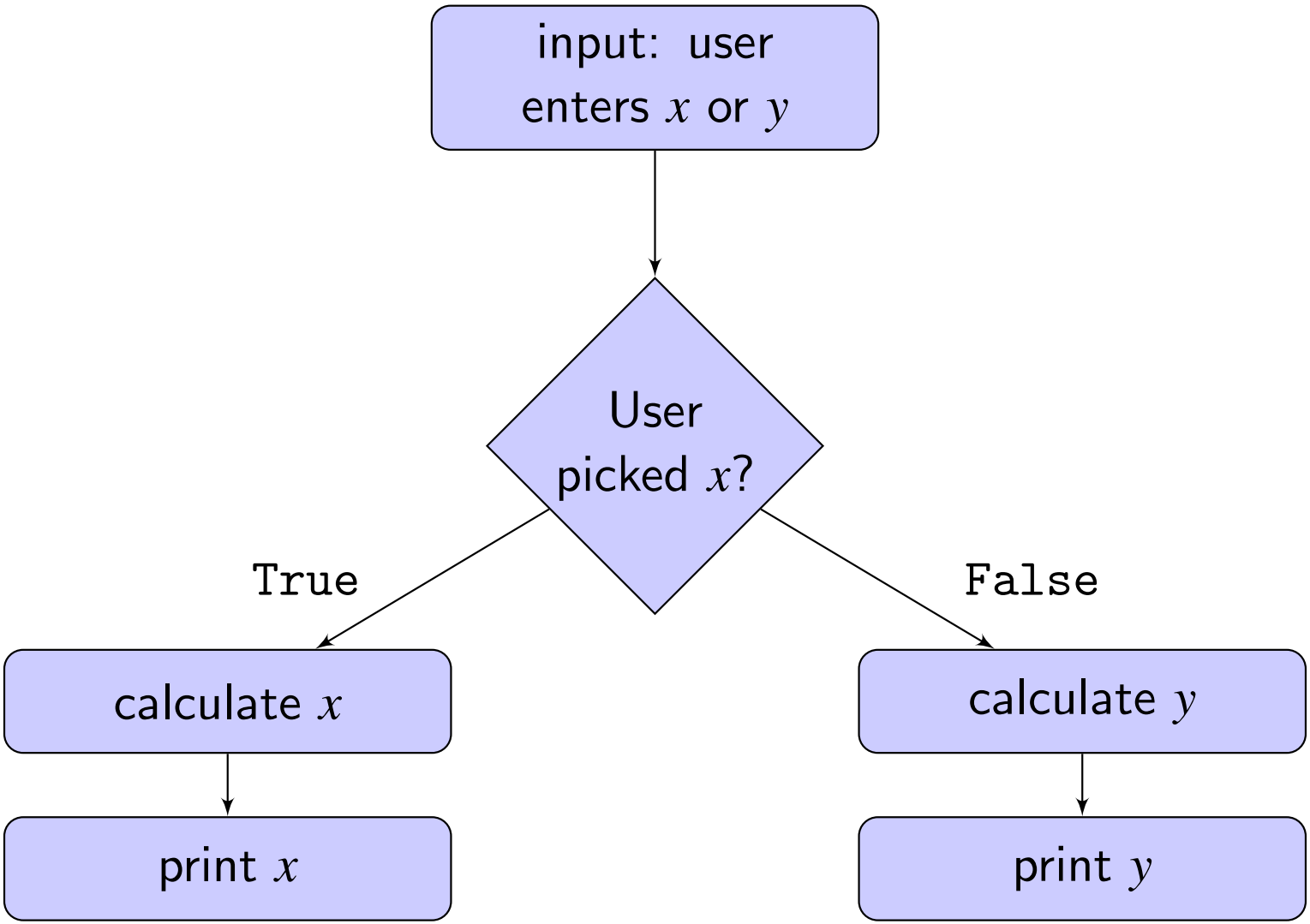
While Loops and Applications

While Loops and Applications

Including Input Validation

Branching Control Flow

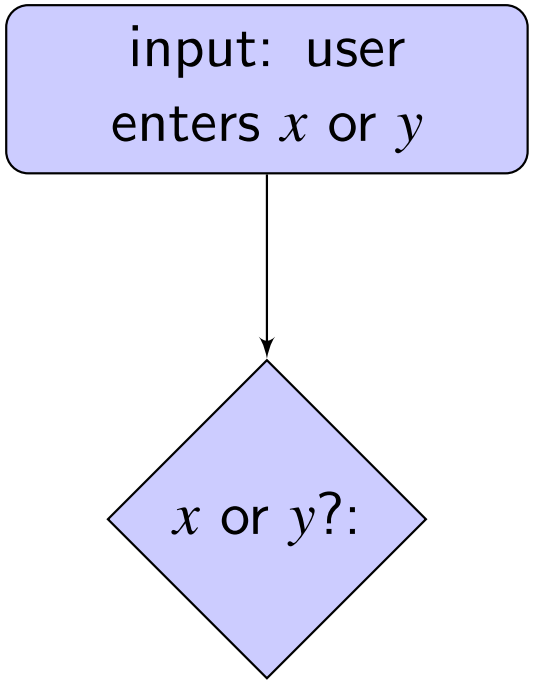


Looping Control Flow

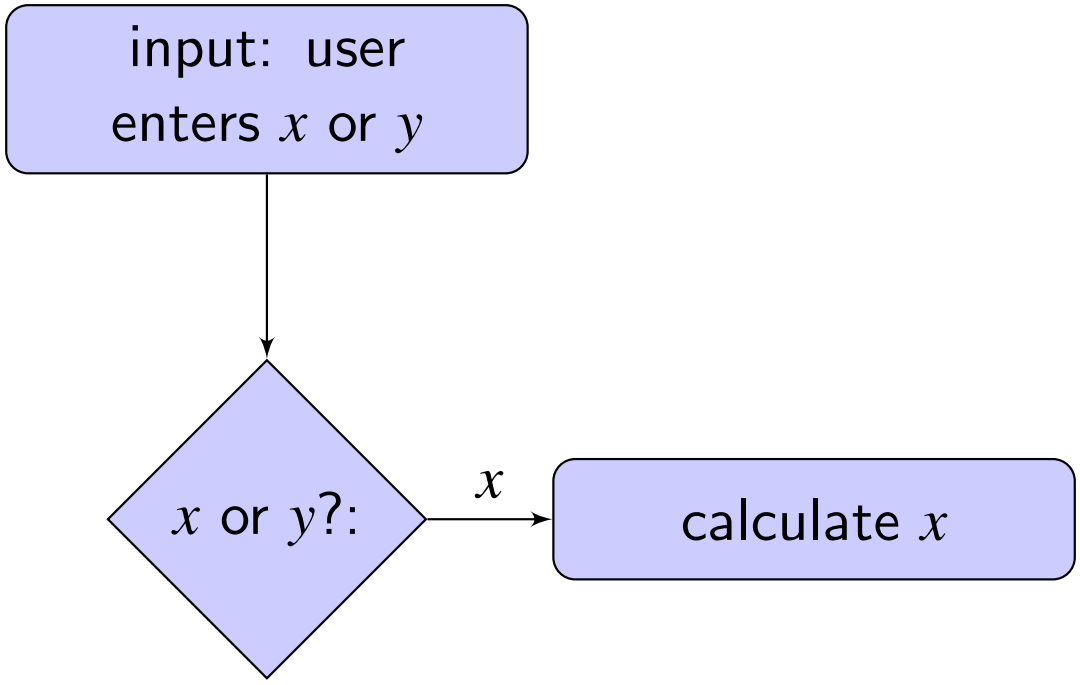
Looping Control Flow

input: user enters x or y

