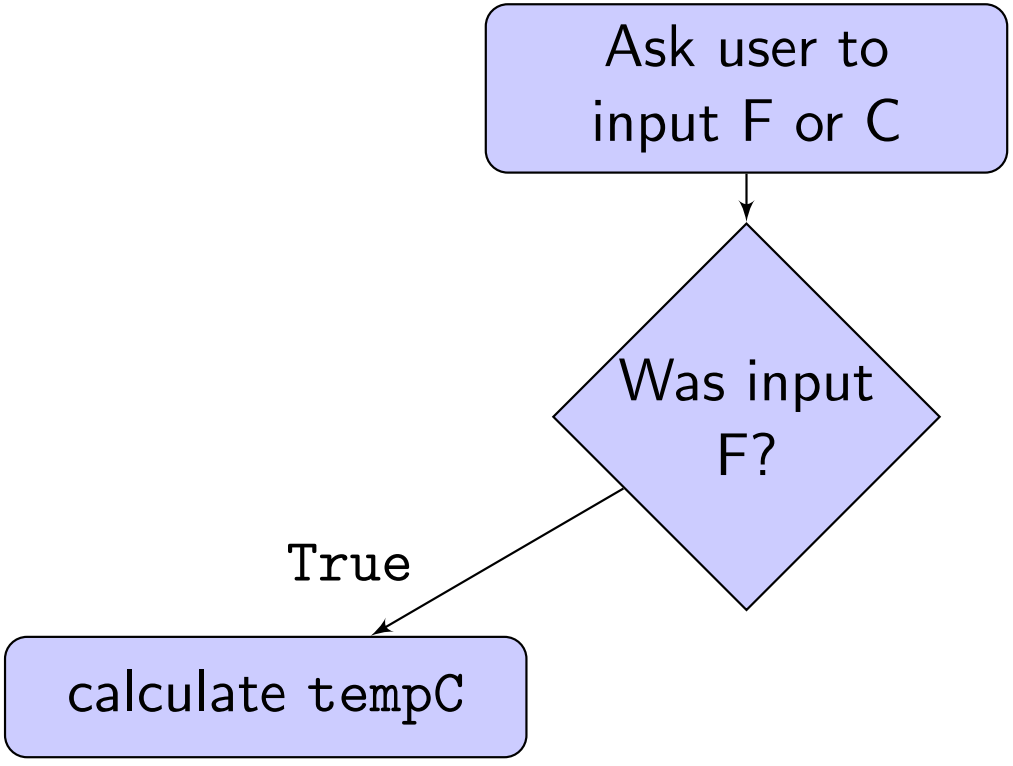

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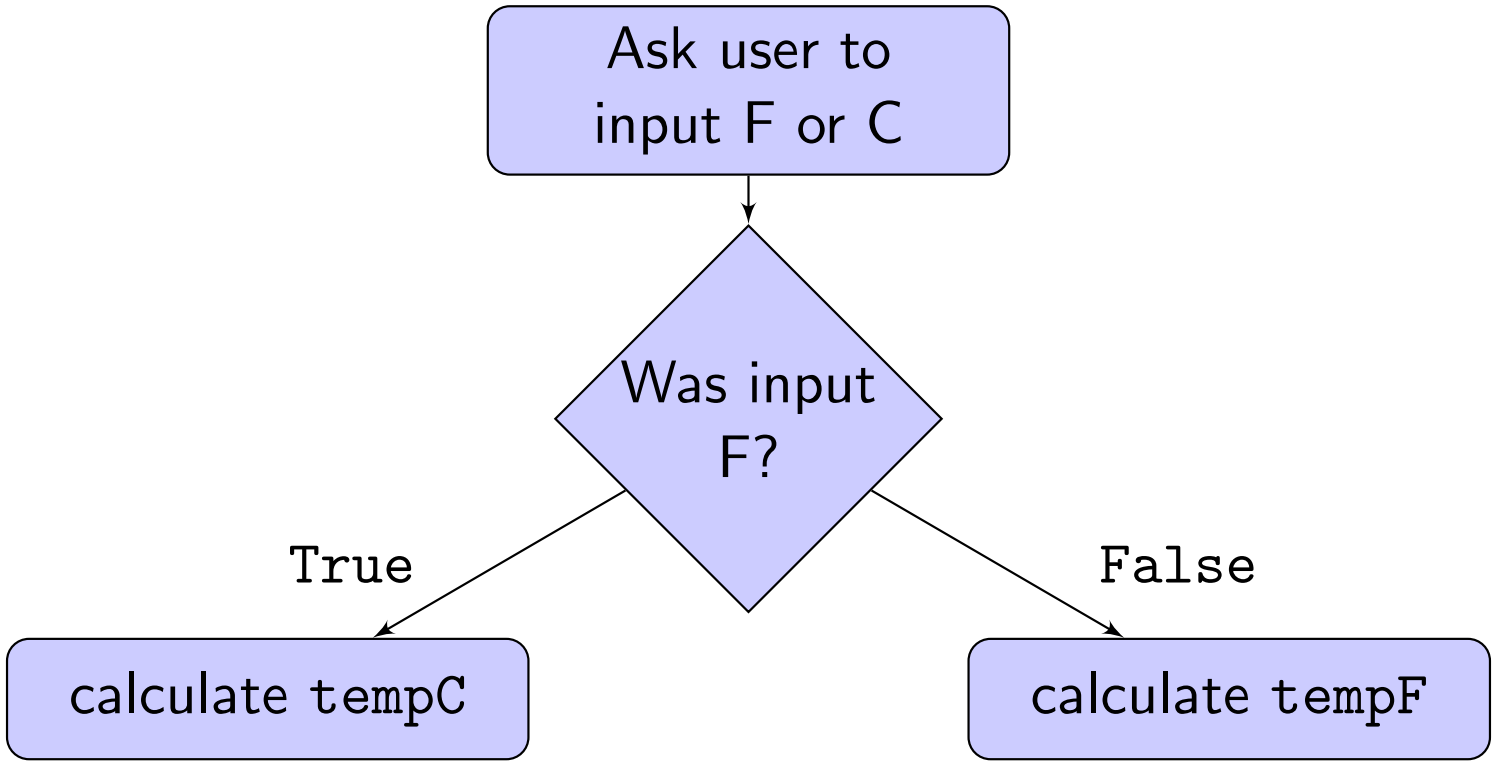

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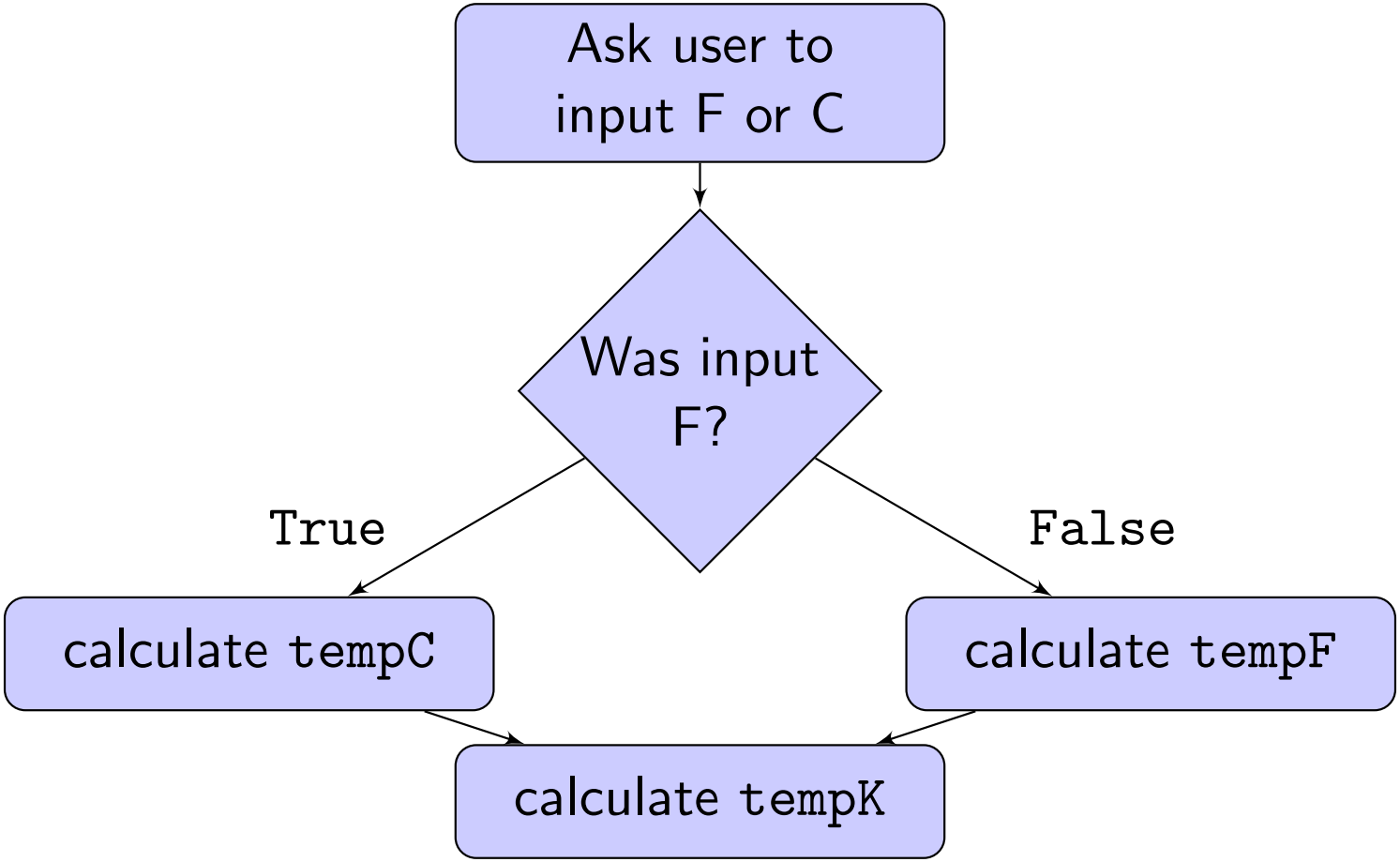

