CSCI 127: Joy and Beauty of Data

Lecture 5: Selection & If Statements

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https://reesep.github.io/classes/summer2021/127/main.html

Booleans

Boolean is a data type for storing true and false and values

There are only 2 values: `True` and `False`

Boolean Comparison

`x == y`	# x is equal to y	`4 == 4` `-> True`
`x != y`	# x is not equal to y	`3 != 4` ->True
`x > y`	# x is greater than y	`10 > 3` ->True
`x < y`	# x is less than y	`4 < 1` -> False
`x >= Y`	# x is greater than or equal to y	`2 >= 3` -> False
`x <= Y`	# x is less than or equal to y	`3 <= 3` -> True

Logical Operators

`and`

Both conditions **must** be True

```
x = 5
y = 4

print(x==5 and y==0)
```

False

```
x = 5
y = 4

print(x==5 and y==4)
```

True

Logical Operators

or

One of the conditions must be True
(or Both of the conditions must be True)

```
x = 5
y = 4

print(x==5 or y==0)
```

True

```
x = 5
y = 4

print(x==0 or y==1)
```

False

```
x = 5
y = 4

print(x==5 or y==4)
```

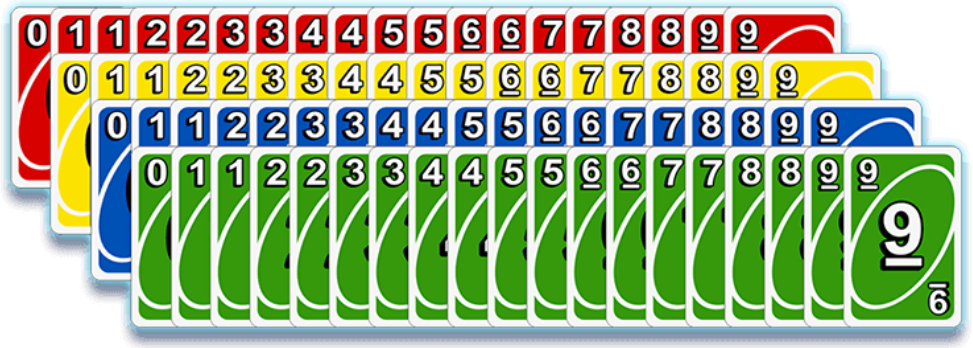
True

Practice Problems

Write a calculator program that will ask for two numbers from the user. The program should then as the user what operation they want to do (addition, subtraction, multiplication, division). The program should then do the requested operation and print out the answer.

The speeding ticket fine policy in Pearsallville is $50 plus $5 for each mph over the limit plus a penalty of $200 for any speed over 90 mph. Write a python function that accepts a speed limit and a clocked speed and either prints a message indicating the speed was legal or prints out the amount of the fine, if the speed was illegal

Practice Problems



Checking a legal move in UNO

Consider a simplified game of UNO that has forty different cards. Each card has a color ("red", "yellow", "green" or "blue") and a value (0, 1, 2, 3, 4, 5, 6, 7, 8 or 9). Complete the boolean function below so that it returns True if the second card can be played on the first card and False otherwise.

```
def legal_play(first_value, first_color, second_value, second_color):
```

For example, legal_play(3, "blue", 3, "green") and legal_play(5, "yellow", 7, "yellow") should both return True, but legal_play(9, "red", 6, "green") should return False.