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| --- |
| /\* |
|  | Aim: |
|  | Check continuity of different types of parentheses using stack.  Learner: ARSHEE QURESHI |
|  | \*/ |
|  | #include <stdio.h> |
|  | #include <ctype.h> |
|  | typedef struct conversion |
|  | { |
|  | char a[30]; |
|  | int top; |
|  | }stack; |
|  |  |
|  | void push(char, stack \*s); |
|  |  |
|  | char pop(stack \*s); |
|  |  |
|  | void checkContinuity(char exp[30]); |
|  |  |
|  | int isMatching(char left, char right); |
|  |  |
|  | int main() |
|  | { |
|  | char exp[30]; |
|  | printf("\nEnter The Expression::\n"); |
|  | scanf("%s",exp); |
|  | checkContinuity(exp); |
|  | return 0; |
|  | } |
|  |  |
|  | char pop(stack \*s) |
|  | { |
|  | char d; |
|  | int top=s->top; |
|  | if(top!=-1) |
|  | { |
|  | d=s->a[top]; |
|  | s->top=s->top-1; |
|  | return d; |
|  | } |
|  | } |
|  |  |
|  | void push(char e, stack \*s) |
|  | { |
|  | int top=s->top; |
|  | if(top<29) |
|  | { |
|  | s->a[++(s->top)]=e; |
|  | } |
|  | } |
|  |  |
|  | int isMatching(char left, char right) |
|  | { |
|  | switch(left) |
|  | { |
|  | case '(': |
|  | if(right==')') |
|  | return 1; |
|  | else |
|  | return 0; |
|  | case '{': |
|  | if(right=='}') |
|  | return 1; |
|  | else |
|  | return 0; |
|  | case '[': |
|  | if(right==']') |
|  | return 1; |
|  | else |
|  | return 0; |
|  | } |
|  | return 0; |
|  | } |
|  |  |
|  | void checkContinuity(char exp[30]) |
|  | { |
|  | int i; |
|  | char e,left; |
|  | stack s; |
|  | s.top=-1; |
|  | for(i=0;exp[i]!='\0';i++) |
|  | { |
|  | e=exp[i]; |
|  | if(e=='('||e=='{'||e=='[') |
|  | push(e,&s); |
|  | else |
|  | { |
|  | if(s.top==-1) |
|  | { |
|  | printf("EXPRESSION INVALID\n"); |
|  | return; |
|  | } |
|  | else{ |
|  | left=pop(&s); |
|  | if(isMatching(left,e)) |
|  | continue; |
|  | else |
|  | { |
|  | printf("EXPRESSION INVALID\n"); |
|  | return; |
|  | } |
|  | } |
|  | } |
|  | } |
|  | if(s.top!=-1) |
|  | printf("EXPRESSION INVALID\n"); |
|  | else |
|  | printf("EXPRESSION VALID\n"); |
|  | } |
|  | /\* |
|  | OUTPUT:- |
|  |  |
|  | Enter The Expression:: |
|  | (([{}]))[{[]{}{}}] |
|  | EXPRESSION VALID |
|  |  |
|  | Enter The Expression:: |
|  | {((}))[][](){} |
|  | EXPRESSION INVALID |
|  |  |
|  | \*/ |