Indian Institute of Technology Bhilai
CS251: Introduction to Language Processing
Homework-2 : Solution-Syntax Analyzer

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README FILE

Language we have choosen for Compiler Design: **Java**.

Syntax Analysis: Syntax analysis, also known as parsing, is a crucial phase in the compilation or interpretation of programming languages. It is a process that checks the source code of a program to determine if it follows the grammatical rules of the programming language. In other words, it verifies whether the code is syntactically correct

Steps to Execute my file:

Simply run the file **parser.sh** -> **./parser.sh** after extracting the zip file. It contains all the commands. Steps to follow :

Open the Terminal in Ubuntu

1. Install flex
2. Type: Install bison
3. Type: ./run.sh

My run.sh file contains the commands:

1. flex Assign.l
2. Type: bison Assign.y
3. Type: gcc Assign.tab.c -ll
3. Type: ./a.out test1
3. Type: ./a.out test2
3. Type: ./a.out test3
3. Type: ./a.out test4
3. Type: ./a.out test_iv1
3. Type: ./a.out test_iv2

In **.l file**, we wrote the rules to generate the given input to appropriate tokens, that could be processed in the syntax analysis and their syntax validity could be determined.

Syntax Analysis using YACC, generally contains 3 parts:

Part - 1:

We will include the tokens that will be used to generate the apt grammar for the syntax analysis.

Part - 2:

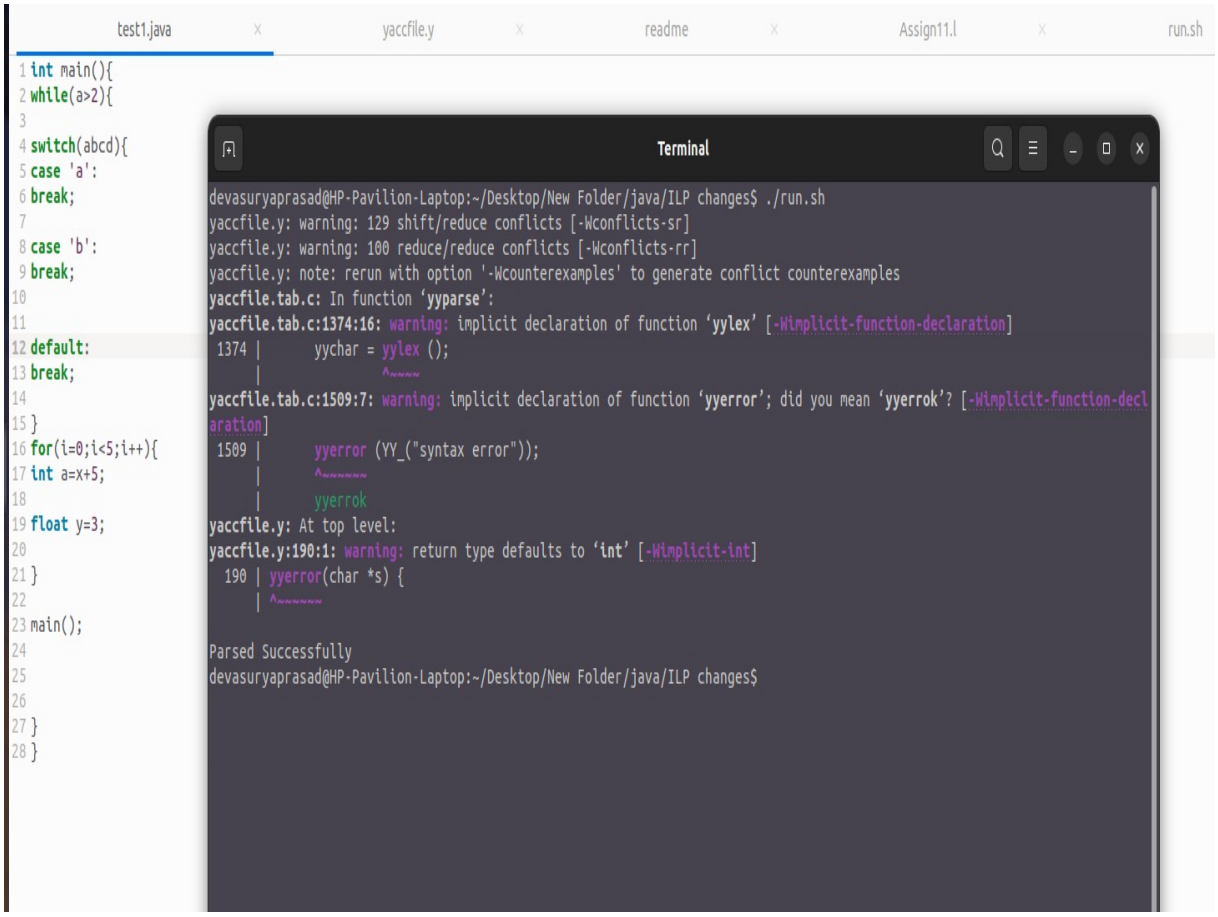
In this part, we define the rules and grammar that must be satisfied for the syntax to be correct. We initialize our grammar with non-terminal "start", in return it goes to other non-terminals and so on .. and finally to correct sequence of other tokens.

Part - 3:

In this part if the input syntax follows the rules defined in the upper part then we have the yyparse set thus we print the syntax is correct. If at any part the error is encountered then we will stop the parsing and the pointer notes the location of the error encountered as this helps us in determining the error in syntax along with the position and type of the error.

Note: In this assignment, we have attached, 4 input files (test1,test2,test3,test4) where we will get valid outputs -> **Parsed successfully**, and 2 input files (test_iv1,test_iv2) where due to some mistake, we will get error in the terminal, it also mentions the place where we are getting the error. I have mentioned clearly in those files, why we are getting the error.

Sample Input: Attached below



Resources:

We didn't specifically used resources, for learning we just learned Yacc and took help from our friends, just to know how to continue in the assignment and to remove some of the error we got , and we used ChatGPT for error reduction and some code formation.