NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPILER DESIGN LAB (KCS - 552)

Department of Computer Science and Engineering

Submitted by:

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Submitted to:

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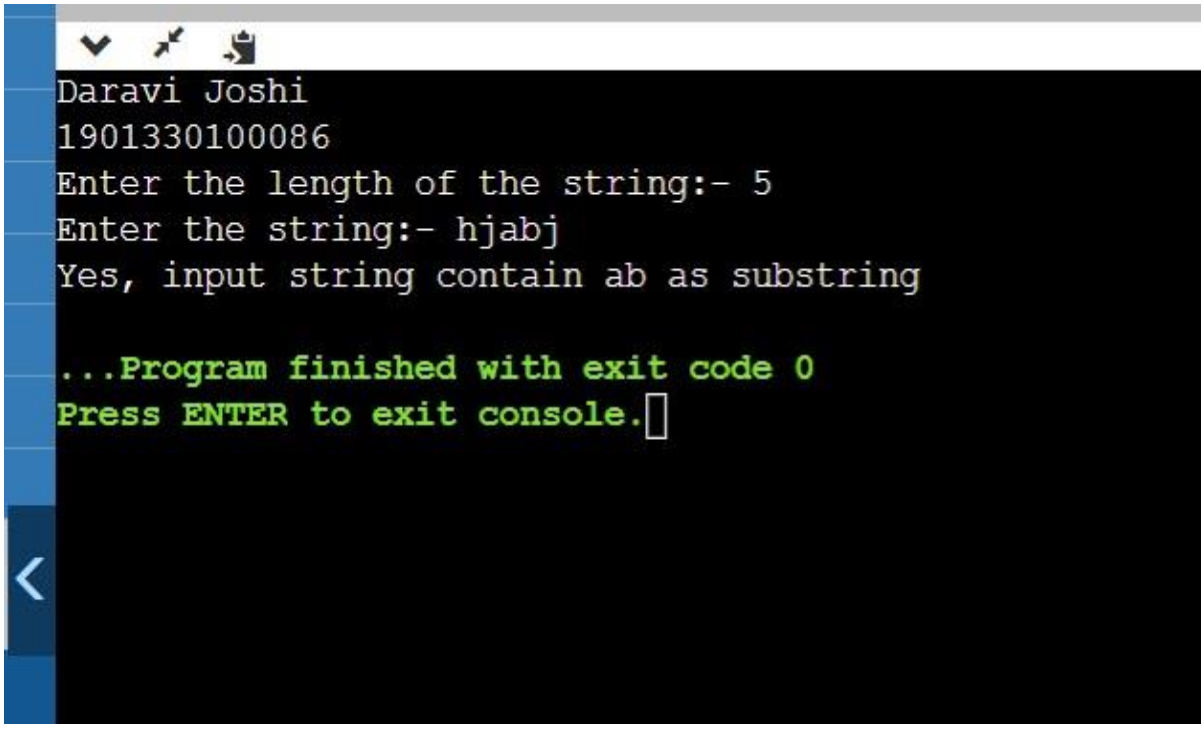
S.NO	Name of Practical	Date	Remark
	1.Write a program to check whether the string ‘ab’ substring or not.		
	2. Write a program to check whether the string starts with ‘ab’ or not.		
	3.Write a program to check whether string starts with ‘a’ and ends with ‘b’ or not.		
	4. Write a program to check whether the string is constant or not.		
	5.Write a program to check whether a string is keyword or not.		
	6). Write a program to check whether a string is identifier or not.		
	7). Write a program to check whether a string is a comment or not.		
	8).Write a program to construct recursive decent parser for the following grammar:-		
	9.Write a program to count spaces in string.		
	10: Write a program to find out identifiers, operators from a string.		
	11: Write a program to remove left factoring		
	12: Write a program to eliminate left recursion.		

Q1:- Wap to check whether the string contain ab as a substring or not.

