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1  """
2  CSE212
3  (c) BYU-Idaho
4  03-Teach - Problem 2 - Solution
5
6  It is a violation of BYU-Idaho Honor Code to post or share this code with others or
7  to post it online.  Storage into a personal and private repository (e.g. private
8  GitHub repository, unshared Google Drive folder) is acceptable.
9  """
10
11 def check_braces(line):
12     """
13     This function will check a line of code and ensure that the braces (including
14     parentheses,
15     square brackets, and curly brackets) are properly used by matching and balancing the
16     open and closed symbols.  All other characters in the line of code will be ignored.
17     A stack is used to remember which open braces were seen previously.  When a close
18     brace is seen then the stack is checked to make sure there is a matching open
19     brace.
20     If an error is found, the function exits.
21     """
22     stack = []
23     for item in line:  # Look at each character in the line of code received
24         if item == '(' or item == '[' or item == '{':  # Check for open braces
25             stack.append(item)
26         elif item == ')':  # Check for close braces
27             if len(stack) == 0 or stack.pop() != '(':
28                 return False
29         elif item == ']':
30             if len(stack) == 0 or stack.pop() != '[':
31                 return False
32         elif item == '}':
33             if len(stack) == 0 or stack.pop() != '{':
34                 return False
35     # If there were any open braces not yet closed then we have an error.
36     return len(stack) == 0
37
38 # True (passes on line 34 ... stack was empty at the end)
39 print(check_braces("(a == 3 or (b == 5 and c == 6))"))
40
41 # False ..wrong opening square bracket (fails on line 29 ... stack had only '(' in it
42 # before it was popped and compared with ']')
43 print(check_braces("(students[i].grade > 80 and students[i].grade < 90)"))
44
45 # False .... missing closing ')' here ----- (fails on line 34 ... stack had an extra
46 # '(' in it at the end when it was supposed to be empty)
47 print(check_braces("(robot[id + 1].execute(.pass() or (not robot[id * (2 + i)].alive
48 and stormy) or (robot[id - 1].alive and lava_flowng))"))

```