



Conditionals and Evaluating Expressions

Practice! Simplify and Type

- $2 + 4 / 2 * 2$
- `220 >= int(("1" + "1" + "0") * 2)`

Simplify: $2 + 4 / 2 * 2$

(Reminder: P E M D A S)

Simplify: $2 + 4 / 2 * 2$

What **type** is $2 + 4 / 2 * 2$?

Simplify:

$220 \geq \text{int}((\text{"1"} + \text{"1"} + \text{"0"}) * 2)$

Mods Practice! Simplify

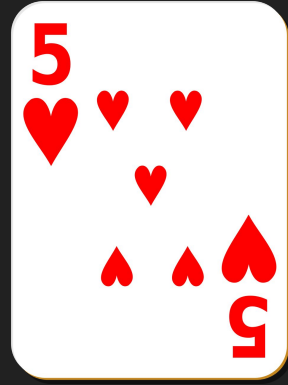
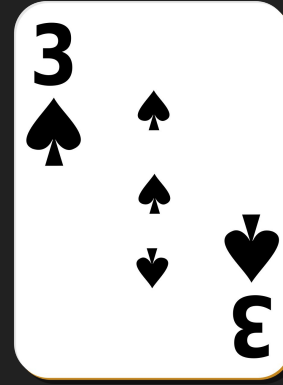
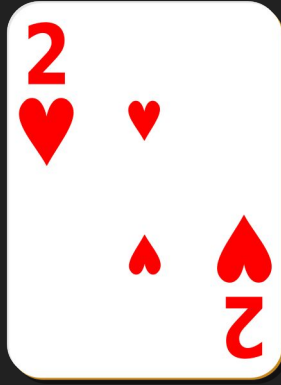
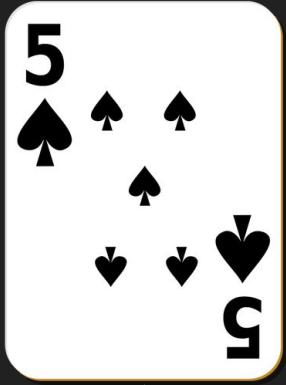
- $7 \% 2$
- $8 \% 4$
- $7 \% 4$
- Any even number $\% 2$
- Any odd number $\% 2$

Takeaways

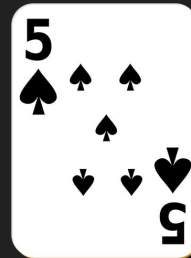
- Ordering of simplifying expressions
- How types can change when simplifying expressions
- Learning the new “mod” (%) operator

Conditionals

Recall: Finding the Lowest Card

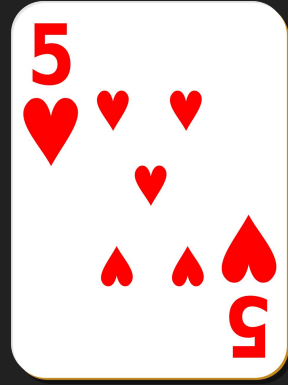
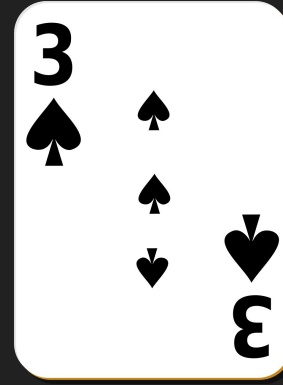
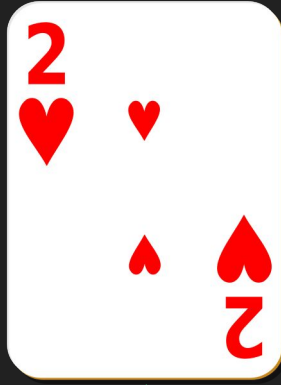
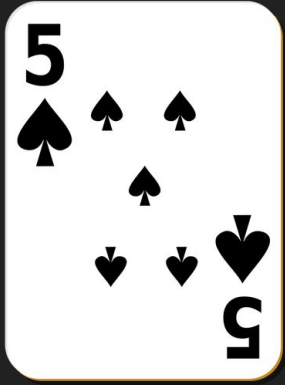


Low card:



If current card < low card,
make it the low card.