CODE

```
#include<stdio.h>
#include<conio.h>
#include<string.h> void
main()
{
int n,i,j=0; char s[20];
printf("Daravi Joshi");
printf("\n1901330100086");
printf("\nEnter the length of the string:- ");
scanf("%d",&n);
printf("Enter the string:- "); for(i=0;i<=n;i++)
scanf("%c",&s[i]); for(i=0;i<=n;i++) if(s[i]=='a' &&
s[i+1]=='b') j++; if(j==1) printf("Yes, input string contain ab
as substring"); else printf("NO, input string does not
contain ab as substring"); getch();
}
```

Output



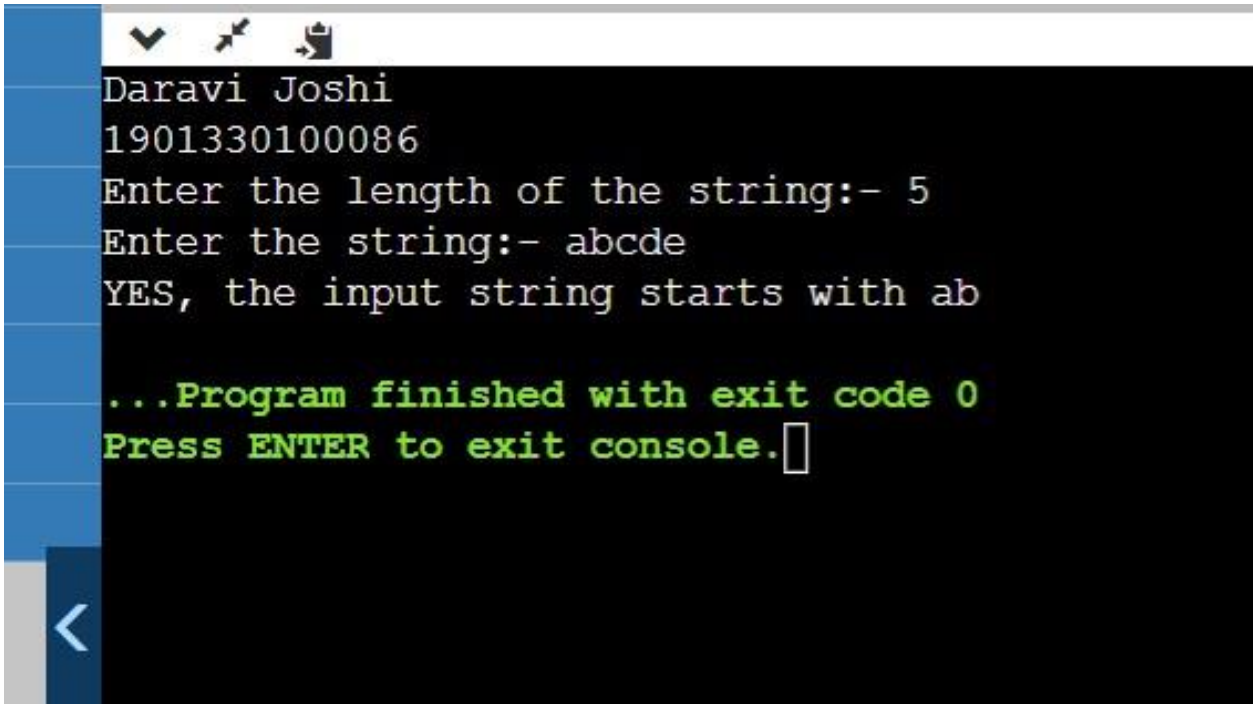
Q2:- Wap to check whether the given string start with ab or not .

CODE

```
#include<stdio.h>
#include<conio.h>
#include<string.h> void
main()
```

```
{
int n,i;
char s[20]; printf("Daravi
Joshi");
printf("\n1901330100086");
printf("\nEnter the length of the string:- ");
scanf("%d",&n);
printf("Enter the string:- "); for(i=0;i<=n;i++)
scanf("%c",&s[i]); if(s[1]=='a' && s[2]=='b')
printf("YES, the input string starts with ab");
else printf("NO, the input string not starts with
ab"); getch();
}
```

