Lecture #3: For Loops and Exceptions

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For Loops

The Loop

The for loop can be used to itterate over something, such as a list

```
a = [2, 4, 6, 7, 7, 9]
for i in a:
    print(a)
```

Over a Generator

The for loop can also itterate over a generator (more on that later)

```
for i in range(20):
    print(a)
```

Dictionary

The for loop can itterate over a dictionary, returning it's keys

```
a = {'resistor': 1e3, 'tollerance': 0.05, 'power': 0.125}
for i in a:
    print(a)
```

Exceptions

Errors

An Exception is raised whenever Python see an issue

```
a = 5 / 0          # Forbidden fruit
```

Rasing them

Exceptions can also be raised

```
raise UserWarning("Haha very funny!")
```

Exceptions List

The list of default exceptions can be found at
`https://docs.python.org/3/library/exceptions.html`

Handling them

Exceptions needs to handled, or else your program will crash!

This is done with the following block

```
x = input("What to divide by (please no 0): ")
x = int(x)
try:
    a = 5 / x
except ZeroDivisionError:
    print("How could you!")
else:
    print(f"Good, result is {a}")
finally:
    print("Done!")
```

Exception-seption

There can also be exceptions inside exceptions. Exception-seption

```
x = input("What to divide by (please no 0): ")
x = int(x)
try:
    a = 5 / x
except ZeroDivisionError:
    print("How could you! Screw you then!")
    a = int("what?")
else:
    print(f"Good, result is {a}")
finally:
    print("Done!")
```

Catching Them All!

Multiple Exceptions can be handled with the same except block, by using a Tupple

```
x = input("What to divide by (please no 0): ")
try:
    x = int(x)
    a = 5 / x
# Catch both a ZeroDivisionError and ValueError the same
 ↪  way!
except (ZeroDivisionError, ValueError):
    print("How could you!")
else:
    print(f"Good, result is {a}")
finally:
    print("Done!")
```

Good Practices

There are a couple of good practice while handling exceptions

- Have them, please.
- Add them around most things, especially where there can be known exceptions
- Don't generalize: Specify the exception
- ...Except around your main application as a safety check

End

The end