Tuples and Dictionaries

CSCI 1030U - Intro to Computer Science
@IntroCS

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Review Coding Exercise 04a.1

- Write the code which, given a string `sentence`, prints a string containing the same words as are in `sentence`, but in reverse order
  - e.g. `ahmed runs quickly` → `quickly runs ahmed`

Outline

- Tuples
- Dictionaries

Tuples

Tuples

- Tuples are collections of elements that are not the same type
  - They usually represent data about the same concept
  - A tuple is merely a comma-separated set of values

```
customer = "Cheyenne Young", "2023/09/13", 408.51
product = "Webcam", 39.99
trial = 3000, 17.81, 13, 50.0
x,y = 0,5
```

Tuples: Indexing and Slices

- Tuples are collections of elements that are not the same type
  - They usually represent data about the same concept
  - A tuple is merely a comma-separated set of values

```
product = "Webcam", 39.99
print(f'{product[0] = }')

customer = "Cheyenne Young", "2023/09/13", 408.51
print(f'{customer[0:2] = }')
```

Hacker's Corner

- Tuples can be used to swap variables:

```
x,y = y,x
```

Dictionaries

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Dictionaries

- Dictionaries are also collections of elements that are not the same type
  - They often serve a similar purpose to tuples
  - A key difference is that the elements of a dictionary are labelled, rather than used by their position

```
customer = {
  'name': 'Chad Witherspoon',
  'join_date': '2013/12/09',
  'balance': 408.51
}
```

Dictionaries - "Indexing"

- Dictionaries don't have any indices, but rather they use the keys like an index

```
customer['name']
customer['balance']
```

Dictionaries - Iteration

- Dictionaries are unordered by nature
  - Do not count on the order of the values in a dictionary
- You can, however, iterate over a dictionary

```
for customer in customers:
    print(customer)

for key in customers.keys():
    print(f'{key} => {customers[key]}')
```

Coding Exercise 04a.2

- Write a program that, given a paragraph string, will create a frequency table for each of the words in the paragraph string

Coding Challenge 04a.1

- Write a program that, given a list of values and a list of names, generates a dictionary containing the same data
  - The order of the elements should be in the same order in each list

Hacker's Corner

- Most non-simple data types, like lists and dictionaries, have a mechanism to combine multiple together:

- To combine two dictionaries together:

```
dict3 = {**dict1, **dict2}
dict3 = dict1 | dict2
```

- To combine two lists together:

```
list3 = list1 + list2
```

Hacker's Corner

- Non-simple data types can also be mixed
- A list of dictionaries:

```
l_of_d = [{'id': 100, 'price': 199.99},
          {'id': 101, 'price': 149.99}]
```

Hacker's Corner

- Non-simple data types can also be mixed

- A dictionary with a list for a value:

```
person = {
  'name': 'Ella Fitzgerald',
  'favourite-words': ['smile', 'yeah', 'sweet']
}
```

Wrap-up

- Tuples
- Dictionaries

Coming Up

- Functions