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1 import re
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3 class Data:
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5     # list of possible type of questions ~ truncated for flexibility [non-exhaustive]
6     possibleList = [["capital", "distanc", "weather", "movi", "forecast", "cit", "length", "climat", "humidit", "director", "actor
7     "], # direct-answer question
8         ["exercis", "diet", "cook", "workout", "routin", "gym", "activit", "nutri", "wellness", "recipi", "fitnes", "
9     yoga", "meditat", "stretch", "cardio", "strength", "vitamin", "calori", "symptom"], # health-related questions
10        ["calendar", "remind", "task", "schedul", "event", "deadlin", "project", "checklist", "alert", "notif", "organ
11    ", "priorit", "goal", "plann", "timelin", "focus", "track", "habit", "workflow"], # productivity questions
12        ["scor", "gam", "jok", "song", "challeng", "puzzl", "music", "lyric", "match", "adventur", "humor", "quiz", "
13    fun", "comed", "story", "celebr", "sport", "trend"], # entertainment questions
14        ["plu", "minus", "multipl", "divid", "formula", "concept", "ratio", "algebra", "geometr", "calculus", "
15    integrat", "deriv", "vector", "probabil", "statist", "measur", "equation", "matrix", "quantit"], # mathematical questions
16        ["pric", "mean", "fact", "happen", "latest", "explain", "differenc", "orig", "reason", "impact", "histor", "
17    overview", "background"], # knowledge-building question
18        ["best", "advic", "help", "tip", "plan", "stuck", "assist", "recommend", "suggest", "guid", "strategy", "solv
19    ", "improv", "overcom", "choic", "option"]] # advice-seeking questions
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25     # list of possible types of questions ~ original unmodified [non-exhaustive]
26     dictionaryList = [["capital", "distance", "weather", "movie", "forecast", "city", "length", "climate", "humidity", "director"
27     , "actor"],
28         ["exercise", "diet", "cook", "workout", "routine", "gym", "activity", "nutri", "wellness", "recipie", "fitness
29     ", "yoga", "meditate", "stretch", "cardio", "strength", "vitamin", "calories", "symptom"],
30         ["calendar", "remind", "task", "schedule", "event", "deadline", "project", "checklist", "alert", "notif", "
31     organ", "prioritize", "goal", "plann", "timeline", "focus", "track", "habit", "workflow"],
32         ["score", "game", "joke", "song", "challenge", "puzzle", "music", "lyric", "match", "adventure", "humor", "
33     quiz", "fun", "comedian", "story", "celebrate", "sport", "trend"],
34         ["plu", "minus", "multiple", "divide", "formula", "concept", "ratio", "algebra", "geometry", "calculus", "
35     integrate", "derivative", "vector", "probability", "statistic", "measure", "equation", "matrix", "quantity"],
36         ["price", "mean", "fact", "happen", "latest", "explain", "difference", "origin", "reason", "impact", "history"
37     , "overview", "background"],
38         ["best", "advice", "help", "tip", "plan", "stuck", "assist", "recommend", "suggest", "guide", "strategy", "
39     solve", "improve", "overcome", "choice", "option"]]
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45     # list of possible cities that the user might reference [non-exhaustive]
46     specificPlaceList = ["Los Angeles", "Chicago", "San Francisco", "Miami", "Austin", "Las Vegas", "Paris", "London", "Tokyo", "
47     Sydney", "Rome", "Barcelona",
48     "Berlin", "Dubai", "Toronto", "Seoul", "Bangkok", "Mexico City", "Riverside", "Cape Town", "California", "Florida", "Texas", "
49     New York", "Nevada", "Hawaii", "Colorado", "Alaska", "Arizona",
50     "Utah", "Illinois", "Michigan", "Washington", "Georgia", "North Carolina", "Tennessee", "South Carolina", "Oregon", "New
51     Jersey", "Virginia", "United States", "Canada", "United Kingdom",