Output

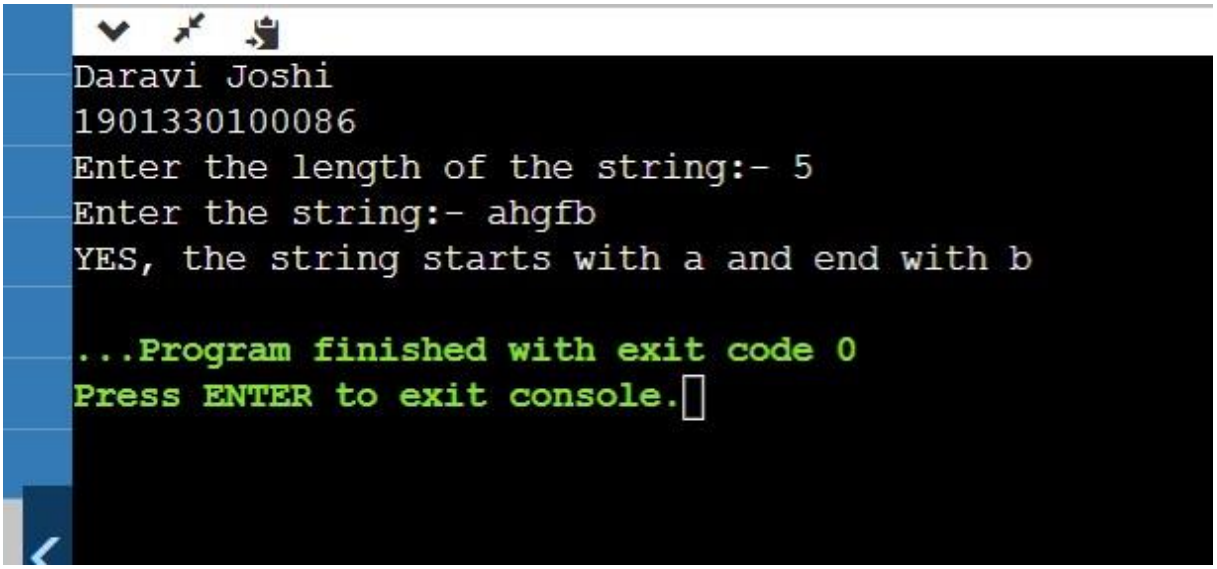


Q3:- Wap to check the string starts with 'a' and end with 'b'. **CODE**

```
#include<stdio.h>

#include<conio.h>

#include<string.h> void

main()
```

```
{
int n,i;
char s[20]; printf("Daravi
Joshi");
printf("\n1901330100086");
printf("\nEnter the length of the string:- ");
scanf("%d",&n);
printf("Enter the string:- "); for(i=0;i<=n;i++)
scanf("%c",&s[i]); if(s[1]=='a' && s[n]=='b')
printf("YES, the string starts with a and end with b");
else printf("NO"); getch();
}
```

