CSE 160 Section 5

Dictionary & File IO

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Logistics

- HW2 - Important style takeaways
  - Avoiding repeating expensive calculations (for example: avoid having multiple for loops looping through the entire nucleotides, when one is enough)
  - Avoid repeating code (use functions)
- HW3 due tomorrow (Friday, 28 Oct @ 11:59 pm)
- Midterm (31st Oct @ 11:59 pm to 2nd Nov @ 11:59 pm)
- HW4 - will be released Monday (31st) night, due 7th Nov

Midterm

- Groups of upto 4 people (can discuss, answers have to be individual)
- Strategy - use past exam papers to practice, and study for the midterm as if it were in person
- Office hours - CANNOT be used to ask any questions related to midterms, only for questions related to HW4.

Good luck !!

HW 4 Strategies

- Draw your data structures (lists, dictionaries) on paper
  - What does your data structure look like before and after a function call?
  - What does it look like before and after the first time through a loop? The second time?
- Pseudocode
  - Writing down the steps you need to accomplish in plain language BEFORE you write code
  - Write this out on paper, or in a code comment that you erase later
  - Helps you organize your thoughts

Lecture Key Points Review

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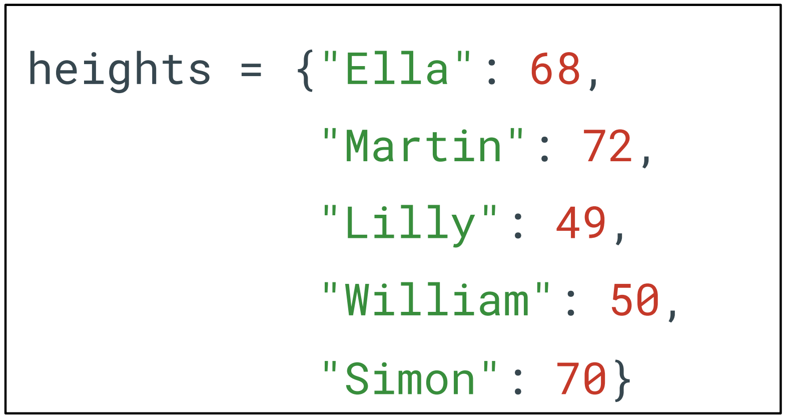
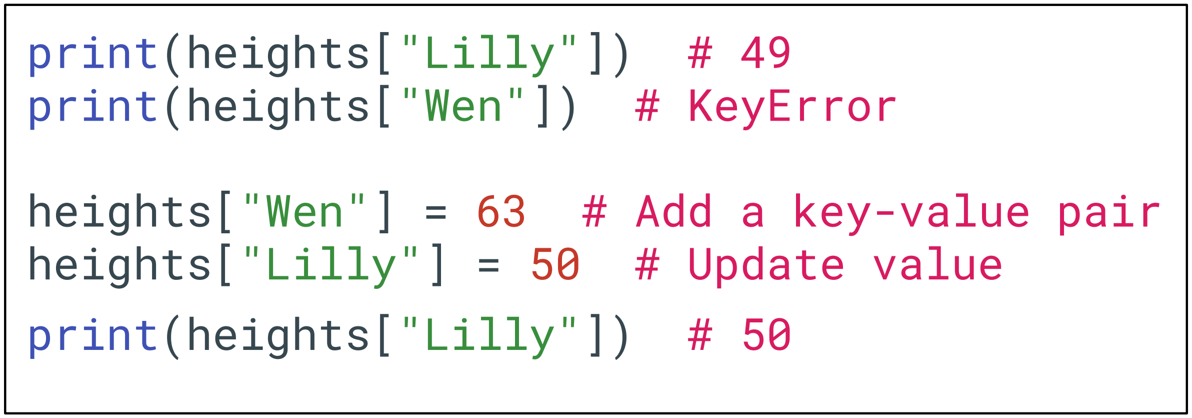
Dictionary

- Collection of key-value pairs
  - Key type must be immutable and keys must be unique
  - Key-value pair order doesn’t matter (dictionaries are unordered)
  - Access value from a key using index syntax (square brackets)
  - If you try to access a key not that doesn’t exist in the dictionary, it will throw an error

Dictionary



```
heights = {"Ella": 68,
           "Martin": 72,
           "Lilly": 49,
           "William": 50,
           "Simon": 70}
```



```
print(heights["Lilly"])  # 49
print(heights["Wen"])  # KeyError

heights["Wen"] = 63  # Add a key-value pair
heights["Lilly"] = 50  # Update value
print(heights["Lilly"])  # 50
```

Dictionary

```
# print out all keys
for key in heights.keys():
        print(key)

# print out all values
for value in heights.values():
        print(value)
```

```
# print out keys and values
for (key, value) in
heights.items():
        print(key, value)

# another method
for key in heights:
        value = heights[key]
        print(key, value)
```

File IO

- Filenames:
  - Absolute filename: give a specific location on disk
  - Relative filename: give a location relative to the current working directory
- Open a file:
  - my_file = open(“file_name.dat”)
- Read a file:
  - my_file.read()
  - for line_of_text in my_file:
    - process line_of_text
  - my_file.close()

Section Handout Problems

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Problem 1

Create def get_squares(number_list) that accepts a list of numbers as a parameter, and returns a dictionary mapping each number in the list to its square.

For Example:

```
nums = [1, 4, 4]
get_squares(nums) returns {1:1, 4:16}
```

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Problem 2

Write def coldest_city(city temperatures) that takes in a dictionary and return the city (key) with the lowest temperature (value).

For Example,

city_temperatures = {‘Seattle’: 36, ’Cupertino’:39,‘New York’:57}
coldest_city(city_temperatures) returns “Seattle”

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Problem 3 Part 1

Write def pokemon_types(pokemon_dict) that takes parameter pokemon_dict and returns a new dictionary mapping each type of pokemon to the number of pokemon in pokemon_dict with that type.

For example, when

pokemon_dict = {"pikachu": "electric", "charmander": "fire", "charizard" : "fire"},
pokemon_types(pokemon_dict) returns {“electric” : 1, “fire” : 2}

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Problem 3 Part 2

Write def pokemon_types(pokemon_dict) that takes parameter pokemon_dict and returns a new dictionary mapping each type of pokemon to the list of pokemon with that type.

For example, when

pokemon_dict = {"pikachu": "electric", "charmander": "fire", "charizard": "fire"}

pokemon_types(pokemon_dict) returns {‘electric’ : [‘pikachu’], ‘fire’: [‘charmander’, ‘charizard’}

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