52     "France", "Italy", "Spain", "Mexico", "Germany", "Australia", "Brazil", "Japan", "India", "South Korea", "Thailand", "South
53     Africa", "China", "Russia", "Egypt", "Argentina", "New Zealand", "Pakistan"]
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59     # list of possible pop-culture references [non-exhaustive]
60     specificPopCultureList = ["The Avengers", "Star Wars", "The Matrix", "Harry Potter", "Jurassic Park", "Titanic", "The
61     Godfather", "Pulp Fiction", "Back to the Future", "The Lion King", # movies
62     "Apple", "Nike", "Tesla", "Coca-Cola", "McDonald's", "Amazon", "Google", "Adidas", "Disney", "Microsoft", # brands
63     "Friends", "Game of Thrones", "The Office", "Stranger Things", "Breaking Bad", "The Simpsons", "The Mandalorian", "The Crown"
64     , "The Walking Dead", "Westworld", # tv shows
65     "The Beatles", "Beyonce", "Kanye West", "Taylor Swift", "Elvis Presley", "Michael Jackson", "Ariana Grande", "Drake", "Lady
66     Gaga", "Eminem", # artists
67     "Super Mario Bros.", "Minecraft", "Fortnite", "The Legend of Zelda", "Call of Duty", "Grand Theft Auto", "Pokémon", "League of
68     Legends", "FIFA", "The Witcher", # video games
69     "Rolls-Royce", "Ferrari", "Lamborghini", "Porsche", "Maserati", "Bentley", "Aston Martin", "Bugatti", "McLaren", "Mercedes-
70     Benz", "Lexus", "BMW", "Audi"] # automotive brands
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61 |matrix|quantit|orig|reason|impact|histor|overview|background|assist|recommend|suggest|guid|strategy|solv|improv|overcom|choic|
   |option)", userInput))
62
63     # returns error if either one of the variables above is empty, else, normal dictionary returned
64     if len(question_type) < 1 or len(identifiers) < 1:
65         # extra step of autocorrect for better interpretation
66
67         issue = {"QT": question_type, "I": self.autoCorrect(userInput, self.possibleList).split()}
68         if self.autoCorrect(userInput, self.possibleList) != "ERROR":
69             self.correctedWord = self.autoCorrect(original_input, self.dictionaryList)
70             print("I am assuming that you mean to say '" + self.autoCorrect(original_input, self.dictionaryList) + "'. The
original word is autocorrected.\n")
71             self.correctedWord = self.autoCorrect(userInput, self.possibleList)
72             return issue
73         else:
74             result = {"QT": question_type, "I": identifiers}
75             self.correctedWord = identifiers[0]
76             return result
77
78     # takes the original sentence inputted by the user and then removes suffixes; local change not global
79     def stemWord(self, userInput):
80         return re.sub(r'\b(?!(is\b))(e|es|ing|ed|s|se|ication|ization|isation|ized|ised|ied|ous|y|ies|tion|ent|ents|er|ers|ic|
ation|ating|ize|ian|ate|ative|atives|ity|lys|in|inate|ance|)\b', '', userInput)
81
82     # finds any key data similar to the list above that might be misspelled to reinterpret input ~ similarity >= 70%
83     def autoCorrect(self, userInput, c_list):
84         inputList = userInput.split()
85         count = 0
86         for r in range(len(c_list)):
87             for c in range(len(c_list[r])):
88                 for n in inputList:
89                     iter = min(len(n), len(c_list[r][c]))
90                     for i in range(iter):
91                         if list(n).__getitem__(i) == list(c_list[r][c]).__getitem__(i):
92                             count+=1
93                         elif (i + 1) < len(c_list[r][c]):
94                             if list(n).__getitem__(i) == list(c_list[r][c]).__getitem__(i + 1):
95                                 count+=1
96                     if (count / max(len(n), len(c_list[r][c]))) * 100 >= 70:
97                         return c_list[r][c]
98                 count = 0
99     return "ERROR"

```