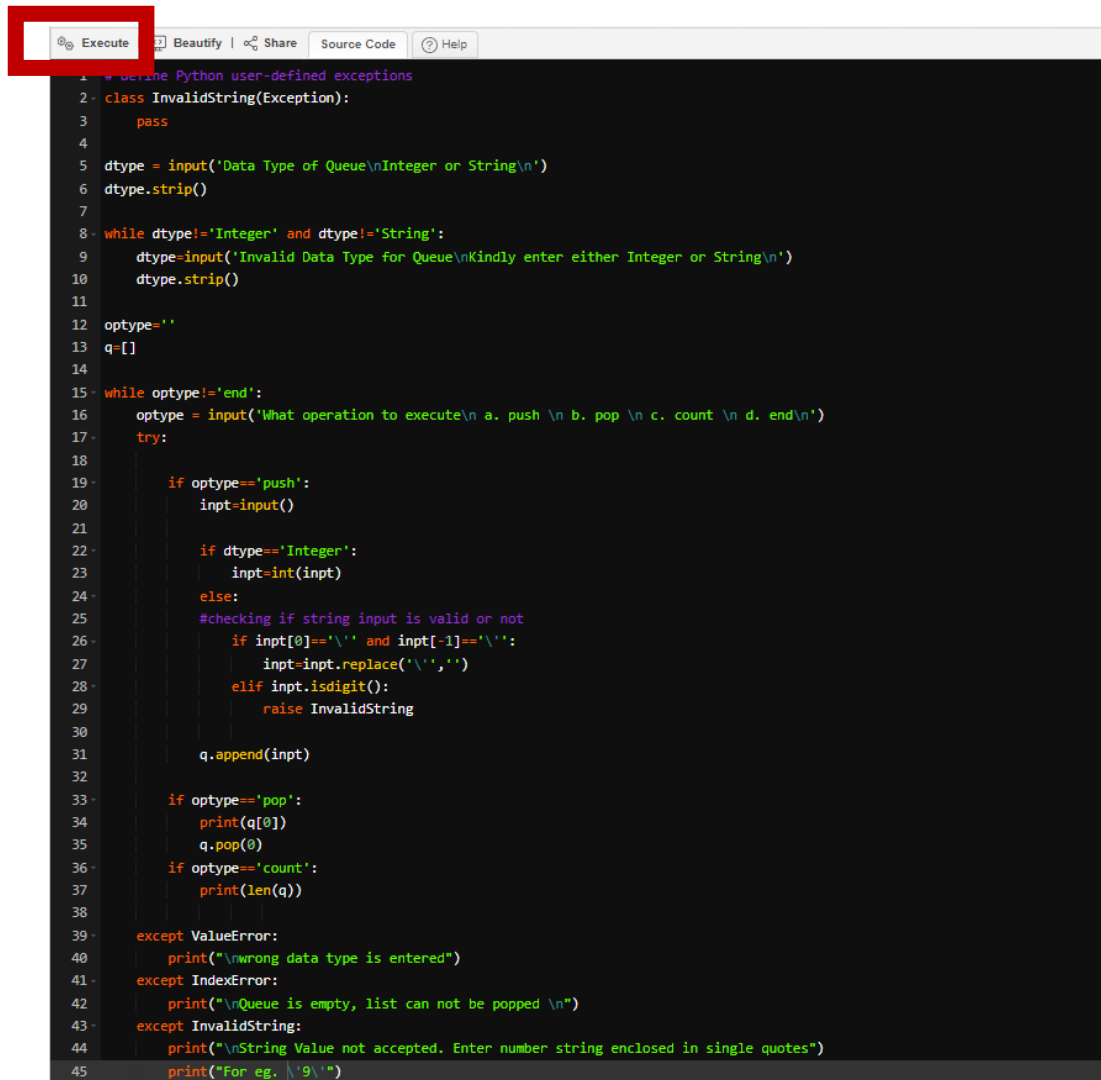


Write a program/function in any Object-Oriented programming language (e.g., Java, C++, Python) that will implement Queue Abstract Data Type with the following functions/methods. Any build-in/pre-defined Queue function/library (e.g., `java.util.Queue` in Java) is NOT allowed to use in your code.

- `push(Element)`: insert the input Element (e.g., String or Integer in Java) to the end of the queue.
- `pop()`: remove/pop the head element of the queue and print the popped element on screen.
- `count()`: return the total number of elements in the queue

Steps for execution

1. Copy the code from ***“Advanced Software Paradigms\_CSCI\_6221\_10\_Sagar\_Sheth\_HW5.txt”***.
2. Open the below link in the web browser.
  - a. [https://www.tutorialspoint.com/online\\_python\\_compiler.php](https://www.tutorialspoint.com/online_python_compiler.php)
3. Paste the Code in and Click on the Execute Button.



```
1 # Define Python user-defined exceptions
2 class InvalidString(Exception):
3     pass
4
5 dtype = input('Data Type of Queue\nInteger or String\n')
6 dtype.strip()
7
8 while dtype!='Integer' and dtype!='String':
9     dtype=input('Invalid Data Type for Queue\nKindly enter either Integer or String\n')
10    dtype.strip()
11
12 optype=''
13 q=[]
14
15 while optype!='end':
16     optype = input('What operation to execute\n a. push \n b. pop \n c. count \n d. end\n')
17     try:
18
19         if optype=='push':
20             inpt=input()
21
22             if dtype=='Integer':
23                 inpt=int(inpt)
24             else:
25                 #checking if string input is valid or not
26                 if inpt[0]!='\'' and inpt[-1]!='\'':
27                     inpt=inpt.replace('\'', '')
28                 elif inpt.isdigit():
29                     raise InvalidString
30
31             q.append(inpt)
32
33         if optype=='pop':
34             print(q[0])
35             q.pop(0)
36         if optype=='count':
37             print(len(q))
38
39     except ValueError:
40         print("\n\nwrong data type is entered")
41     except IndexError:
42         print("\n\nQueue is empty, list can not be popped \n")
43     except InvalidString:
44         print("\n\nString Value not accepted. Enter number string enclosed in single quotes")
45         print("For eg. \'9\'")
```

4. The below output should be displayed on the terminal.

```
Terminal
Data Type of Queue
Integer or String
Integer
What operation to execute
a. push
b. pop
c. count
d. end
push
1
What operation to execute
a. push
b. pop
c. count
d. end
push
10
What operation to execute
a. push
b. pop
c. count
d. end
push
11
What operation to execute
a. push
b. pop
c. count
d. end
push
a
wrong data type is entered
What operation to execute
a. push
b. pop
c. count
d. end
pop
1
What operation to execute
a. push
b. pop
c. count
d. end
pop
10
What operation to execute
```

```
What operation to execute
a. push
b. pop
c. count
d. end
pop
11
What operation to execute
a. push
b. pop
c. count
d. end
pop
Queue is empty, list can not be popped

What operation to execute
a. push
b. pop
c. count
d. end
end
```

Terminal

```
Data Type of Queue
Integer or String
String
What operation to execute
a. push
b. pop
c. count
d. end
push
9
String Value not accepted. Enter number string enclosed in single quotes
For eg. '9'
What operation to execute
a. push
b. pop
c. count
d. end
push
'9'
What operation to execute
a. push
b. pop
c. count
d. end
push
a
What operation to execute
a. push
b. pop
c. count
d. end
pop
9
What operation to execute
a. push
b. pop
c. count
d. end
pop
a
What operation to execute
a. push
b. pop
c. count
d. end
end
```

