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**ROLL NO:-SECOA115**

**ASSIGNMENT NO:-08**

**AIM** **:-** In any language program mostly syntax error occurs due to unbalancing delimiter such as (),{},[]. Write C++ program using stack to check whether given expression is well parenthesized or not.

**PROGRAM:-**

#include<iostream>

using namespace std;

class stack

{

int top;

char exp[30];

char stk[30];

public:

stack()

{

top=-1;

}

int is\_stack\_empty();

int is\_stack\_full();

void push(char);

void pop();

void well\_parenthesis();

char getchar();

};

int stack::is\_stack\_empty()

{

if(top==-1)

return 1;

else

return 0;

}

int stack::is\_stack\_full()

{

if(top==29)

return 1;

else

return 0;

}

void stack::push(char ch)

{

if(is\_stack\_full())

cout<<"\n Sorry..stack is full";

else

{

top++;

stk[top]=ch;

}

}

void stack::pop()

{

char temp;

if(is\_stack\_empty())

cout<<"Sorry..stack is empty";

else

{

temp=stk[top];

top--;

}

}

char stack::getchar()

{

char temp;

temp=stk[top];

return temp;

}

void stack::well\_parenthesis()

{

int flag=0;

char ch,a;

cout<<"\n Enter the expression consisting of brackets";

cin>>exp;

int i=0;

while(exp[i]!='\0')

{

ch=exp[i];

if(ch=='('||ch=='{'||ch=='[')

push(ch);

else if(ch==')'||ch=='}'||ch==']')

{

if(!is\_stack\_empty())

{

a=getchar();

if(ch==')'&&a=='(' || ch=='}'&& a=='{' || ch==']'&&a=='[')

{

pop();

}

else

{

flag=1;

cout<<"\n Mismatched brackets...not well parenthesized";

break;

}

}

else

{

flag=1;

cout<<"\n Less no. of brackets in stack...not well parenthesized";

break;

}

}

i++;

}

if(flag==0)

{

if(is\_stack\_empty())

cout<<"\n Well parenthesized";

else

cout<<"\n Not well parenthesized...as stack is not empty";

}

}

int main()

{

stack s;

int a;

do

{

s.well\_parenthesis();

cout<<"\n do u want to continue if yes press 1";

cin>>a;

}while(a==1);

return 0;

}

**OUTPUT**

Enter the expression consisting of brackets{()}

Well parenthesized

do u want to continue if yes press 11

Enter the expression consisting of brackets{()}]

Less no. of brackets in stack...not well parenthesized

do u want to continue if yes press 11

Enter the expression consisting of brackets{()

Not well parenthesized...as stack is not empty

do u want to continue if yes press 1