Assignment - 24

1A.

1. Lambda function is anonymous, it has no name, so it cannot be reused. Def function can be reused. It has a name.
2. Lambda can have multiple args, but single expression. Def can have multiple expression and multiple args.
3. Lambda does not have return value whereas def can have.

2A. Benefits of lambda:

1. Less no of lines of code
2. Temporary functions
3. Function call can be done immediately after function definition
4. More effecient

3A. Map/Filter/Reduce:

The map() function iterates through all items in the given iterable and executes the function we passed as an argument on each of them.

Syntax: map(function, iterable(s))

The filter() forms a new list that contains only elements that satisfy a certain condition, i.e. the function we passed returns True.

Syntax: filter(function, iterable(s))

The reduce() works differently than map() and filter(). It does not return a new list based on the function and iterable we've passed. Instead, it returns a single value.

Syntax: reduce(function, sequence[, initial])

4A.

Function annotations are arbitrary python expressions that are associated with various part of functions. These expressions are evaluated at compile time and have no life in python's runtime environment. Python does not attach any meaning to these annotations. They take life when interpreted by third party libraries, for example, mypy.

5A.

In Python, we know that a function can call other functions. It is even possible for the function to call itself. These types of construct are termed as recursive functions.

Following is an example of a recursive function to find the factorial of an integer.

```
def factorial(x):
    if x == 1:
        return 1
    else:
        return (x * factorial(x-1))
num = 3
print("The factorial of", num, "is", factorial(num))
```

6A.

1. Use 4-space indentation and no tabs.
2. Use docstrings : There are both single and multi-line docstrings that can be used in Python. However, the single line comment fits in one line, triple quotes are used in both cases. These are used to define a particular program or define a particular function.
3. Wrap lines so that they don't exceed 79 characters : The Python standard library is conservative and requires limiting lines to 79 characters. The lines can be wrapped using parenthesis, brackets, and braces. They should be used in preference to backslashes.
4. Use of regular and updated comments are valuable to both the coders and users : There are also various types and conditions that if followed can be of great help from programs and users point of view. Comments should form complete sentences. If a comment is a full sentence, its first word should be capitalized, unless it is an identifier that begins with a lower case letter. In short comments, the period at the end can be omitted. In block comments, there are more than one paragraphs and each sentence must end with a period. Block comments and inline comments can be written followed by a single '#'.
5. Use of trailing commas : This is not mandatory except while making a tuple.

6. Use spaces around operators and after commas, but not directly inside bracketing constructs
7. Naming Conventions : There are few naming conventions that should be followed in order to make the program less complex and more readable. At the same time, the naming conventions in Python is a bit of mess, but here are few conventions that can be followed easily.
8. Characters that should not be used for identifiers : 'l' (lowercase letter el), 'O' (uppercase letter oh), or 'I' (uppercase letter eye) as single character variable names as these are similar to the numerals one and zero.
9. Don't use non-ASCII characters in identifiers if there is only the slightest chance people speaking a different language will read or maintain the code.
10. Name your classes and functions consistently : The convention is to use CamelCase for classes and lower_case_with_underscores for functions and methods. Always use self as the name for the first method argument.
11. While naming of function of methods always use self for the first argument to instance methods and cls for the first argument to class methods.If a functions argument name matches with reserved words then it can be written with a trailing comma. For e.g., class_

7A.

1. Return statement
2. Print statement
3. Function inside the function