

Design Patterns used in this assignment are Abstract Factory Pattern and Singleton Pattern

In Abstract Factory pattern an interface is responsible for creating a factory of related objects without explicitly specifying their classes. Each generated factory can give the objects as per the Factory pattern. So instead of calling all the class (NumberExpression, StringExpression etc) constructors the factory class can now just provide with the a user-friendly concrete implementation. One more use of this pattern would be instead of initiating the classes at multiple places in the code, now we have it all in one factory method which can be easy for modifications.

Singleton pattern involves a single class which is responsible to create an object while making sure that only single object gets created. This also provides a way to access its only object which can be accessed directly without need to instantiate the object of the class. Thus, to get counts of multiple instances of Node, this way makes it possible to keep track even when multiple factory objects are created without the use of making static count variables.