CSC108 Recipe for Designing Functions

1. **Example** Write some examples of calls to your function[1] and the expected returned values. Include an example of a *standard* case (as opposed to a tricky or corner case.) Put the examples inside an indented triple-quoted string.

```
    """
    >>> length_is_multiple("two", 2)
    False
    >>> length_is_multiple("two", 3)
    True
    """
```

2. **Type Contract** Write a type contract that identifies name and type of each parameter. Choose a meaningful name for each parameter. Also identify the return type of the function. Put the type contract above the examples.

```
    """
    @param str string: a string
    @param int num: a whole number
    @rtype: bool

    >>> length_is_multiple("two", 2)
    False
    >>> length_is_multiple("two", 3)
    True
    """
```

3. **Header** Write the function header above the docstring and outdent it.

```
def length_is_multiple(string, num):
    """
    @param str string: a string
    @param int num: a whole number
    @rtype: bool

    >>> length_is_multiple("two", 2)
    False
    >>> length_is_multiple("two", 3)
    True
    """
```

4. **Description** In the same line as the opening triple-quote mark, put a one-line summary of what the function does. If necessary, you can put an optional, longer description above the type contract. Mention each parameter by name.

```
def length_is_multiple(string, num):
    """Return whether num evenly divides length of string.

    @param str string: a string
    @param int num: a whole number
    @rtype: bool

    >>> length_is_multiple("two", 2)
    False
    >>> length_is_multiple("two", 3)
    True
    """
```

[1] Do not include examples for functions that involve randomness or user input.

5. **Body** Write the body of the function by remembering to indent it to match the docstring. To help yourself write the body, review your example cases from step 1 and how you determined the return values. You may find it helpful to write a few more example calls in the docstring.

```
def length_is_multiple(string, num):
    """Return whether num evenly divides length of string.

    @param str string: a string
    @param int num: a whole number
    @rtype: bool

    >>> length_is_multiple("two", 2)
    False
    >>> length_is_multiple("two", 3)
    True
    """
    return len(string) % num == 0
```

6. **Test Your Function** Test your function on all your example cases including any additional cases you created in step 5. Additionally try it on extra *tricky* or *corner* cases. In order to automatically test your docstring examples you can include the following at the end of the file:

```
if __name__ == '__main__':
    import doctest
    doctest.testmod()
```