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Lab Terminal

Question # 2

Explain two core functions of the mini compiler.

Answer

1. Tokenization (Lexical Analysis):

This function splits the input code into tokens such as keywords (int), identifiers (myVar), operators (=), and terminators (;).

For example, the input `int myVar = 100;` generates tokens:

`["int", "myVar", "=", "100", ";"]`.

2. Syntax Parsing:

This function checks if the tokens adhere to the defined grammar rules. For example, it validates if the input follows the structure of `int variable_name = value;`. If not, it reports a syntax error.

Example

`int x = 10;`

The parser will produce a syntax tree that reflects the structure of the assignment statement. For instance:

AssignmentStatement

```
|— Type: int
|— Variable: x
|— Expression: 10
```

If the syntax were incorrect, such as missing the assignment operator:

`int x 10;`

The parser would raise a syntax error indicating that the assignment operator = is missing.