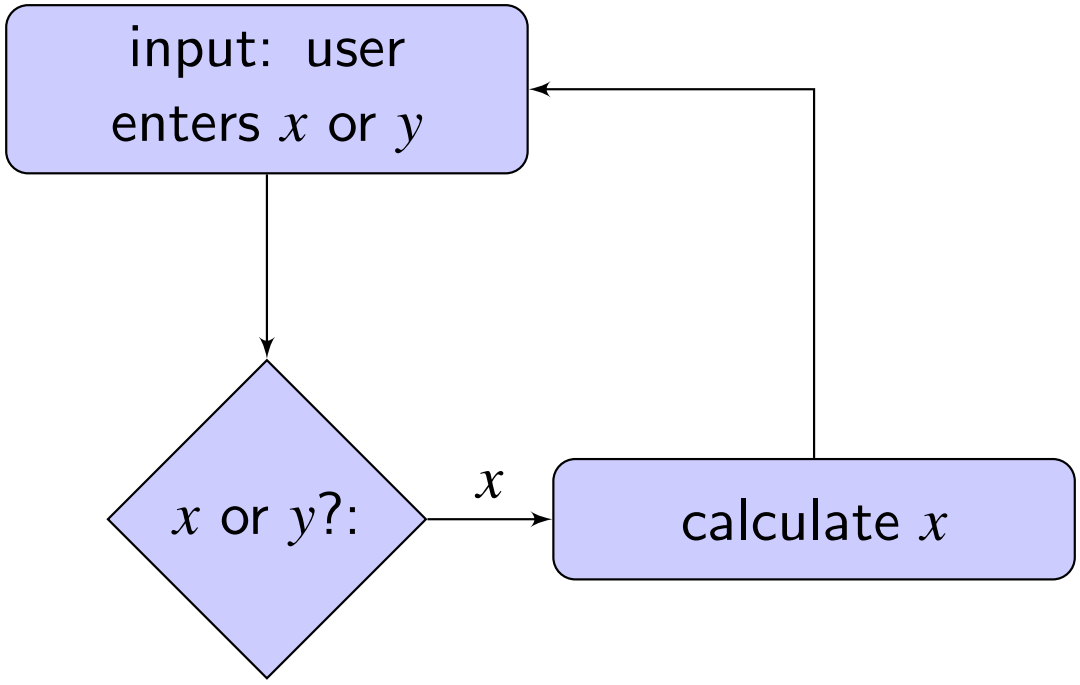
Looping Control Flow



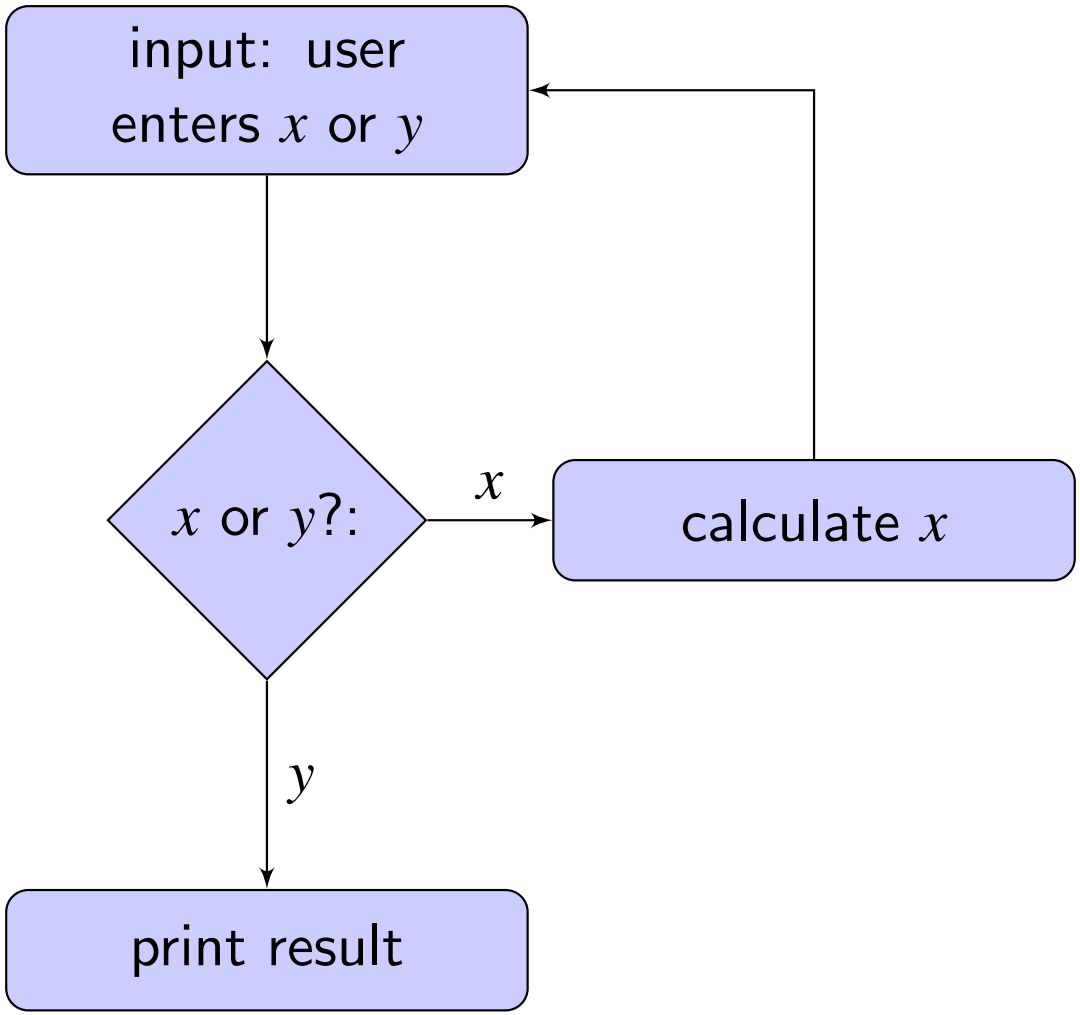
Looping Control Flow



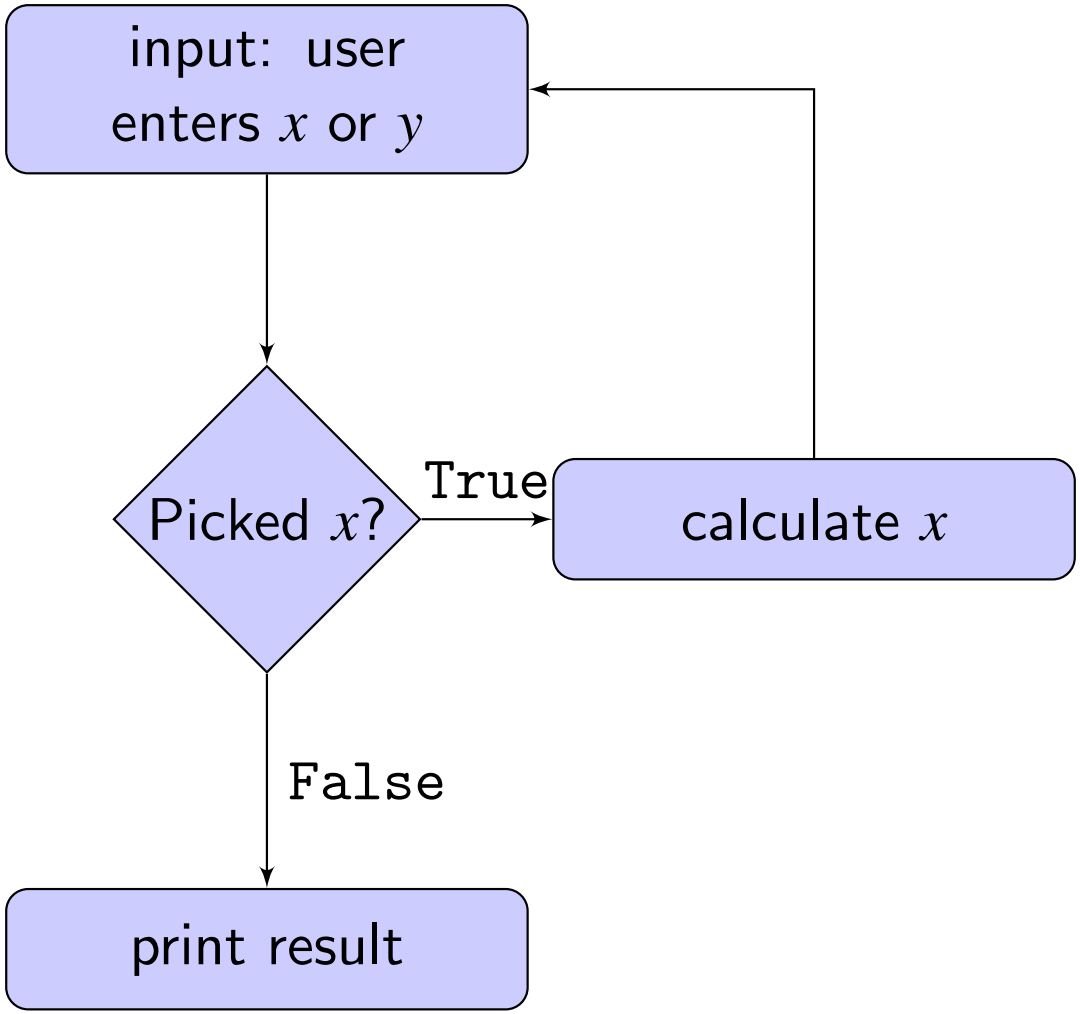
Looping Control Flow



Looping Control Flow



Looping Control Flow



while-loops

while-loops

```
Python command 1
```

while-loops

```
Python command 1
while expression 1 :
```

while-loops

```
Python command 1
while expression 1 :
    Python command 2
```

while-loops

```
Python command 1
while expression 1 :
    Python command 2
    # Can have if-statement
    if expression 2 :
        Python command 3
```