OUTPUT

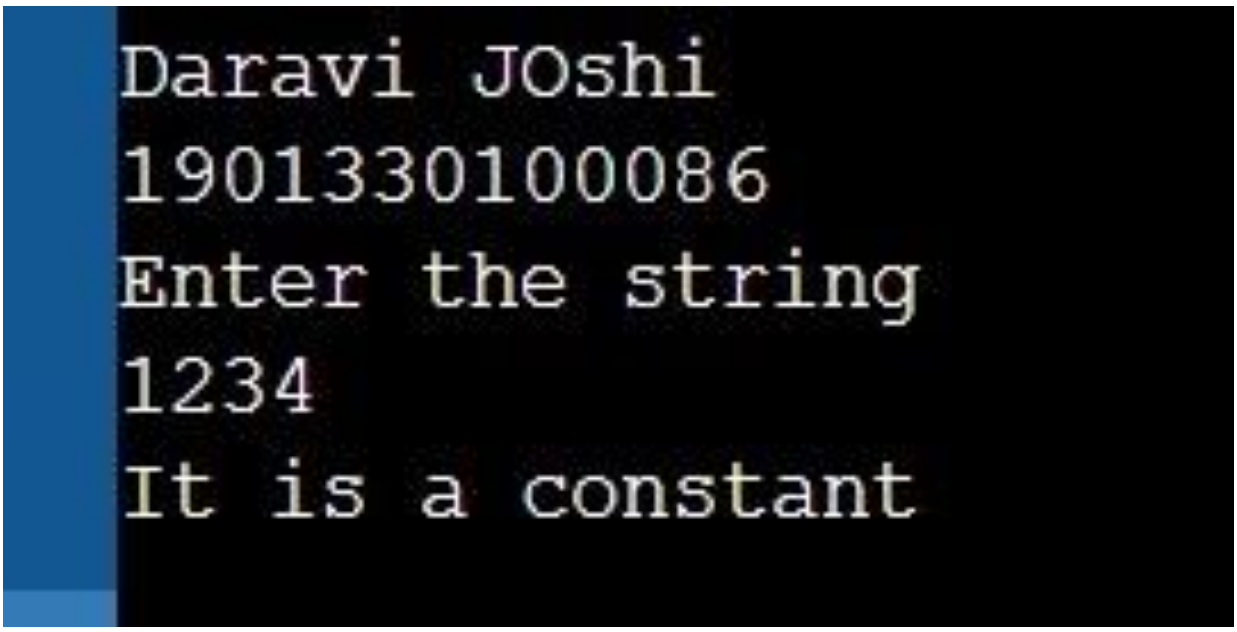


Q-4: Wap to check whether string is constant or not. **CODE**

```
#include<stdio.h>
#include<conio.h>
#include<string.h> #include<ctype.h> void
main(){ char str[10]; int isConstant=0, a=0;
printf("Daravi Joshi \n 1901330100086\n");
printf("Enter the string\n"); gets(str); a=0;
while(str[a]){
if(isdigit(str[a]))
```

```
{
isConstant= 1; break;
}
a++;
}
if(isConstant) printf("It is a constant"); else
printf("String does not contain a constant");
getch();
}
```

OUTPUT

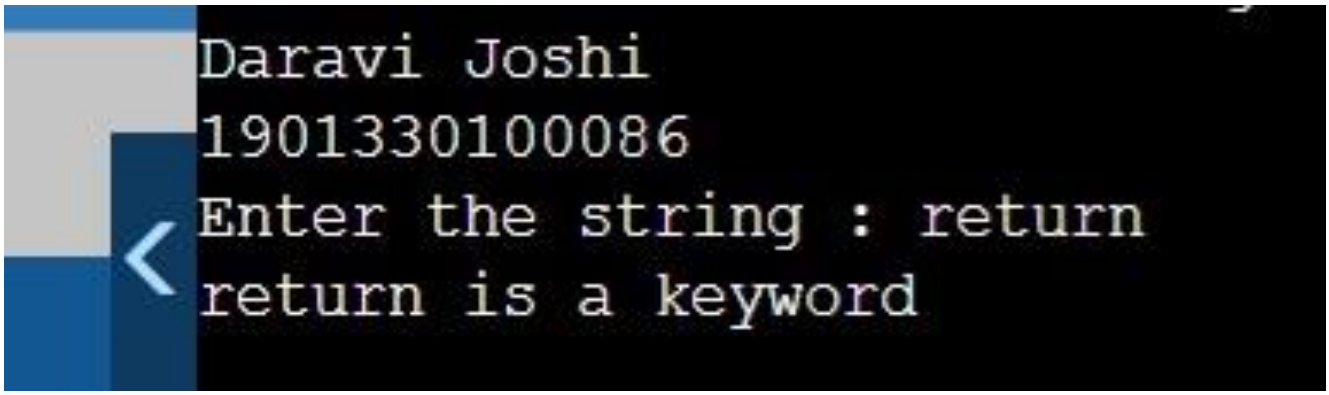


Q-5: Wap to check whether string is keyword or not. **CODE**

```
#include <stdio.h>
#include <string.h> int
main() {
char keyword[32][10]={
"auto","double","int","struct","break","else","long",
"switch","case","enum","register","typedef","char",
"extern","return","union","const","float","short",
"unsigned","continue","for","signed","void","default",
"goto","sizeof","voltile","do","if","static","while"
} ;
char str [10];
printf("Daravi Joshi\n1901330100086\nEnter the enter the string");
gets(str); int flag=0,i;
for(i = 0; i < 32; i++) {
if(strcmp(str,keyword[i])==0) { flag=1;
}
}
```

```
if(flag==1) printf("%s is a
keyword",str); else printf("%s is
not a keyword",str);
}
```

