Quiz 6 – Name: _____

Question 1. Write a *recursive function* called `addch` that has two parameters: a string `S` and a character `ch`. The function should return a string with the character added between each letter of the original string. For example, calling `addch("hello", "*")` would return `"h*e*l*l*o"`.

Question 2. Assume the mystery function is originally called as follows: `mystery("EVIL",1)`.

- Draw the stack as it would look at it's largest
- Show what is printed as the functions recur
- Show what is finally returned by the first call to `mystery()`

```
1 def mystery(S,n):                                                    STACK:
2   print("%2d: %s" % (n, S))
3   if len(S) == 0:
4     return S
5   else:
6     fch = S[0]
7     rest = S[1:]
8     result = mystery(rest,n+1) + fch
9     return result
```

Functions print:

What is finally returned?

Question 3. For each of the algorithms below, attach the correct label: $O(n \log n)$, $O(n^2)$, $O(\log n)$, and $O(n)$

`binary search:`

`merge sort:`

`bubble sort:`

`linear search:`

Question 4. Imagine you are writing a playlist class for some music application, like iTunes or Spotify. Create a `Playlist` class that works with the following test code, and produces the results below. You should write the `__init__`, `__str__`, and `addSong` methods. For the constructor, only the name of the playlist is given. For the `addSong` method, the name of the song is given.

```
1  p = Playlist("Workout Music")
2  p.addSong("Pump It")
3  p.addSong("Back In Black")
4  p.addSong("We Will Rock You")
5  p.addSong("Panama")
6  print(p)
```

```
Playlist: Workout Music
 1: Pump It
 2: Back In Black
 3: We Will Rock You
 4: Panama
```