

Questions: C Program

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0.1 Introduction

In the following document, brief answers to some questions are presented. The questions are related to a code sample shown in the figure below; while the answers are the most representative way of saying the code is doing. The sample code is a simple analyzer of input strings that contain arithmetic expressions that are lists of digits with plus and minus signs dividing them.

```
#include <ctype.h> /* carga el archivo que contiene al
                    predicado isdigit */
int preanálisis;
main()
{
    preanálisis = getchar();
    expr();
    putchar('\n'); /* agrega un carácter de línea nueva al final */
}
expr()
{
    término()
    while(1)
        if (preanálisis == '+') {
            pareo('+'); término(); putchar('+');
        }
        else if (preanálisis == '-') {
            pareo('-'); término(); putchar('-');
        }
        else break;
}
término()
{
    if (isdigit(preanálisis)) {
        putchar(preanálisis);
        pareo(preanálisis);
    }
    else error();
}
pareo(t)
int t;
{
    if (preanálisis == t)
        preanálisis = getchar();
    else error();
}
error()
{
    printf("error de sintaxis\n"); /* imprime mensaje de error */
    exit(1);                      /* y después se detiene */
}
```

0.2 Questions

1. When does error() method is executed?

The method error() is executed if a term is not a digit, that is, whenever there are no digits before an

operator (+/-), or when there are two consecutive digits or if there is an unexpected character that is not an operator/digit.

2. Why is there a t parameter in `parea(t)` method?

The t parameter exists so that the code can identify when there is a syntax errors.

3. How many characters can the algorithm receive as input?

It receives one character at a time, but overall you can type as many characters as you wish, one after another, as long as they don't trigger an error.

4. Why adding a newline character after evaluating `expr()`?

It is added so that after printing the finished analyzed expression and there are no more *accepted* characters following, the program prints a new line before exiting.

5. What does the `parea(x)` method does?

It serves the purpose of getting another character from the input if there are no errors, else prints an error message and finishes execution.

0.3 Conclusion

The conclusion is that the code above is a way of reading an input that consists of a string which is a list of digits separated by either a plus or minus sign. The code divides itself into different methods to process the input as a term, expression or error.