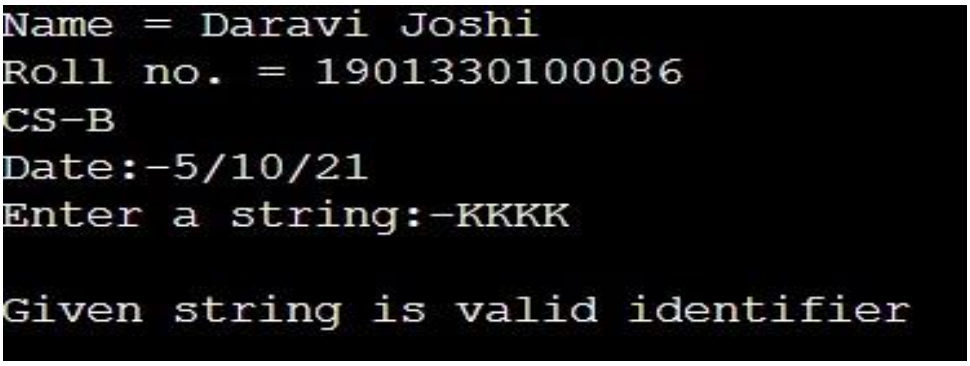
OUTPUT



6).Write a program to check whether a string is identifier or not.

```
#include<stdio.h> #include<string.h> void main(){
   char str[100],i;     int count=0;     int t=0;     printf("Name = Daravi
Joshi");     printf("\nRoll no. = 1901330100086");     printf("\nCS-B");
printf("\nDate:-5/10/21");     printf("\nEnter a string:-");     gets(str);
if(!((str[0]>='a' &&
str[0]<='z')||(str[0]>='A'&&str[0]<='Z')||(str[0]=='_')))   {
printf("\nGiven String is not valid identifer");        count=1;       t=1;
   }
   if(t==0){     for(i=1;i<strlen(str);i++){         if(!((str[i]>='a' &&
str[i]<='z')||(str[i]>='A'&&str[i]<='Z')||(str[i]>='0'&& str[i]<='9')||(str[i]=='_')))  {
printf("\nGiven string is not valid identifer");            count=1;            break;
       }
   }
   }
   if(count==0) {        printf("\nGiven
string is valid identifier");
   } }
```

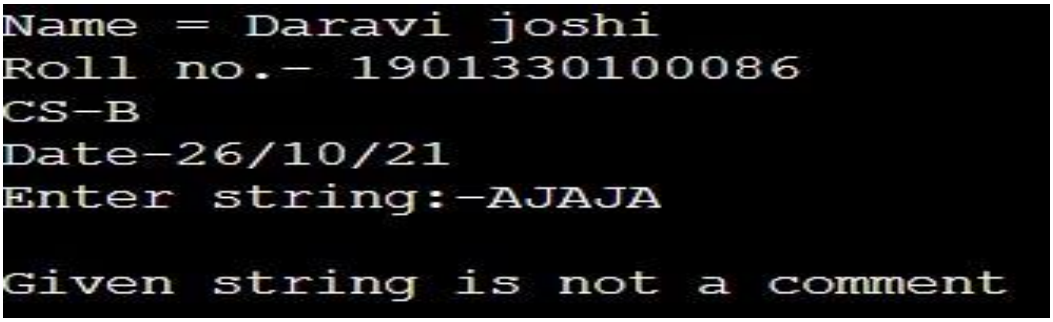
OUTPUT:-



7).Write a program to check whether a string is a comment or not.

```
#include<stdio.h> #include<string.h> void main()

{    char str[100];    printf("Name = Daravi joshi");    printf("\nRoll no.-

1901330100086 ");    printf("\nCS-B");    printf("\nDate-26/10/21");

printf("\nEnter string:-");    gets(str);    int n = strlen(str);

if((str[0]=='/'&&str[1]=='/')||((str[0]=='/' && str[1]=='*')&&(str[n-2]=='*'&&str[n-

1]=='/')))

  {

    printf("\nGiven string is a comment");

  }

else

  {

    printf("\nGiven string is not a
comment");

  }

}
```

