CITY
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STEM Digital Academy

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Tuple Processing

Programming and Algorithms

Lecture by

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```
n = 3
for i in range(1,n+1):
    print("Hello World!")
```

```
Hello World!
Hello World!
Hello World!
```

What will we Cover?

- Why are tuples used?
- Processing tuples
- Writing simple programs incorporating the tuple data structure

Why we Use Tuples?

- Use tuples to indicate the intention of not changing the collection data
- Immutability may also mean slight optimization when processing the code containing tuples
- If modification of the collection items is required, use lists instead.

Processing Tuples I

Use an IN keyword to check if the element exists in a tuple

```
birds = ("hawk", "robin", "swift", "toucan")
if "toucan" in birds:
    print("toucan exists in birds")
else:
    print("bird not found")
```

```
toucan exists in birds
```

Processing Tuples II

Use a FOR loop to iterate over a tuple and print each element

```
birds = ("hawk", "robin", "swift", "toucan")
for t in birds:
    print(t)
```

```
hawk
robin
swift
toucan
```

Example I

```
numbers = (2, 3, 5, 7)
product = 1
for n in numbers:
    product *= n
print(product)
```

```
210
```

Iterate through the tuple using a FOR loop.

Example II

Convert a string into a tuple and then find the largest and smallest elements in the tuple

```
my_tuple = tuple(input("Enter a string: "))
print(my_tuple)
print("smallest value is:", min(my_tuple))
print("largest value is:", max(my_tuple))
```

```
Enter a string: table
('t', 'a', 'b', 'l', 'e')
smallest value is: a
largest value is: t
```

Converting the input sequence into a tuple

Example III

Check if the number entered in the console is part of the tuple already. If not, append it.

```
tuple1 = (4, 2, 7, 6, 5, 3)
n = int(input("Enter a number: "))
if n not in tuple1:
    list1 = list(tuple1)
    list1.append(n)
    tuple1 = tuple(list1)

print(tuple1)
```

```
Enter a number: 10
(4, 2, 7, 6, 5, 3, 10)
```

Converting the tuple into a list to append a value and then converting back into a tuple

Try It Yourself

Problem 1

Write a program which stores a list of 7 numbers in a tuple.

Then determines the average car price.

Hint: Use an `input()` function within a loop that executes 7 times. Then convert the list into a tuple.

Calculate the average by using `sum()` and `len()` functions.

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