Python basics assignments -24

1. A lambda expression is a small anonymous function, while a def statement defines a function with a name. Both can be used to define functions, but lambda expressions are generally used when the function is only needed in one place, while def statements are used when the function will be used multiple times.
2. The benefit of using a lambda expression is that it allows you to define a function in a single line of code, which can make your code more concise and easier to read.
3. Map applies a function to each element of an iterable and returns a new iterable with the modified elements. Filter creates a new iterable with elements that satisfy a given predicate (a function that returns a Boolean). Reduce applies a function to an iterable in a cumulative way, reducing the iterable to a single value.
4. Function annotations are a way to specify metadata about a function. They can be used to document the function, but they do not affect the function's execution. They are written in the form **def foo(arg: Annotation) -> Annotation:**, where **Annotation** can be any valid expression.
5. A recursive function is a function that calls itself, either directly or indirectly. Recursive functions are used to solve problems that can be divided into smaller subproblems that can be solved in a similar way.
6. Some general design guidelines for coding functions include:
   * Keep functions small and focused on a single task.
   * Use descriptive and concise function and variable names.
   * Use default values for optional arguments to make the function more flexible.
   * Document the function using a docstring.
   * Use function annotations to specify the types of the function's arguments and return value.
7. Some ways that functions can communicate results to a caller are:
   * Returning a value using the **return** statement.
   * Modifying a mutable object passed as an argument.
   * Raising an exception to indicate an error.