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1  """
2  CS241 Homework 05
3  Written by Chad Macbeth
4  """
5
6  # The strategy is that for every opening brace that I put on the stack,
7  # there should be a closing brace that matches it to pop off.
8
9  # So, if I have { [ ( ) ] }
10 # Then I will push {, [, and ( onto the stack.
11 # When I see a closing ), then I should see a
12 # ( popped off the stack. If I get something else,
13 # then the the braces are not ordered properly. If the
14 # stack is empty, then I'm missing a brace.
15
16 filename = input("File: ")
17 braces = []
18 balanced = True
19 with open(filename, "r") as fileIn:
20     for brace in fileIn: # Read each line
21         brace = brace.strip() # Remove whitespace
22         if (brace == "{" or (brace == "(" or (brace == "["):
23             braces.append(brace) # Push open brace onto the stack
24         else:
25             if (len(braces) == 0): # Close brace received but empty stack
26                 balanced = False
27                 break
28             # Pop off stack and check for mismatch between open and close brace
29             prev_brace = braces.pop()
30             if (((brace == "}") and (prev_brace != "{")) or
31                 ((brace == ")") and (prev_brace != "(")) or
32                 ((brace == "]") and (prev_brace != "["))):
33                 balanced = False
34                 break
35
36 # Stack should now be empty. If it is not, then not balanced.
37 if (len(braces) != 0) or (not balanced):
38     print("Not balanced")
39 else:
40     print("Balanced")
41

```