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UNITS 7 AND 8: SEMANTIC ANALYSIS and ERROR HANDLING

We want to develop an analyzer that can verify that the data packages that circulate through an information channel have the appropriate structure.

A data package consists of two types of blocks, the blocks labeled with the letter "a" and those labeled with the letter "b". Valid data packages have the following structure:

- They start with a block "a"
- They can have any number of blocks greater than or equal to 1.
- They cannot have more than two consecutive blocks with the same label.

Example:

```
a abbabaab aabaa abaaab ababaabb baab …
```

Error package (three consecutive "a" blocks)

Error package (it starts with a "b" block)

1. Define the grammar G of the analyzer.

2. Construct an LL(1) syntax parsing table for the analyzer.

3. Construct an SLR(1) parsing table for the analyzer.

4. Show the derivation trees that are induced in the LL(1) and SLR(1) analysis for the blocks: "aabaa" and "abaaab"

5. Perform syntax error recovery for the SLR(1) parser.

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