CD Lab 6

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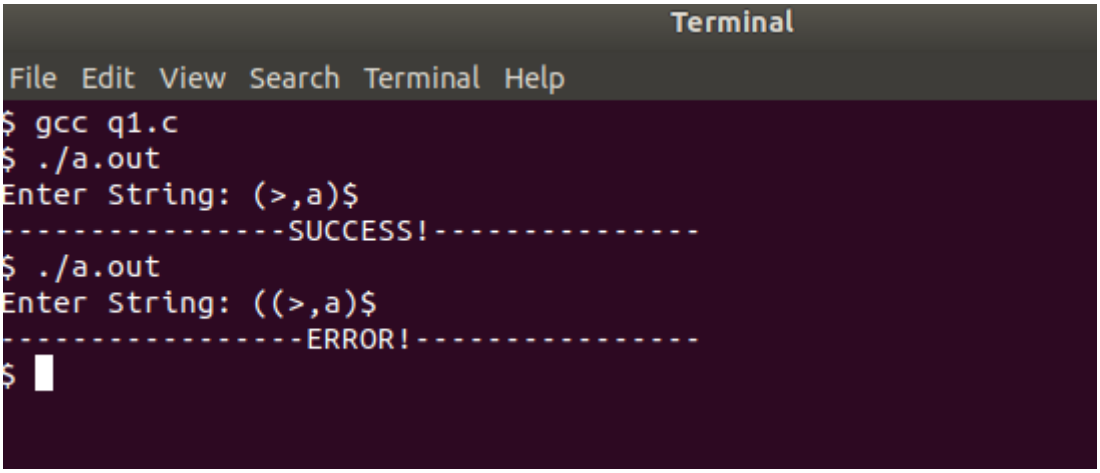
Roll no -58

Q1.

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

/*
S->a | > | ( T )
T->T, S|S

T -> ST'
T' -> ,ST'|e

*/

void S();
void T();
void Tprime();

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

void Tprime(){
        if(str[curr]==','){
                curr++;
                S();
                Tprime();
                return ;
        }

}
```

```
void T(){
	S();
	Tprime();
}


void S(){
	if(str[curr]=='a'){
		curr++;
		return ;
	}
	else if(str[curr]=='>'){
		curr++;
		return ;
	}
	else if(str[curr]=='('){
		curr++;
		T();
		if( str[curr]==')' ){
			curr++;
		}else{
			invalid();
		}
	}
	else{
		invalid();
	}
}


int main()
{
	printf("Enter String: ");
	scanf("%s", str);
	S();
	if(str[curr] == '$')
	valid();
	else
	// printf("%c\n", str[curr]);
	invalid();
}
```

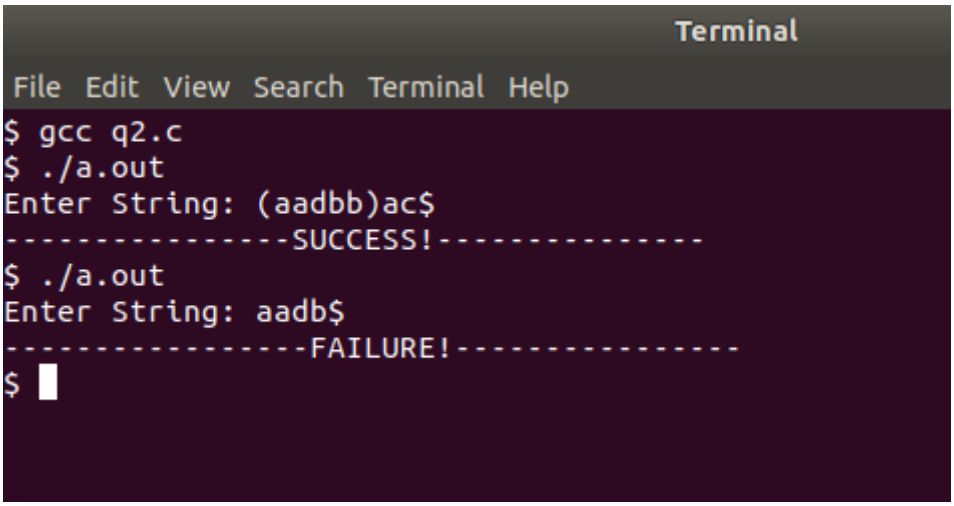


Q2.

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

/*
S->UVW
U ->(S) | aSb | d
V -> aV | e
W -> cW | ε

*/

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

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

void V(){
        if(str[curr]=='a'){
                curr++;
                V();
```

```
                return ;
        }
}

void W(){
        if(str[curr]=='c'){
                curr++;
                W();
                return ;
        }
}


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 ;
        }else{
                invalid();
        }
}


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


int main()
{
        printf("Enter String: ");
```

```
        scanf("%s", str);
        S();
        if(str[curr] == '$')
        valid();
        else
        // printf("%c\n", str[curr]);
        invalid();
}
```