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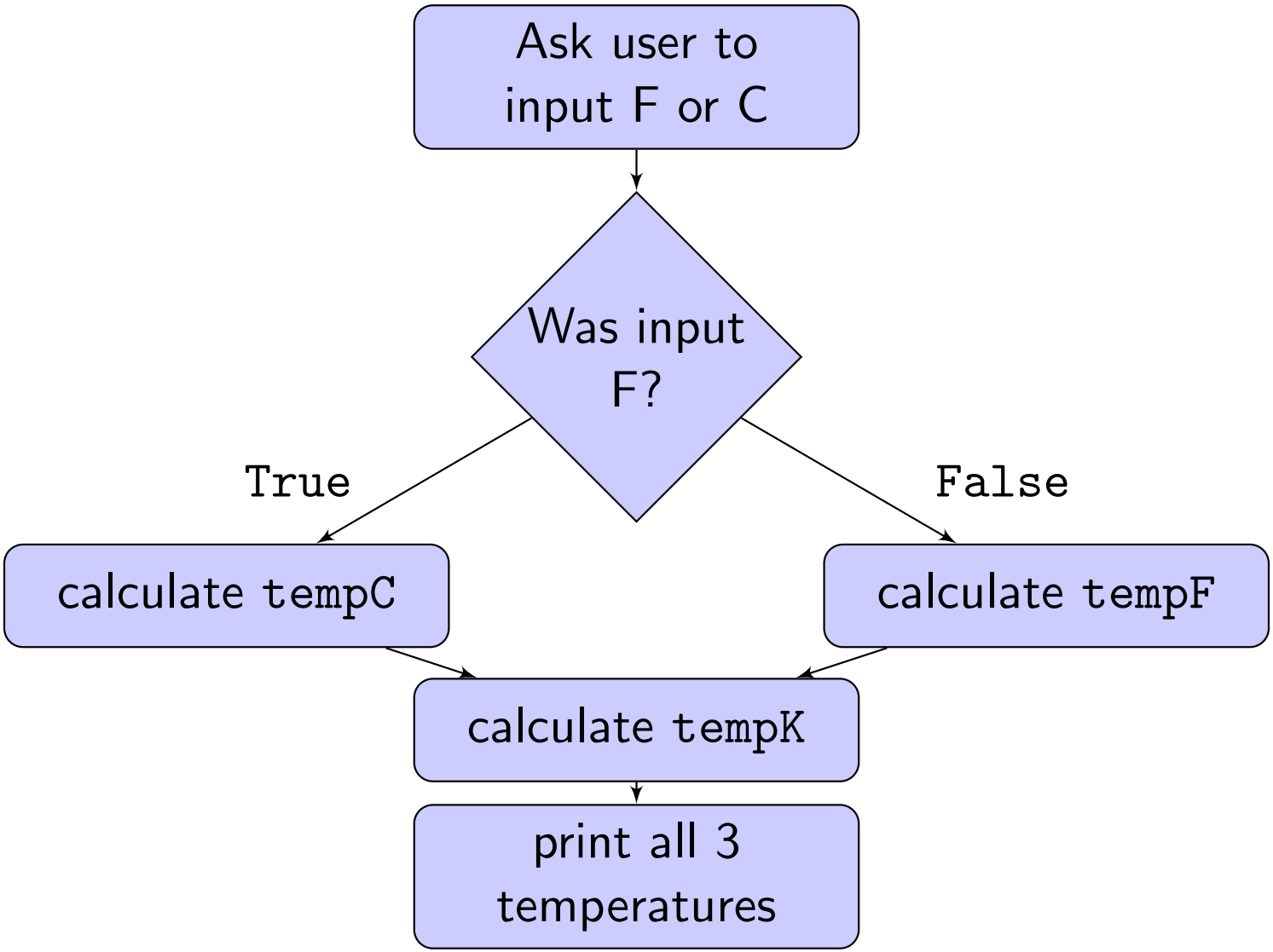

Concept Check!

What will each of the following blocks of code print?

1. ```
   x = -5
   if x < 1.0:
       print("x is small")
   else:
       print("x is big")
   ```
2. ```
   userName = "Bobo"
   if userName >= " ":
       print("Nice name!")
   else:
       print("Bad name!")
   ```