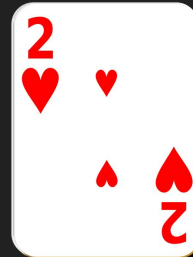
Recall: Finding the Lowest Card



$2 < 5?$

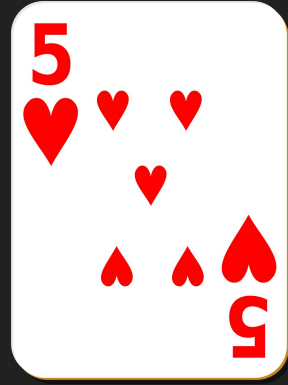
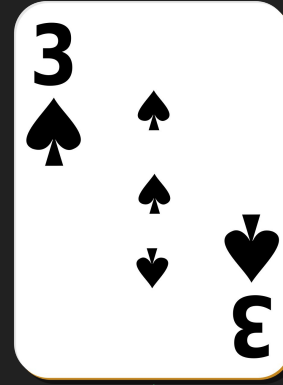
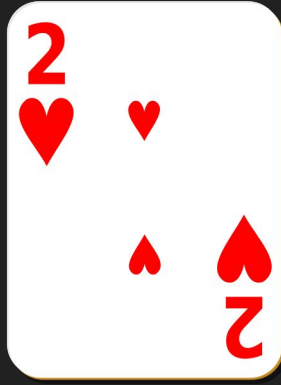
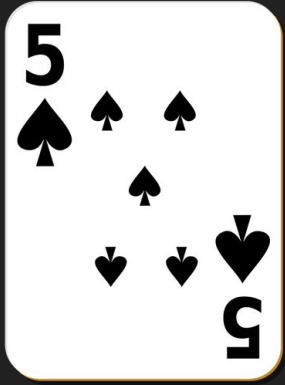


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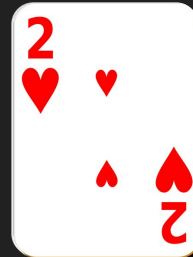
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Recall: Finding the Lowest Card



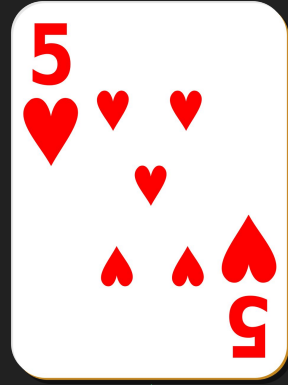
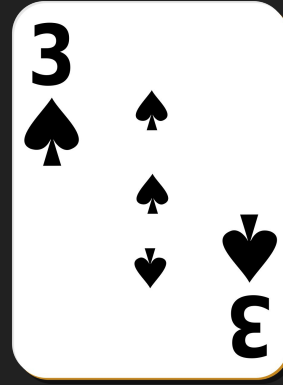
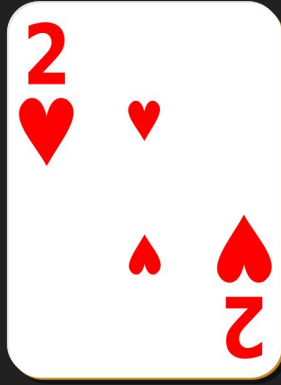
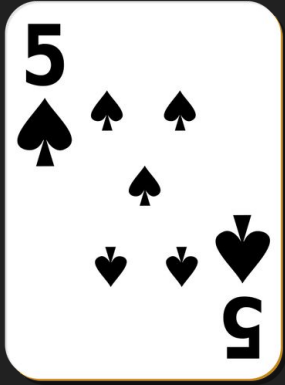
$3 < 2?$ 

Low card:



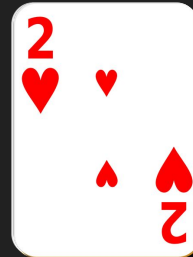
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Recall: Finding the Lowest Card



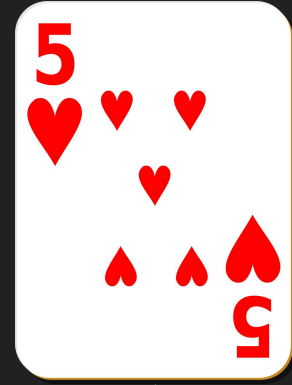
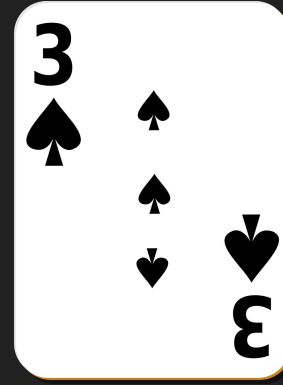
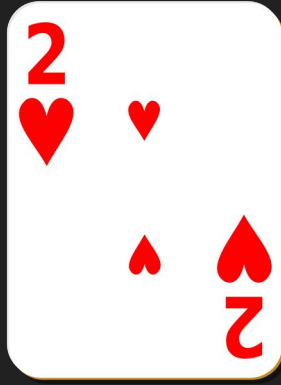
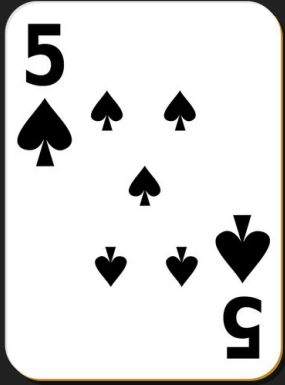
5 < 2? 

