In Class Programming Assignment 1 for Big Data Analytics
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- Question 5: Modifying input strings
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```
# Question 5a: input user string; remove two characters and reverse input

# Initialize input
user_input = input("Please enter a string: ")

# Identify input
# print(type(user_input))

# Chop input
input_len = len(user_input)
mod_user_input = user_input[:(input_len - 2)]

# Print input
print(mod_user_input)
print(mod_user_input[::-1])

# Question 5b: Use arithmatic with user input numbers

# Initialize input
user_input_1 = input("Please enter a number: ")
user_input_2 = input("Please enter a number: ")

print(int(user_input_1) + int(user_input_2))
print(int(user_input_1) - int(user_input_2))
print(int(user_input_1) * int(user_input_2))
print(int(user_input_1) / int(user_input_2))
```
    - In part a, I'm storing the user input and finding the length. That way, I can save the modified user input as a separate, shortened string. Reversing it is as simple as iterating it negatively, or backwards
    - In part b, I'm simply asking for two numbers as input. The results of those numbers in different calculations are then printed out.
- Question 6: Replacing elements of a string
    -
```
# Question 6: Intake a string, replace each instance of "python" into "pythons"

user_input = input("Please enter a string: ")
print(user_input.replace("python", "pythons"))
```
    - In this question, I'm simply taking the user input and using the 'replace' function to replace any instance of "**python**" with "**pythons**"
- Question 7: Identifying letter grade based on input score number

```python
# Question 7: Input user grade- print what letter grade it is (based on syllabus class structure)

user_input = input("Please enter a number grade: ")

if float(user_input) >= 90.0:
    print("User grade: A")
elif float(user_input) >= 80.0:
    print("User grade: B")
elif float(user_input) >= 70.0:
    print("User grade: C")
elif float(user_input) >= 60.0:
    print("User grade: D")
else:
    print("User grade: F")
```

    - In this code, a user input is then converted to a float and compared to grademark "milestones" to identify the letter grade. I chose to use floats as most grades tend to have some degree of a fraction of a point. Of course, if that's not the case, then there's no issue- an int-to-float conversion doesn't lose any vital data.
- Question 8: Identify the elements of a given list inside of a list

```python
# Question 8: Write a code that appends the type of elements from a given list

input_list = [23, 23.5, "hello", True, [1, 2, 3], 'a', {"Bananas", "Tomatos", "Eggs"}]
input_type = []

for i in input_list:
    input_type.append(type(i))

print(input_type)
```

    - In this code, I have a hardcoded list of elements. I'm using a for loop to iterate through each element, and append it's type to a new list. That new list is then printed out, which identifies the data type of each element in order
    - This problem caused the most time, as I (along with another student) assumed that the input list had to be "live", or that the user had to type it in. Once reading the assignment, we found that this was not the case. After clearing up that clerical error, this question was quite easy.
- Question 9: Assorted code requests

- ```
  # Question 9: Modify lists via assortment of modifications

  IT_companies = {'Facebook', 'Google', 'Microsoft', 'Apple', 'IBM', 'Oracle', 'Amazon'}
  A = {19, 22, 24, 20, 25, 26}
  B = {19, 22, 20, 25, 26, 24, 28, 27}
  age = [22, 19, 24, 25, 26, 24, 25, 24]

  # Find the length of the set IT_companies

  print("Length of IT_companies",len(IT_companies))

  # Add 'Twitter' to IT_companies

  IT_companies.add('Twitter')
  print("IT_companies after adding 'Twitter': ",IT_companies)
  print("Length of IT_companies",len(IT_companies))

  # Insert multiple IT companies at once to the set IT_companies

  IT_companies.update({'Meta', 'X', 'Atari'})
  print("IT_companies after adding 'Meta', 'X', and 'Atari': ",IT_companies)
  print("Length of IT_companies",len(IT_companies))

  # Remove one of the companies from the set IT_companies

  IT_companies.remove('Twitter')
  print("IT_companies after removing 'Twitter': ",IT_companies)
  print("Length of IT_companies",len(IT_companies))

  # What is the difference between remove and discard
  ```
  ...
  ```
  # Join A with B and B with A

  E = A.union(B)
  F = B.union(A)
  print("Join A with B: ",E)
  print("Join B with A: ",F)

  # What is the symmetric difference between A and B

  print("Symmetric difference between A and B: ",A.symmetric_difference(B))

  # Delete the sets completely

  A.clear()
  B.clear()
  C.clear()
  D.clear()
  E.clear()
  F.clear()

  # Convert the ages to a set and compare the length of the list and the set.

  print("The length of the age list is: ",len(age),". The length of the age set is: ",len(set(age)),".")
  ```
  (Screenshots shortened for the sake of saving space)
- In this series of code, I'm modifying, appending, removing, and identifying different elements in a series of sets.
  ```