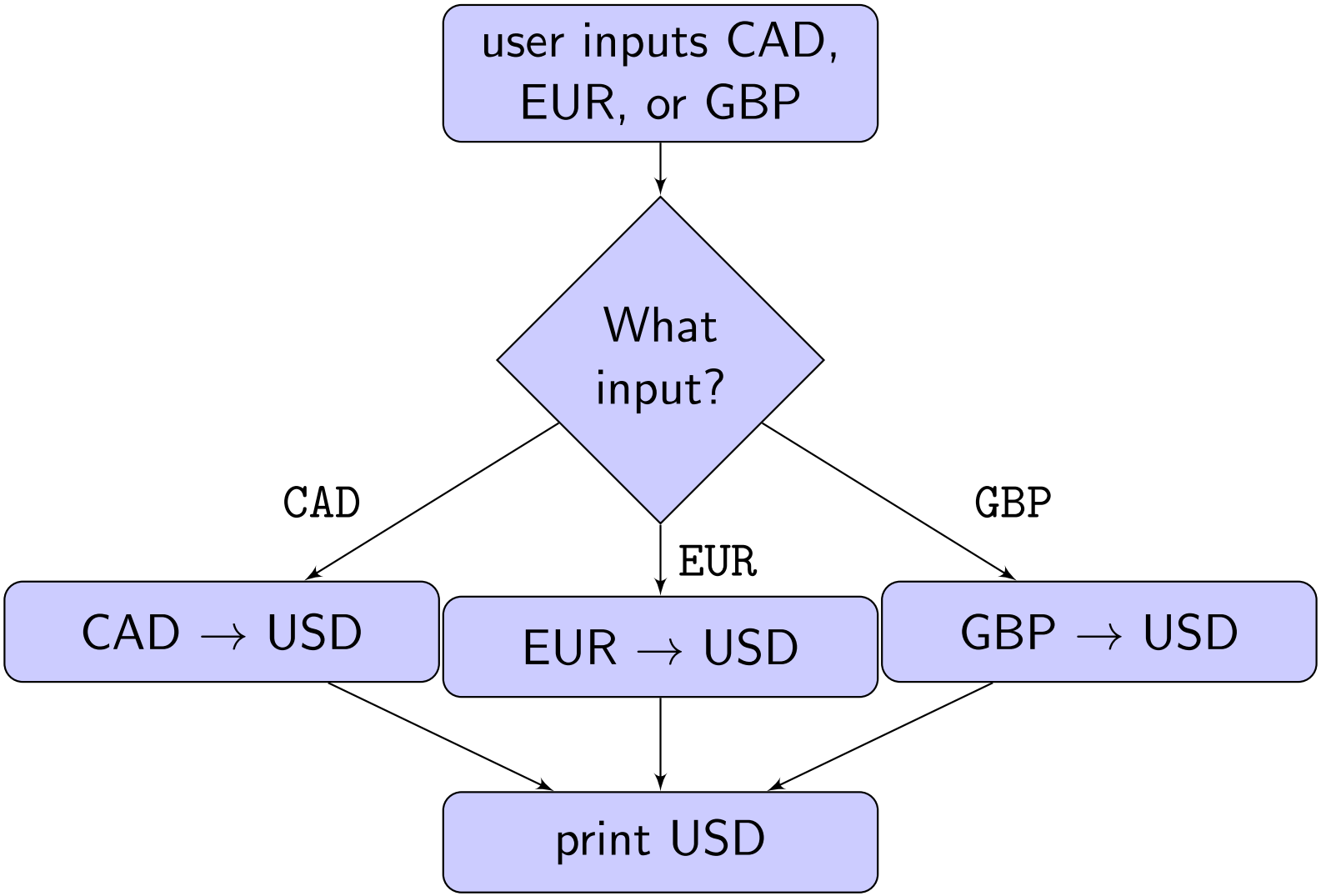
while-loops

```
Python command 1
while expression 1 :
    Python command 2
    # Can have if-statement
    if expression 2 :
        Python command 3
    # Nested while-loop
    while expression 3 :
        Python command 4
```

while-loops

```
Python command 1
while expression 1 :
    Python command 2
    # Can have if-statement
    if expression 2 :
        Python command 3
    # Nested while-loop
    while expression 3 :
        Python command 4
# Stop indent to finish loop
Python command 5
```

Convert CAD, EUR, GBP to USD



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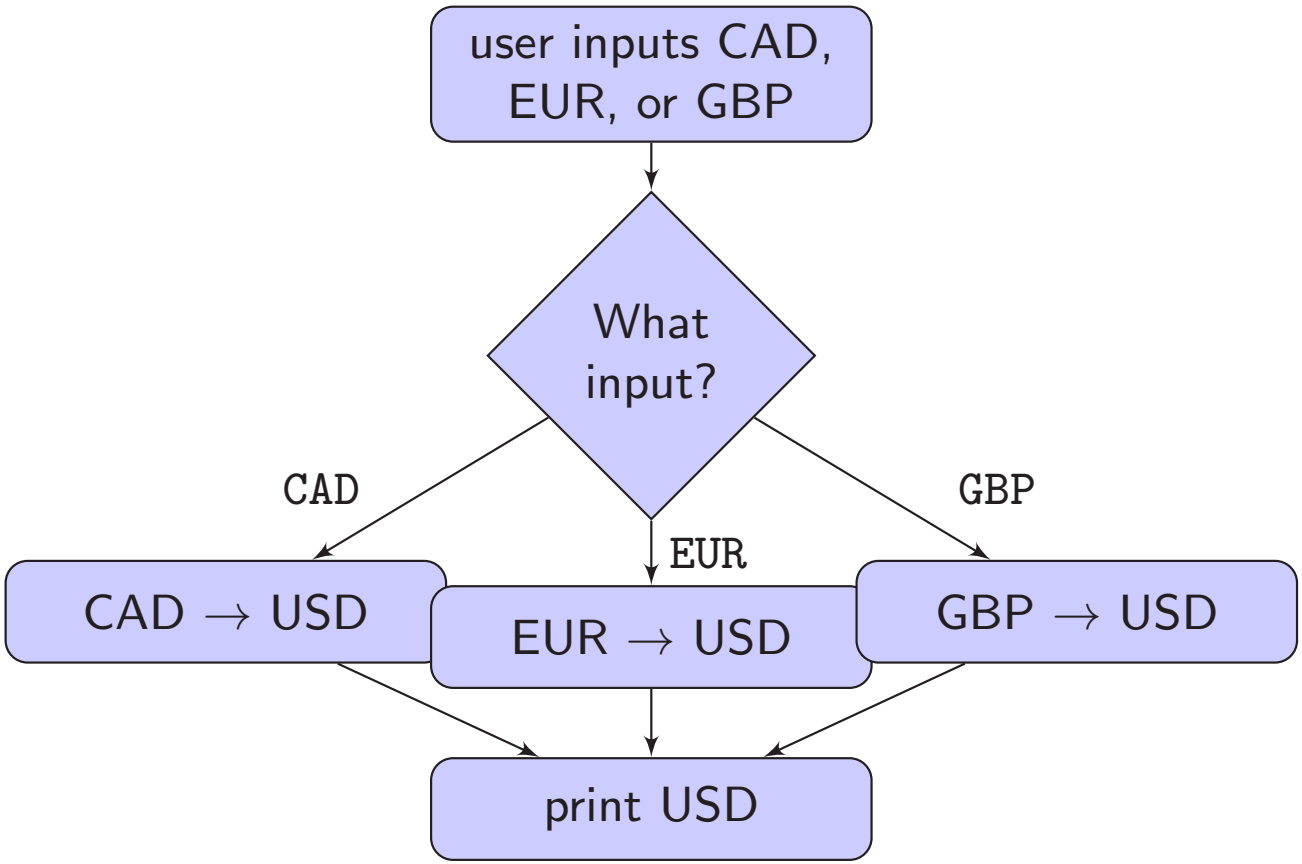

