Activity 1:

* Open the file in cmd mode
* Then run the code by typing the command:

python filename.py

Activity 2:

* Python is interpreted language i.e it executes the code line by line and converts the source code to bytecode at compilation time. It uses dynamic compilation.
* C# is compiled to intermediate language and then executed. C# first compiles to intermediate language and then get executed.
* Python compiles and runs the code in one step, while C# compiles first and then runs the compiled code.

Activity 3:

Python dynamically infers the data type of a variable baes on the value assigned to it. You can check the datatype by using type() function.

**Justification:** Python’s dynamic typing allows more flexibility, as the variable's type is determined at runtime based on the assigned value

Activity 4:

* Mutable data types are those that can be changed after creation.
* Example:

List,dictionary, set

* Immutable data types are those that cannot be changed after creation.

Example:

* Tuple,string

Activity 5:

Recursion:

A process in which a function calls itself to solve smaller problems.

Pros:

* Complex problems can be solved easily by converting a big problem to smaller ones.
* Code is easy to understand for the programs like factorial

Cons:

* High memory usage (because of multiple function calls)
* Can cause stack overflow

Activity 6:

Each function call is stacked one upon the other and when base case is reached it starts to return value back up the stack and this continues until all calls are resolved.