Low card:



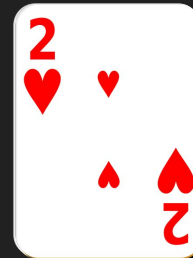
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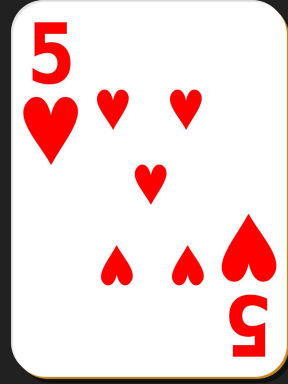
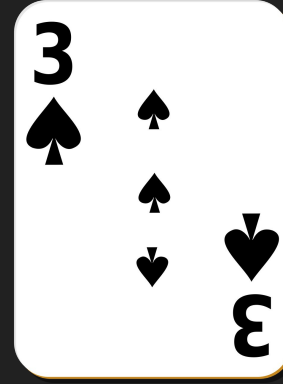
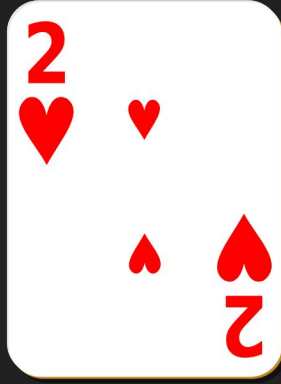
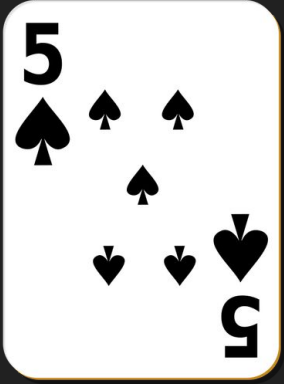
$5 < 2?$ 

Low card:



If current card $<$ low card,
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Recall: Finding the Lowest Card



Low card:



Conditional Statement



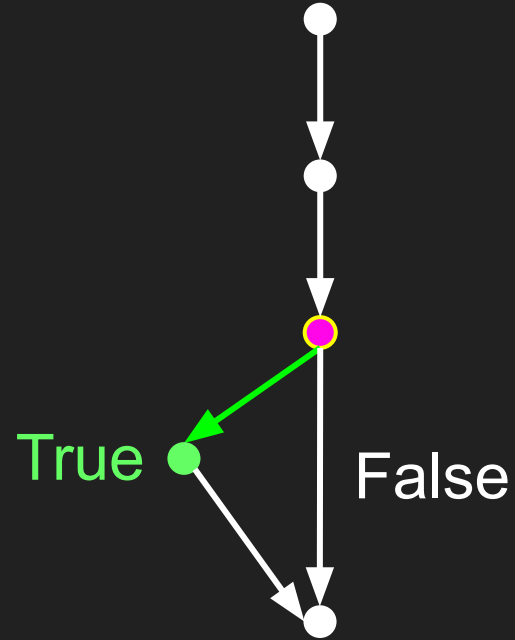
If current card < low card,
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Conditional Statements

if <something>: ← bool

<do something>

<rest of program>



Conditional Statements

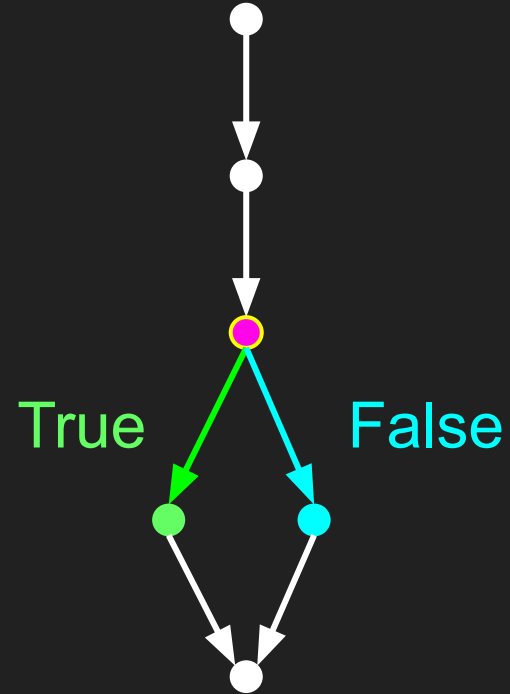
if <something>:

 <do something>

else:

 <do something else>

<rest of program>



Conditional Statements

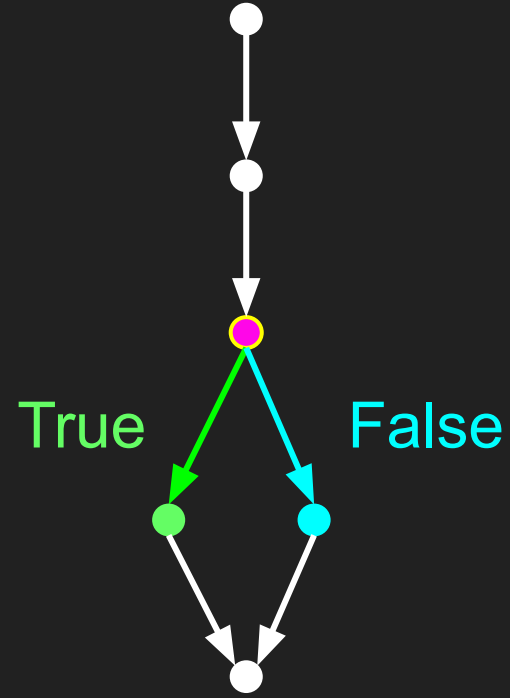
if <something>:

 <do something>

else:

 <do something else>

<rest of program>



Discussion

What is a decision you make in your day-to-day that you can express as an conditional (if-else) statement?

E.g. If I my assignment is due tomorrow, I start working on it. Else (it's not due tomorrow), I procrastinate another day.

(This is bad behavior and I don't condone it!)

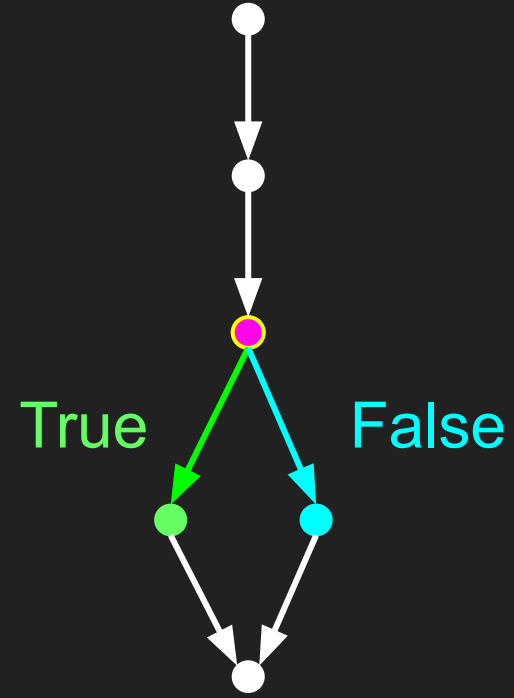
Conditional Statements

if

:



else:



Boolean

- Something that evaluates to True or False
- Typically shown with relational operator and/or boolean operator

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- Typically shown with relational operator and/or boolean operator
 - `weather == "rainy"`
 - `x >= 2`

Boolean Operators

- not, and, or
- Can be used to express more with booleans
 - It is not rainy: `weather != rain`

Boolean Operators

- not, and, or
- Can be used to express more with booleans
 - It is not rainy: `not (weather == rain)`

Boolean Operators

- not, and, or
- Can be used to express more with booleans
 - It is not rainy: (weather != rain)
 - It is rainy and it is cold: (weather == rain) **and** (weather == cold)

Boolean Operators

- not, and, or
- Can be used to express more with booleans
 - It is not rainy: `(weather != rain)`
 - It is rainy and it is cold: `(weather == rain) and (weather == cold)`
 - It is rainy or it is snowy: `(weather == rain) or (weather == snow)`

Not

- `not` inverts the value of a boolean expression

b	<code>not b</code>

and

- booleans combined with **and** evaluate to True if and only if both booleans are True

a	b	a and b

and

- booleans combined with **or** evaluate to True if at least one is True

a	b	a or b

Ordering

P

E

MD

AS

not

and

or

Practice

Write a program that prints "Pass" if my_number is even and > 10 and "Fail" otherwise

(Hint: You will want to use %)

```
1 my_number_string: str = input("Guess a number: ")
2 my_number: int = int(my_number_string)
3
4
5
6
```