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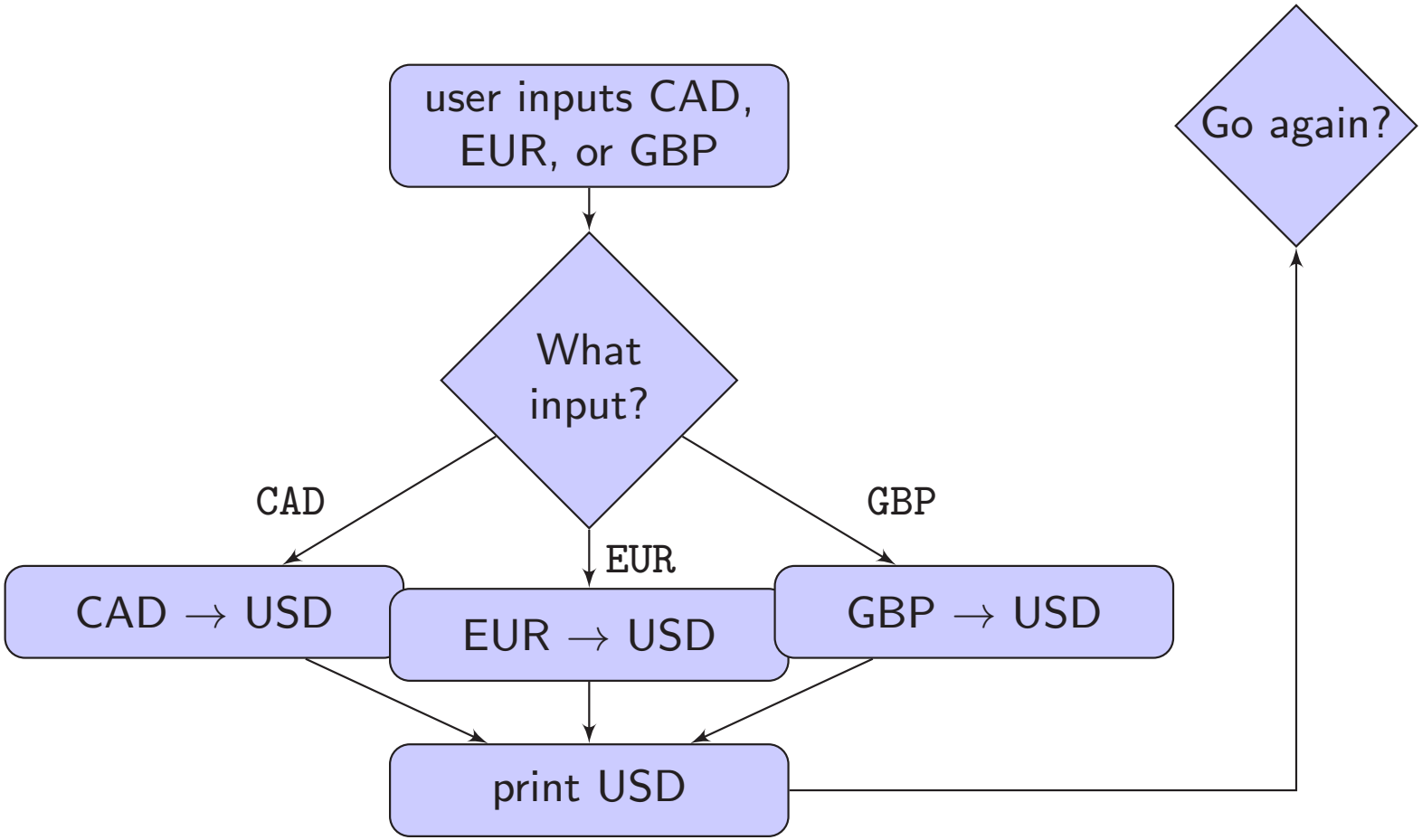

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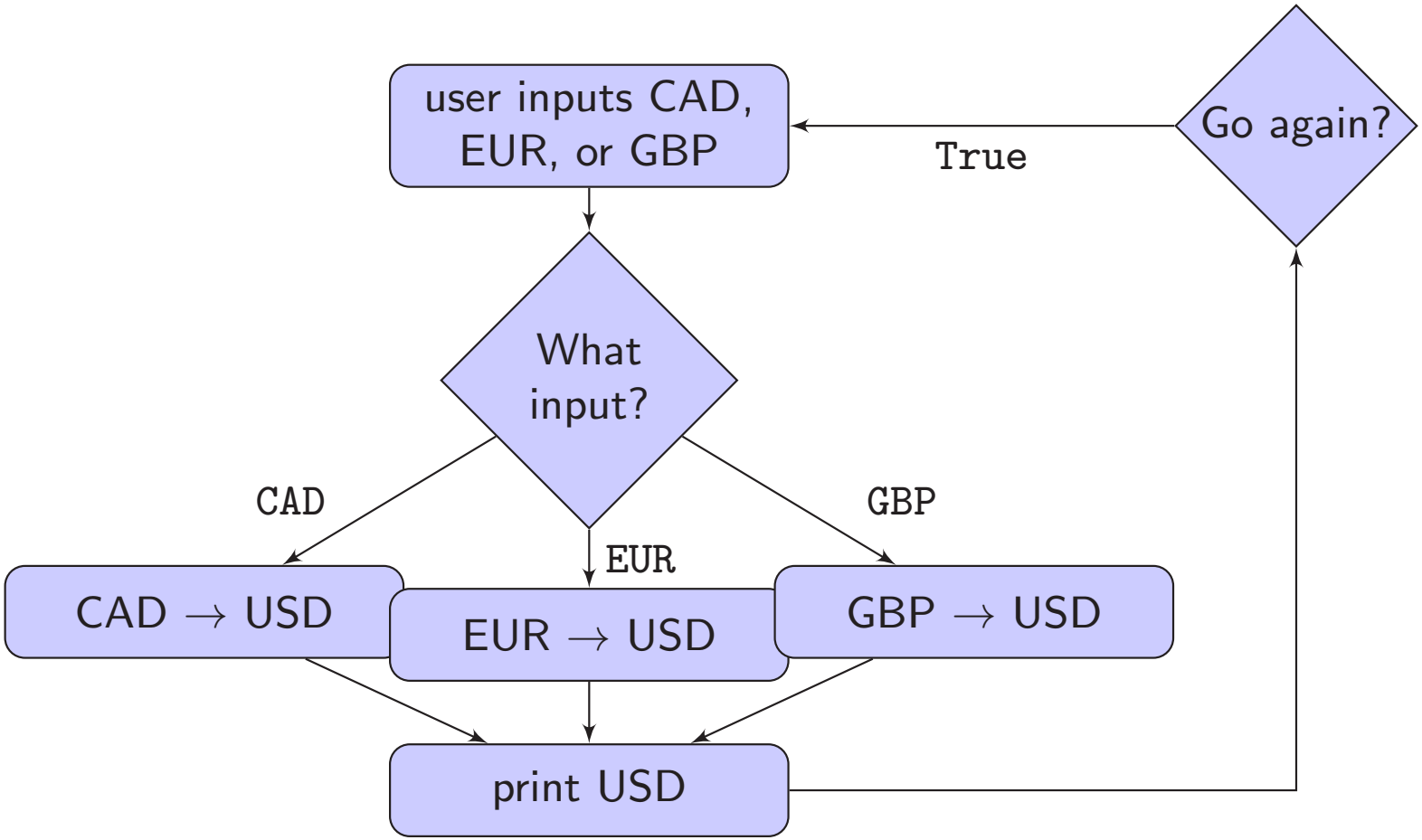

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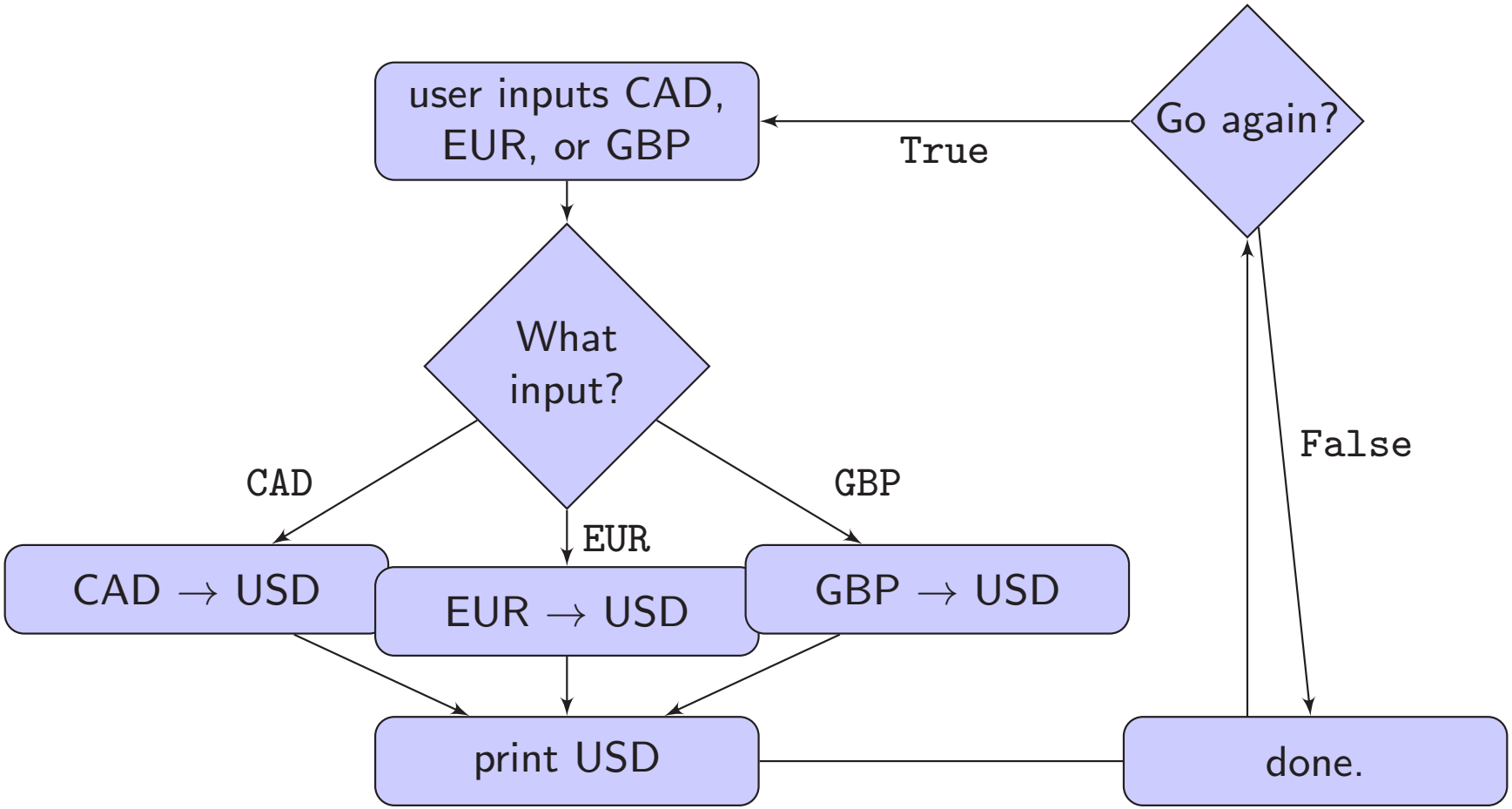

Concept Check!

