Dennis Johnson
180905025
CSE-B
Batch 3

10-12-2020

CD-Lab-6: RDP

1. S - > a | > | (T)
T -> T, S | S

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

int curr = 0;
char str[100];
void T();
void Tprime();
void S();

void invalid()
{
printf("-----------------ERROR!----------------\n");
exit(0);
}
void valid()
{
printf("----------------SUCCESS!---------------\n");
exit(0);
}
void T()
{       S();
        Tprime();
}
void Tprime()
{       if(str[curr] == ',')
          {
                curr++;
                S();
                Tprime();
          }
          else {if(str[curr] == '$')
                valid();
                else return;
                }
}
void S()
{       if(str[curr] == 'a' || str[curr]=='>')
        {curr++;
```

```
        return;
        }
        else if(str[curr]=='(')
                {curr++;
                T();
                if(str[curr]==')')
                        valid();
                else invalid();
                }
        else invalid();
}
int main()
        {printf("Enter a $ terminated string: ");
        scanf("%s", str);
        S();
        if(str[curr] == '$')
        valid();
        else
        invalid();
return 0;
}
```

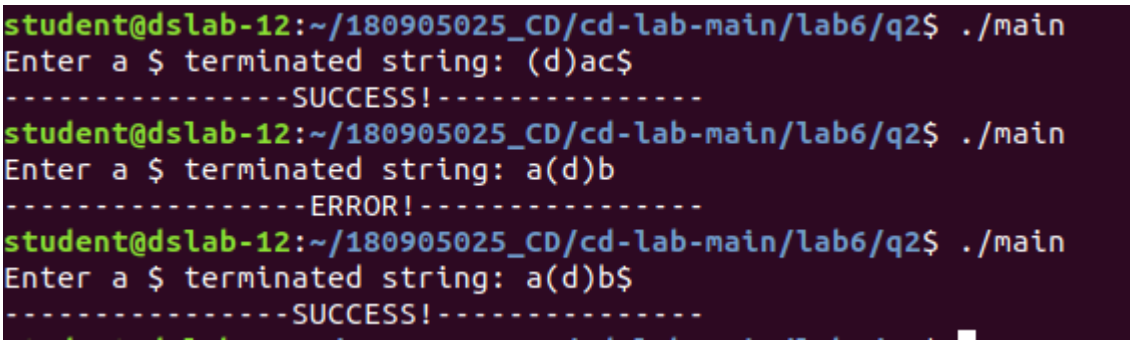
```
student@dslab-12:~/180905025_CD/cd-lab-main/lab6/q1$ ./main
Enter String: (a,>)
----------------SUCCESS!---------------
student@dslab-12:~/180905025_CD/cd-lab-main/lab6/q1$ ./main
Enter String: a,>
-----------------ERROR!----------------
```

2. **S -> UVW**
U -> (S) | aSb | d
V -> aV | ε
W-> aW | ε

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
int curr = 0;
char str[100];

void U();
void W();
void S();
void V();

void invalid()
{
printf("-----------------ERROR!----------------\n");
exit(0);
```

```
}
void valid()
{
printf("----------------SUCCESS!---------------\n");
exit(0);
}
void S()
{	U();
	V();
	W();
}
void U()
{
	if(str[curr]=='(')
	  {
		curr++;
		S();
		if(str[curr]==')')
			{curr++;
			return;
			}
		else invalid();
	  }
	else if(str[curr]=='a')
		{curr++;
		S();
		if(str[curr]=='b')
		{	curr++;
			return;
		}
		else invalid();
		}
	else if(str[curr]=='d'){
			curr++;
			return;
		}
}
void V()
{	if(str[curr]=='a')
	  {
		curr++;
		V();
	  }
}
void W()
{
	if(str[curr]=='c')
	  {
		curr++;
		W();
	  }
}
```

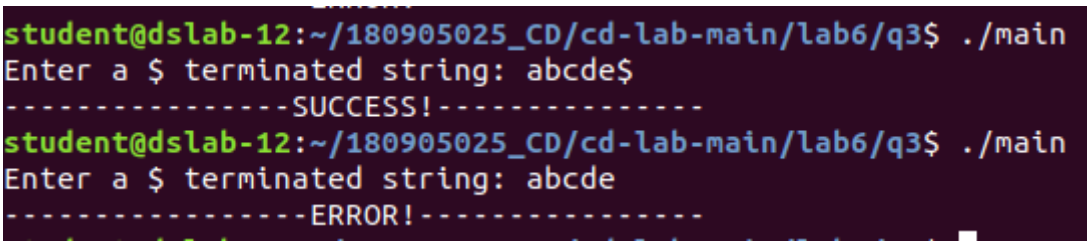
```
int main()
        {printf("Enter a $ terminated string: ");
        scanf("%s", str);
        S();

        if(str[curr]=='$')
          valid();
        else
          invalid();
return 0;
}
```



3. **S -> aAcBe**
A -> Ab | b
B -> d

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

int curr = 0;
char str[100];
void U();
void A();
void Aprime();
void B();

void invalid(){
printf("-----------------ERROR!----------------\n");
exit(0);
}

void valid(){
printf("----------------SUCCESS!---------------\n");
exit(0);
}
```

```
void S(){
  if(str[curr] == 'a'){
    curr++;
                    A();
                    if(str[curr] == 'c')
                    {curr++;
                            B();
                            if(str[curr]=='e')
                                    {curr++;
                                    return;
                                    }
                            else invalid();
                    }
    else invalid();
            }
            else invalid();
}
void A()
{
            if(str[curr]=='b')
              {
                    curr++;
                    Aprime();
                    }
                    else invalid();
}

void Aprime()
{           if(str[curr]=='b')
              {
                    curr++;
                    Aprime();
              }
              else return;
}
void B()
{
            if(str[curr]=='d')
                    curr++;
             else invalid();
}
int main()
            {printf("Enter a $ terminated string: ");
            scanf("%s", str);
            S();
            if(str[curr]=='$')
            valid();
            else
            invalid();
return 0;
}
```



4. **S -> (L) | a**
L -> L,S | S

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
int curr = 0;
char str[100];

void L();
void S();
void Lprime();
void invalid()

{
printf("----------ERROR!----------\n");
exit(0);
}
void valid()
{
printf("----------SUCCESS!----------\n");
exit(0);
}
void S()
{       if(str[curr]=='(')
        {       curr++;
                L();
                if(str[curr]==')')
                curr++;
                else invalid();
        }
        else if(str[curr]=='a')
                curr++;
        else invalid();
}
void L()
{
        S();
        Lprime();
}
void Lprime()
```

```
{       if(str[curr]==',')
         {
                curr++;
                S();
                Lprime();
         }
         else return;
}
int main()
        {printf("Enter a $ terminated string: ");
        scanf("%s", str);
        S();
        if(str[curr]=='$')
        valid();
        else
        invalid();
return 0;
}
```

```
student@dslab-12:~/180905025_CD/cd-lab-main/lab6/q4$ ./main
Enter a $ terminated string: (a,a,a)$
----------------SUCCESS!---------------
student@dslab-12:~/180905025_CD/cd-lab-main/lab6/q4$ ./main
Enter a $ terminated string: (a,a)
-----------------ERROR!----------------
```