OUTPUT:-



8).Write a program to construct recursive decent parser for the following grammar:-

E->TE'

E'->+TE'/@

T->FT'

T'->*FT'/@

F->(E)/ID

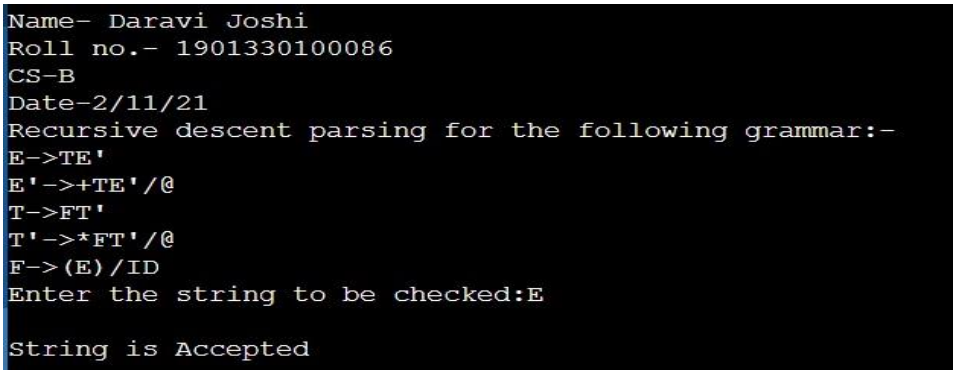
Where @->null character.

```
#include<stdio.h>
#include<string.
h>
#include<ctype.
h> char
input[10]; int
i,error; void E();
void T(); void
Eprime(); void
Tprime(); void
F();  void main()
{ i=0; error=0; printf("\nName- Daravi Joshi"); printf("\nRoll
no.- 1901330100086 "); printf("\nCS-B"); printf("\nDate-
2/11/21"); printf("\nRecursive descent parsing for the
following grammar:-");  printf("\nE->TE'\nE'->+TE'/@\nT-
>FT'\nT'->*FT'/@\nF->(E)/ID");  printf("\nEnter the string to
be checked:");  gets(input); E();
if(strlen(input)==i&&error==0)
{
   printf("\nString is Accepted");
}
else
{
printf("\nString is Rejected");
}
}
```

```
void E()
{
    T();
    Eprime();
}
void Eprime()
{
if(input[i]=='+')
    {
i++;
    T();
    Eprime();
    }
}
void T()
{
    F();
    Tprime();}
void Tprime()    {

if(input[i]=='*')
{    i++;    F();
Tprime();}}
void F()
{
if(isalnum(input[i]
)) i++; else
if(input[i]=='(')
```

```
{ i++; E();
if(input[i]==')
') i++; else
error=1;}
else error=1;
}
```

OUTPUT:-



9. Write a program to count spaces in string.

```
#include<stdio.h>
#include<conio.h>
#include<ctype.h>
#include<string.h>
void main()
{
char ch[10]; int flag,count=0,i;
printf("Daravi Joshi”);
printf("\nRoll no.-
1901330100086 "); printf("Enter
a string : "); gets(ch); for
(i=0;ch[i]!='\0';i++)
{
   if( ch[i]==' ') count++;
}
if(count>0) printf("String has spaces.\nNo. of
spaces are = %d",count);  else printf("Spaces are
not present");
}
```

OUTPUT:-

```
Daravi Joshi
Roll no.- 1901330100086 Enter a string : J A V A
String has spaces.
No. of spaces are = 3
```

