**COMSATS UNIVERSITY OF ISLAMABAD,**

**ATTOCK CAMPUS**

**LAB TERMINAL**

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**QUESTION NO 04:**

Challenges faced during the project

Initialization:

Three classes (Symbols, MemorySaver, MemoryCalculating) are defined for different purposes, such as symbol storage and memory representation.

Several lists are initialized for storing identifiers, symbols, reversed words, and other data.

Form Loading:

During the form's load, lists for identifiers, symbols, and reversed words are populated.

Creating Identifiers, Symbols, and Reversed Words:

Methods createIdentifiers(), createSymbols(), and createReversedWords() populate the respective lists.

Creating Memory Labels:

The createMemoryLabels() method seems to create labels for memory representation, but it's not completely implemented in the provided code.

Error Display:

The printErrors() method displays error messages based on the code's compilation status.

Button Click Event:

When the button (button1) is clicked, the code in textBox1 is processed and its components are categorized (Identifier, Symbol, Reversed Word, Variable, Number, Pointer, or Error). The results are displayed as labels in flowLayoutPanel1

While the exact challenges aren't explicitly mentioned in the provided code, based on the context and the nature of such projects, potential challenges could include:

1. Tokenization Accuracy: Determining the correct categorization of every part of the input code can be complex, especially when dealing with edge cases or incomplete inputs.

2. Error Handling: Recognizing and accurately reporting errors in the code can be challenging, especially when the errors are syntactical or semantic in nature.

3. UI Management: Dynamically updating the user interface (like adding or removing labels) while maintaining responsiveness can be a challenge in Windows Forms applications.

4. Regex and Parsing: Ensuring that the regex used for checking alphanumeric characters and other patterns works accurately for all cases.

5. Memory Management: If the application has to handle large code snippets, managing memory for lists and dynamically created UI components can be a concern.