What will be printed, by each of the following loops?

1.
```
k = 1
while k <= 3:
    print(k)
    k = k + 1
```

2.
```
color = "red"
while color != "purple":
    print(color)
    if color == "red":
        color = "green"
    elif color == "green":
        color = "blue"
    else:
        color = "purple"
```

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```

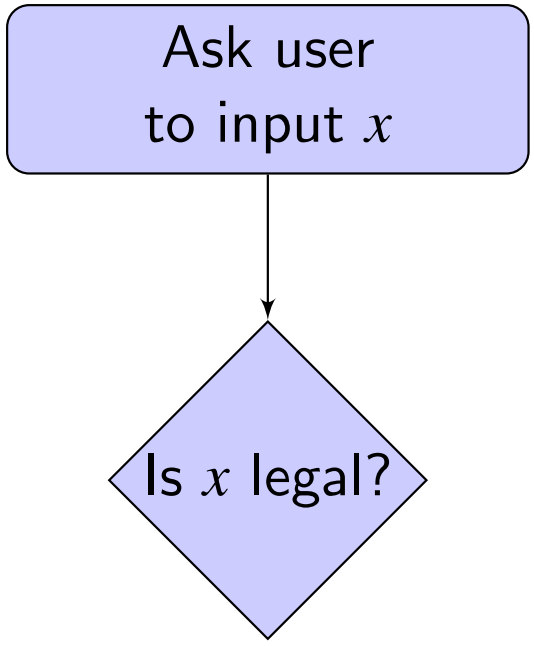
```
red
green
blue
```

Input validation

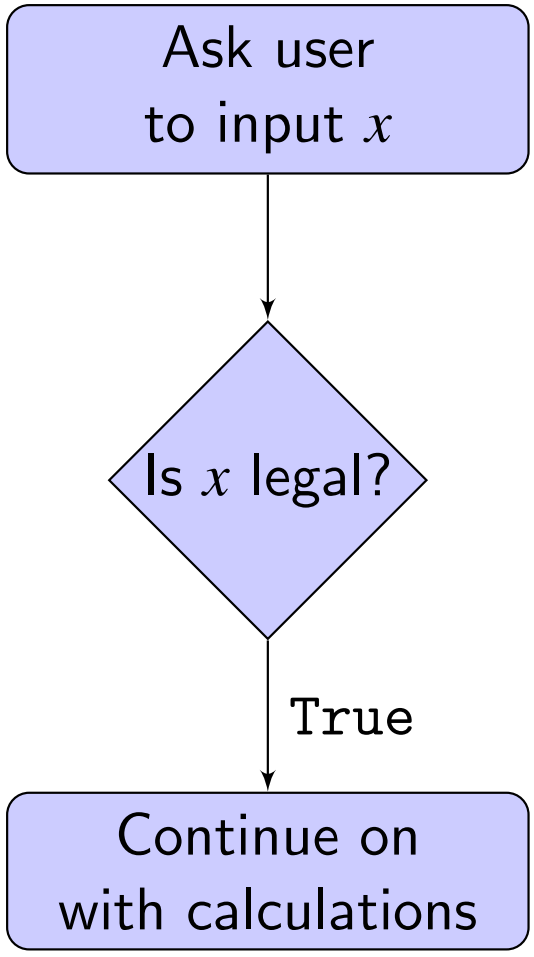
Input validation

Ask user
to input x

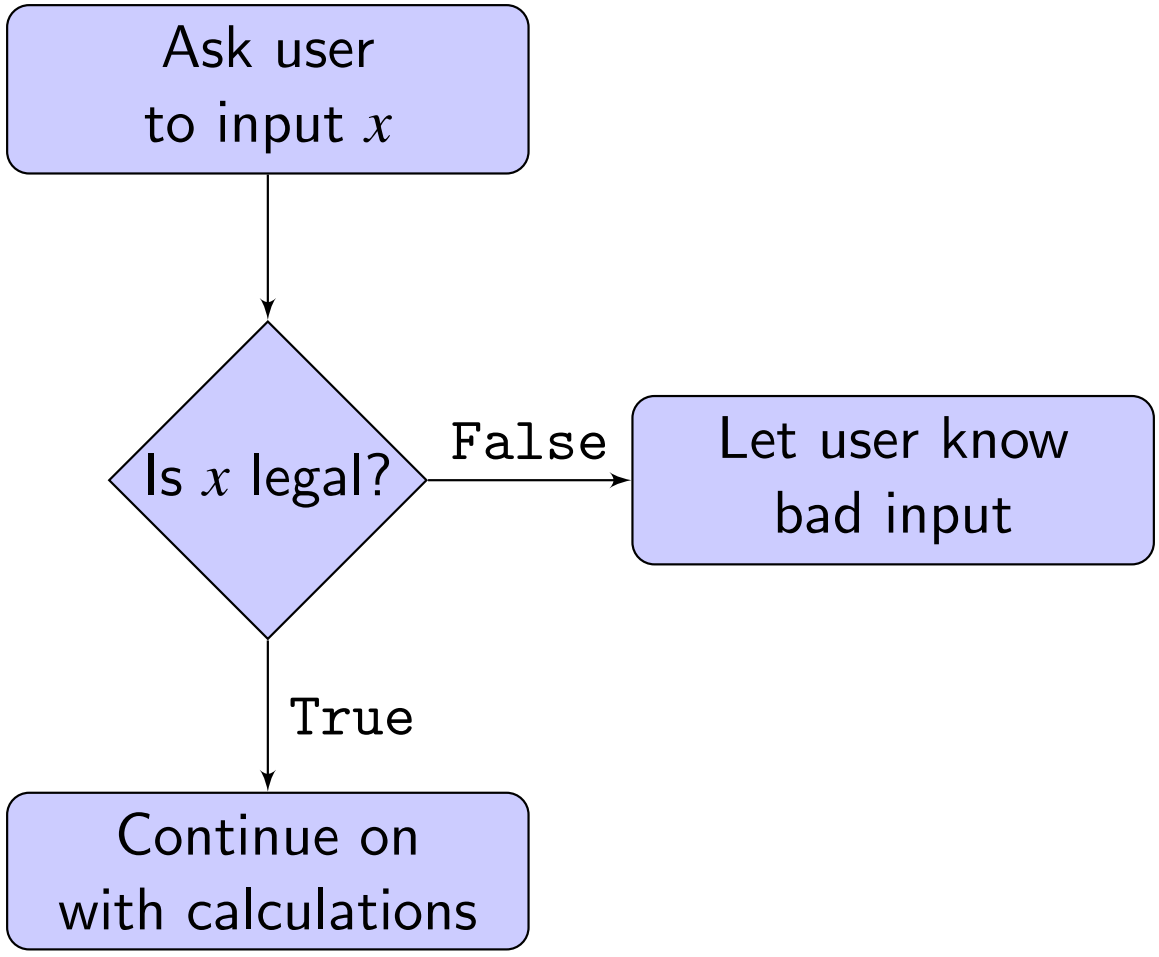
Input validation



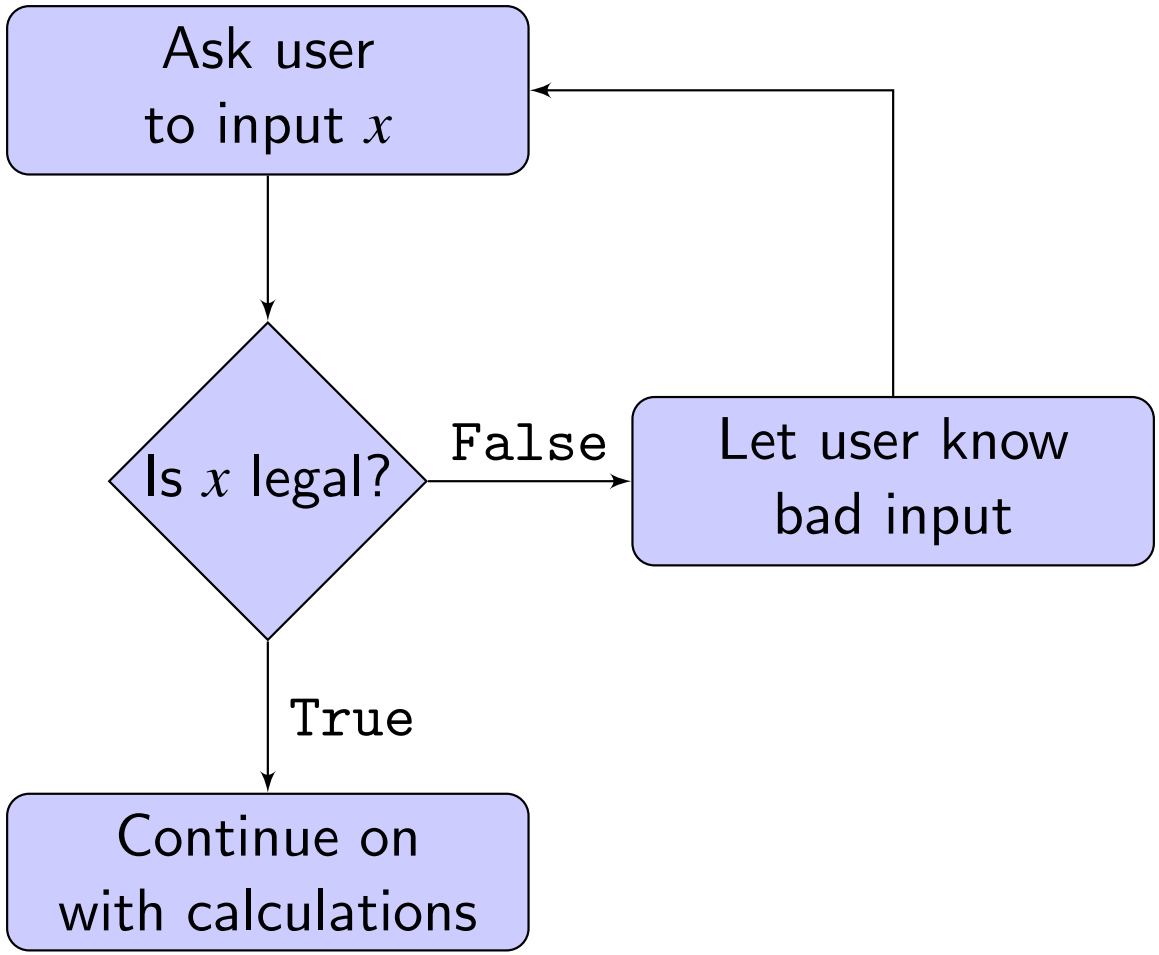
Input validation



Input validation



Input validation



Checking List of Strings

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```
>>> vowels = ["a", "e", "i", "o", "u"]
```

Checking List of Strings

```
>>> vowels = ["a", "e", "i", "o", "u"]
>>> "a" in vowels
True
```

Checking List of Strings

```
>>> vowels = ["a", "e", "i", "o", "u"]
>>> "a" in vowels
True
>>> "k" in vowels
False
```

Checking List of Strings

```
>>> vowels = ["a", "e", "i", "o", "u"]
>>> "a" in vowels
True
>>> "k" in vowels
False
>>> "A" in vowels
False
```

try-except

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```
try:
    a dangerous command
```

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```
try:
    a dangerous command
except ErrorType:
    what to do when fails
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try:
    userInput = int(input("Enter an integer:  "))
```

try-except

```
try:
    a dangerous command
except ErrorType:
    what to do when fails

try:
    userInput = int(input("Enter an integer:  "))
except ValueError:
    # Do this when input can't cast to int
    userInput = [illegal value]
```

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```

Checking List of Strings

```
>>> vowels = ["a", "e", "i", "o", "u"]
>>> "k" in vowels
False
```

Checking List of Strings

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>>> vowels = ["a", "e", "i", "o", "u"]
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False
>>> "k" not in vowels
True
```

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>>> "k" not in vowels
True
>>> "a" in vowels
True
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False
>>> "k" not in vowels
True
>>> "a" in vowels
True
>>> "a" not in vowels
False
```