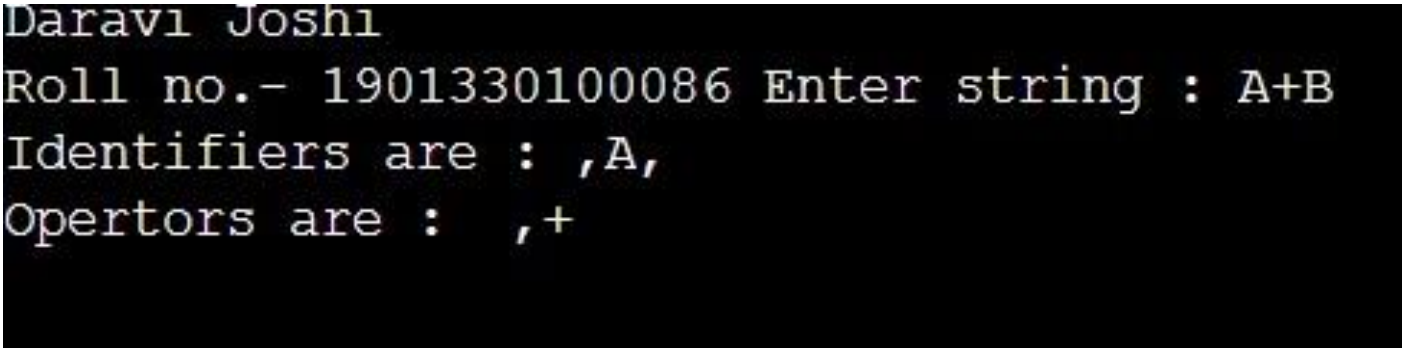
Write to

Program - 10: a program find out identifiers, operators from a string.

```
#include<stdio.h>
#include<conio.h>  #include<conio.h>
void main(){ int i=0,j=0,k=0; char
str[20],id[30],op[30];  printf("Daravi
Joshi"); printf("\nRoll no.-
1901330100086 ");  printf("Enter string
:"); gets(str);  while(str[i]!='\0')
{
   if(isalnum(str[i]))
{     id[j]=str[i];
j++;} else
{
   op[k]=str[i];
op[k+1]=','; id[j]=',';
j++;
k+=2;
}
i++;
} id[j-1]='\0'; op[k-1]='\0';
printf("Identifiers are : ");
puts(id); printf("Opertors
are : ");  puts(op);
}
```

OUTPUT:-

Write to



Program -11: a program remove left factoring

```
#include<stdio.h>  #include<string.h>  int main(){ char
gram[20],part1[20],part2[20],modifiedGram[20],newGram[20],tempGram[20]; int i,j=0,k=0,l=0, pos;
printf("Daravi Joshi"); printf("\nRoll no.- 1901330100086 ");  printf("Enter Production : A->");  gets(gram);
for(i=0;gram[i]!='|';i++,j++)  part1[j]=gram[i];  part1[j]='\0'; for(j=++i,i=0;gram[j]!='\0';j++,i++)
part2[i]=gram[j]; part2[i]='\0'; for(i=0;i<strlen(part1)||i<strlen(part2);i++){ if(part1[i]==part2[i]) {
modifiedGram[k]=part1[i];
   k++;
pos=i+1;
} }
for(i=pos,j=0;part1[i]!='\0';i++,j++){
newGram[j]=part1[i];
}
```

Write to

```
newGram[j++]='|';
for(i=pos;part2[i]!='\0';i++,j++){
newGram[j]=part2[i];
}
modifiedGram[k]='X';
modifiedGram[++k]='\0';
newGram[j]='\0'; printf("\n A->%s",modifiedGram);  printf("\n X->%s\n",newGram);
}
```

OUTPUT:-

Write to

Program -12: a program eliminate left recursion.

```
#include<stdio.h>
#include<string.h>
void main()
{
char
input[100],l[50],r[50],temp[10],tempprod[20],productions[25][50
];  int i=0,j=0,flag=0,consumed=0;  printf("Daravi Joshi");
printf("\nRoll no.- 1901330100086 "); printf("\nEnter the
productions: ");  scanf("%1s->%s",l,r); printf("%s",r);
while(sscanf(r+consumed,"%[^|]s",temp) == 1 && consumed <=
strlen(r)) {
   if(temp[0] == l[0]) { flag = 1;
sprintf(productions[i++],"%s-
>%s%s'\0",l,temp+1,l);
}
else sprintf(productions[i++],"%s'-
>%s%s'\0",l,temp,l);  consumed +=
strlen(temp)+1;
```

Write to

```
} if(flag == 1) { sprintf(productions[i++],"%s->?\0",l);
printf("\nThe productions after eliminating Left Recursion
are:\n");  for(j=0;j<i;j++) printf("%s\n",productions[j]);
}
else printf("The Given Grammar has no Left
Recursion");
}
```

OUTPUT:-