```
####################
## EXAMPLE: for loops over strings
####################
#s = "demo loops"
#for index in range(len(s)):
#    if s[index] == 'i' or s[index] == 'u':
#        print("There is an i or u")
#
#for char in s:
#    if char == 'i' or char == 'u':
#        print("There is an i or u")


####################
## EXAMPLE: while loops and strings
## CHALLENGE: rewrite while loop with a for loop
####################
#an_letters = "aefhilmnorsxAEFHILMNORSX"
#word = input("I will cheer for you! Enter a word: ")
#times = int(input("Enthusiasm level (1-10): "))
#
#i = 0
#while i < len(word):
#    char = word[i]
#    if char in an_letters:
#        print("Give me an " + char + "! " + char)
#    else:
#        print("Give me a  " + char + "! " + char)
#    i += 1
#print("What does that spell?")
#for i in range(times):
#    print(word, "!!!")



####################
## EXAMPLE: perfect cube
####################
#cube = 27
##cube = 8120601
#for guess in range(cube+1):
#    if guess**3 == cube:
#        print("Cube root of", cube, "is", guess)
#        # loops keeps going even after found the cube root


####################
## EXAMPLE: guess and check cube root
####################
#cube = 27
##cube = 8120601
#for guess in range(abs(cube)+1):
#    # passed all potential cube roots
#    if guess**3 >= abs(cube):
#        # no need to keep searching
#        break
#if guess**3 != abs(cube):
#    print(cube, 'is not a perfect cube')
#else:
#    if cube < 0:
#        guess = -guess
#    print('Cube root of ' + str(cube) + ' is ' + str(guess))


####################
## EXAMPLE: approximate cube root
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```

```
#cube = 27
##cube = 8120601
##cube = 10000
#epsilon = 0.1
#guess = 0.0
#increment = 0.01
#num_guesses = 0
## look for close enough answer and make sure
## didn't accidentally skip the close enough bound
#while abs(guess**3 - cube) >= epsilon and guess <= cube:
#    guess += increment
#    num_guesses += 1
#print('num_guesses =', num_guesses)
#if abs(guess**3 - cube) >= epsilon:
#    print('Failed on cube root of', cube, "with these parameters.")
#else:
#    print(guess, 'is close to the cube root of', cube)


####################
## EXAMPLE: bisection cube root (only positive cubes!)
####################
#cube = 27
##cube = 8120601
## won't work with x < 1 because initial upper bound is less than ans
##cube = 0.25
#epsilon = 0.01
#num_guesses = 0
#low = 0
#high = cube
#guess = (high + low)/2.0
#while abs(guess**3 - cube) >= epsilon:
#    if guess**3 < cube:
#        # look only in upper half search space
#        low = guess
#    else:
#        # look only in lower half search space
#        high = guess
#    # next guess is halfway in search space
#    guess = (high + low)/2.0
#    num_guesses += 1
#print('num_guesses =', num_guesses)
#print(guess, 'is close to the cube root of', cube)
```