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/*****
*   Project 2
*
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*
*   This program creates a tree from an infix
*   equation and creates separate processes
*   to calculate the equation
*
*****/

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/wait.h>

#define MAXINPUT 50
#define READ 0
#define WRITE 1

int equate(char **tokens, int numTokens);

int main(){
    //Stored user input
    char *equation = malloc(MAXINPUT);

    //Breaks user input into tokens
    char **tokens = malloc(MAXINPUT *      (char*));

    //Number of tokens
    int numTokens = 0;

    //Get user input and remove new line
    fgets(equation, MAXINPUT, stdin);
    strtok(equation, "\n");

    //Breaks user input into separate tokens and keeps track of total tokens
    equation = strtok(equation, " ");
    (equation != NULL){
        tokens[numTokens] = equation;
        numTokens++;
        equation = strtok(NULL, " ");
    }

    //Solves the equation
    equate(tokens, numTokens);

    0;
}

int equate(char **tokens, int numTokens){
    //Equation elements
    int left = 0;
    int right = 0;
    char op;
    int answer = 0;

    //Iterator
    int i = 0;

    //Piping
    int fd[2];

    //Process elements
    pid_t pid;

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int status;

//Loop boolean
int loop = 1;

//Stores answers into file
FILE* file = fopen("answers", "a+");

//My goal for this was to solve a 2 operator equation
(loop){

    //Checks the operator type
    (*tokens[i] == '+' || *tokens[i] == '-' || *tokens[i] == '*' || *tokens[i] == '/'){

        //Creates pipe
        (pipe (fd) < 0) {
            perror ("plumbing problem");
            exit(1);
        }

        //Spawns a process
        ((pid = fork()) < 0) {
            perror("fork failure");
            exit(1);
        }

        //Child Process
        (pid == 0) {
            //Pipes to a file
            dup2 (fileno(file), fileno(stdout));

            //Stores input into equation elements
            sscanf(tokens[i-1], "%d", &left);
            op = *tokens[i];

            printf("PID : %i\t PPID : %i\t%i\t%i\t%c\n", getpid(), getppid(), left, right, op);

            //Checks if at the end of the equation
            (tokens[i+2] == 0){
                //If at the end then stores the next number into right
                sscanf(tokens[i+1], "%d", &right);

                //Equates
                (op == '+')
                    answer = left + right;
                (op == '-')
                    answer = left - right;
                (op == '*')
                    answer = left * right;
                (op == '/')
                    answer = left / right;

                printf("%i\n", answer);

                exit(0);
            }
            //Set to 3 to start at the second operator
            i = 3;

            //Creates pipe
            (pipe (fd) < 0) {
                perror ("plumbing problem");
                exit(1);
            }

            //Spawns a process
            ((pid = fork()) < 0) {
                perror("fork failure");
            }
        }
    }
}

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        exit(1);

//Child process
} (pid == 0) {
    //Since at the end of the equation it stores all elements including right
    sscanf(tokens[i-1], "%d", &left);
    op = *tokens[i];
    sscanf(tokens[i+1], "%d", &right);

    printf("PID : %i\t PPID : %i\t%i\t%i\t%c\n", getpid(), getppid(), left, right,
op);

    //Equates
    (op == '+')
        answer = left + right;
    (op == '-')
        answer = left - right;
    (op == '*')
        answer = left * right;
    (op == '/')
        answer = left / right;

    printf("%i\n", answer);

    exit(0);
} {
    //Waits on child
    wait(&status);
}
} {
    //Waits on child
    wait(&status);
}
}

//Increments
i++;

//Prevents from overlooping
(i==numTokens){
    loop = 0;
}
}

0;
}

```