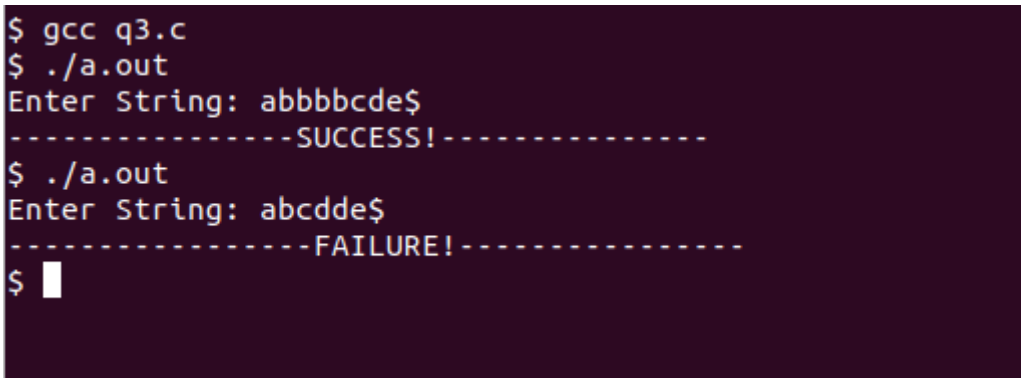


Q3.

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

/*
S->aAcBe
A->Ab|b
B->d


A -> bA'
A' -> bA'
*/
```

```
void S();
void A();
void Aprime();
void B();

void invalid()
{
printf("-----------------FAILURE!----------------\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();
	}
}

void B(){
	if(str[curr]=='d'){
		curr++;
		return ;
	}
}

void Aprime()
{
	if (str[curr]=='b')
	{
		curr++;
		Aprime();
		return;
	}
}
```

```
void A()
{
	if (str[curr]=='b')
	{
		curr++;
		A();
		return;
	}
}

int main()
{
	printf("Enter String: ");
	scanf("%s", str);
	S();
	if(str[curr] == '$')
	valid();
	else
	// printf("%c\n", str[curr]);
	invalid();
}
```



Q4.

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

/*

S ->(L) | a
L -> L,S | S
```

```
L -> SL'
L' -> ,SL'
*/


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

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



void S(){
	if(str[curr]=='('){
		curr++;
		L();
		if(str[curr]==')'){
			curr++;
			return;
		}else{
			invalid();
		}
	}
	else if(str[curr]=='a'){
		curr++;
		return ;
	}

	else{
		invalid();
	}
}

void L(){
	S();
	Lprime();
}

void Lprime()
{
	if(str[curr]==','){
		curr++;
```

```
                S();
                Lprime();
                return ;
        }
}

int main()
{
        printf("Enter String: ");
        scanf("%s", str);
        S();
        if(str[curr] == '$')
        valid();
        else
        // printf("%c\n", str[curr]);
        invalid();
}
```

```
$ gcc q4.c
$ ./a.out
Enter String: (a,a,a)$
----------------SUCCESS!--------------
$ ./a.out
Enter String: (a,a,aa)$
----------------FAILURE!---------------
$
```

//