Compiler Design LAB

Lab report

Submitted by

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1. Write a program in Lex to identify “real precision” of a given number.

Program:

```
%{
#include<stdio.h>
void precision(char*numstr);
%}

%%
[0-9]*.[0-9]+ { precision(yytext);
//                  printf("Hey");
                    }
. {}
%%
void precision(char*numstr)
{
        char*temp=numstr;
        int len=0,num=0;float round;
        while(*temp!='.')
        {
                num=num*10+((*temp)-48);
                temp++;len++;
        }
        printf("Rounded Num: %d, Precision: %d",num,len);
}
int yywrap(){}
int main()
{
        yylex();
return 0;
}
```

OUTPUT:

2. Write a program to implement the elimination of left recursion. (using C++)

Program:

```
#include<iostream>
#include<string>
#include<algorithm>
#include<vector>

using namespace std;
void eliminate_left_recursion(string&ip)
{
	size_t pos=ip.find("->");
	string left=ip.substr(0,pos);
	string right=ip.substr(pos+2);
	vector<string>right_parts;
	int start=0;
	while(true)
	{
		int end=right.find('|',start);
		if(end==string::npos)
		{
			right_parts.push_back(right.substr(start));
			break;
		}
		right_parts.push_back(right.substr(start,end-start));
		start=end+1;
	}
	vector<string>productions;
	bool has_left_recursion=false;
	for(auto part:right_parts)
	{
	if(part.find(left)==0){
		has_left_recursion=true;
		productions.push_back(left+"->"+part.substr(left.length())+ left+"'");
	}
	else{
		productions.push_back(left+"'->"+part+left+"'");
	}
	}
		if(has_left_recursion)
		{
			productions.push_back(left+"'->ε");
		}
		if(has_left_recursion)
		cout<<"Left Recursion Present"<<endl;
		for(auto prod:productions)
			cout<<prod<<endl;
return;
}
int main()
{
	string ip;
	getline(cin,ip);
```

```
        string::iterator it=ip.begin();
        eliminate_left_recursion(ip);
return 0;
}
```

OUTPUT: