Q1: Project Overview and Introduction:

The project is a Windows Forms application developed in C# that seems to be designed for educational purposes, focusing on compiler-related concepts such as semantic analysis, lexical analysis, and the computation of First/Follow sets for a set of context-free grammar productions.

Components:

I. Semantic Analysis:

The PerformSemanticAnalysis method processes an arithmetic expression, checking for semantic errors (such as insufficient operands for operators) and providing a result indicating whether the expression is semantically valid.

II. Lexical Analysis:

The CreateToken method classifies input words into different token types (e.g., integers, strings, keywords, identifiers, operators, parentheses, unknown). The DisplayTokens method displays the generated tokens.

III. First/Follow Sets:

The application allows the user to input context-free grammar productions, and the ComputeFirstSet and ComputeFollowSet methods calculate the First and Follow sets for each non-terminal symbol. The results are displayed in the application.

IV. User Interface:

The user interface is implemented using Windows Forms, featuring buttons (btnS, btnL, btnFF, btnClear, btnExit, btnLA, exm) and text boxes (tbINP, tbS, tbL, tbFF). The buttons trigger various actions, such as semantic analysis, lexical analysis, and computing First/Follow sets.

Example Data:

The exm_Click event handler sets an example string in the tbINP text box, possibly for testing or demonstration purposes.