**Code for Assignment 12:**

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#include<stdio.h>

#include<stdlib.h>

typedef struct GLL\_node

{

int header\_data\_node;

char data;

struct GLL\_node \*down;

struct GLL\_node \*right;

}GLL\_node;

void print\_GLL(GLL\_node \*start);

GLL\_node \* insert( char []) ;

void main()

{

GLL\_node \*start=NULL;

char index[50];

printf("\nenter book index to create GLL");

scanf("%s",index);

start=insert(index);

printf("\nbook index is:\n");

print\_GLL(start);

}

void print\_GLL(GLL\_node \*start)

{

if(start==NULL)

{

return;

}

else

{

if(start->header\_data\_node==1)

{

printf("(|");

print\_GLL(start->down);

printf("|)");

print\_GLL(start->right);

}

else if(start->header\_data\_node ==0)

{

printf("%c",start->data);

printf("->");

print\_GLL(start->right);

}}

}

GLL\_node \* insert( char index[])

{

static int i=0;

GLL\_node \*temp = NULL;

if(index[i]=='\0')

return NULL;

for(;index[i]==',' || index[i]==' ';i++);

temp =(GLL\_node\*)malloc(sizeof(GLL\_node));

temp->down=NULL;

temp->right=NULL;

if(index[i]=='(')

{

temp->header\_data\_node=1;

i++;

temp->down=insert(index);

if(index[i]!='\0')

temp->right=insert(index);

else

i=0;

}

else if(isalpha(index[i]))

{

temp->header\_data\_node=0;

temp->data=index[i++];

temp->right=insert(index);

}

else if(index[i]==')')

{

i++;

free(temp);

return NULL;

}

return temp;

}

**Output:**

****