PL Homework Assignment 4:

Web-based Recursive Descent Recognizer

In this assignment you are to implement a recursive-descent recognizer with a **web interface** for the BNF grammar given below. Based on the pseudocode you have done in PL Assignment 1, this is a good opportunity to develop the web programming skills required by today's IT field.

```
EXP    ::= EXP  + TERM   | EXP - TERM    | TERM
TERM   ::= TERM * FACTOR | TERM / FACTOR | FACTOR
FACTOR ::= ( EXP ) | DIGIT
DIGIT  ::= 0 | 1 | 2 | 3
```

The following is a set of requirements for this recognizer (parser):

- Ask the user for an input stream.
- Report "legal" or "errors found" (not both!).
- Assume the input stream is the token stream.
- Assume the input stream terminates with a $.
- Assume there is no white space.
- Use a form to collect input and return the output.
- Test your recognizer with illegal and legal strings.
- Give a brief description of this recognizer for the user on how to use and what method that it based on.

Submission:

1. **Test** your RDR thoroughly. Based on the given grammar, you may construct your testing strings with a set of valid ones and a set of invalid ones. Here is two sample testing sets:

Valid set: 1+2$, 0-3*2$, 2/(3+1)$

invalid set: 1+2, 1*4$, 1*a$

2. Write a short user instruction on top of you RDR. You should tell user the input requirements and give sample valid strings and invalid strings examples.

3. You are required to **submit a source code** file of your RDR at Canvas, and post your web-based RDR at your course website at an easy to find location.

4. You are also required to do a **demo** of your web-based RDR to your instructor before the due date during week 15 class time or office hours by sharing screen at a Zoom meeting. Please send an email before you come to demo to avoid waiting. Here is an example implemented in PHP. You may

implement it in a language of your choice as long as it has a web interface and works correctly. JavaScript is another popular choice for many students. If you would also like to use PHP or JavaScript as your implementation language but not familar with it, then you can read this to help you start. You may find our Recursive Desent Parser Courseware helpful. There are two sample PHP code examples in Canvas for your references.

5. Write a brief report (100 - 300words) posted at bottom of your RDR or link to a separate page from your RDR. In the report, you should describe your RDR implementation experience on (1) which language you used and explain your choice and feel of the language; (2) useful learning resource for our implementation in this assignment -- share with the class. You may list books or online learning resources; (3) additional suggestions/contributions for learning community (students and instructors) of this parser inmplementation assignment. **Submit the report** at Canvas as well.