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# J. C. Bose University of Science and Technology

System Programming Files

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# System Programming File

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**Program 1 : WAP to check whether the string starting with “a” or not.**

```
#include<stdio.h>
#include<conio.h>
void main ()
{
   char str[20];
   clrscr();
   printf("enter the string\n");
   gets(str);
   if(str[0]=='a')
   {
      printf ("string is starting with a");
   }
   else
   {
      printf("string is not starting with a");
   }
   getch();
}
```

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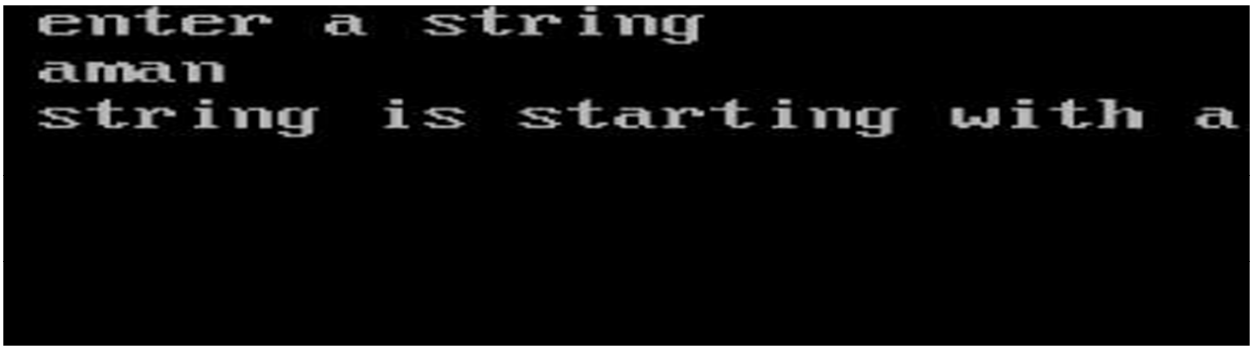

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## Program 2 : WAP to count number of occurrences of substring "aba" in a string.

```
#include<stdio.h>

#include<conio.h>

void main()

{

   char str[20];

   int i=0,count=0;

   clrscr();

   printf("enter the string\n");

   gets(str);

   while(str[i]!='\0')

   {

    if(str[i]=='a' && str[i+1]=='b' && str[i+2]=='a')

    {
```

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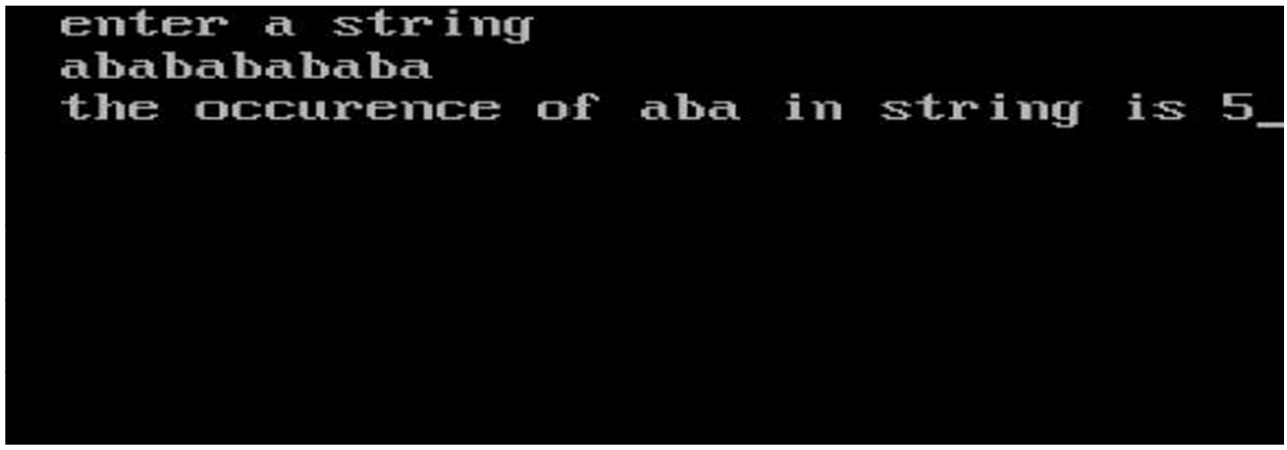
```
        count++;
     }
        i++;
   }
printf("The occurrence of aba in string %d",count);
getch();
}
```



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## Program 3 : WAP to check whether the entered string is ended with character “a” or not.

```
#include<stdio.h>

#include<conio.h>

#include<string.h>

void main()
```

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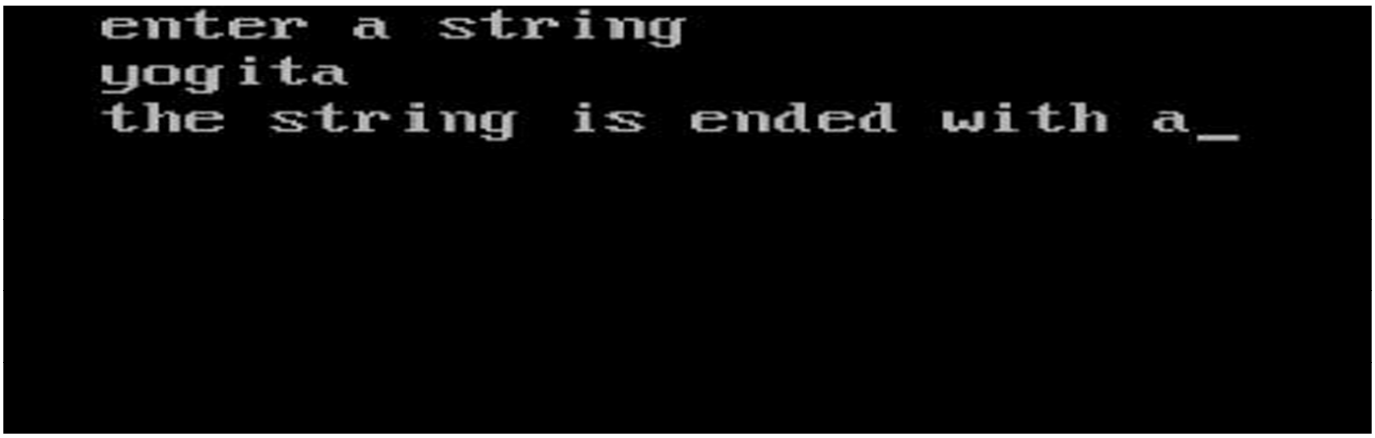
```
{
   char str[20];
   int n;
   printf("enter the string");
   gets(str);
   n=strlen(str);
   if(str[n-1]=='a')
   {
     printf("the string is ended with a");
   }
   else
   {
     printf("the string is not ended with a");
   }
    getch();
}
```



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## Program 4 : WAP to check whether the entered string contains character or not.

```
#include<stdio.h>
#include<conio.h>
void main()
{
   char str[20];
   int i=0,flag=0;
   clrscr();
   printf("enter the string");
   gets(str);
   while(str[i]!='\0')
   {
        if(str[i]=='z')
     {
        printf("this string contains 'z'");
        flag=1;
        break;
     }
        i++;
```

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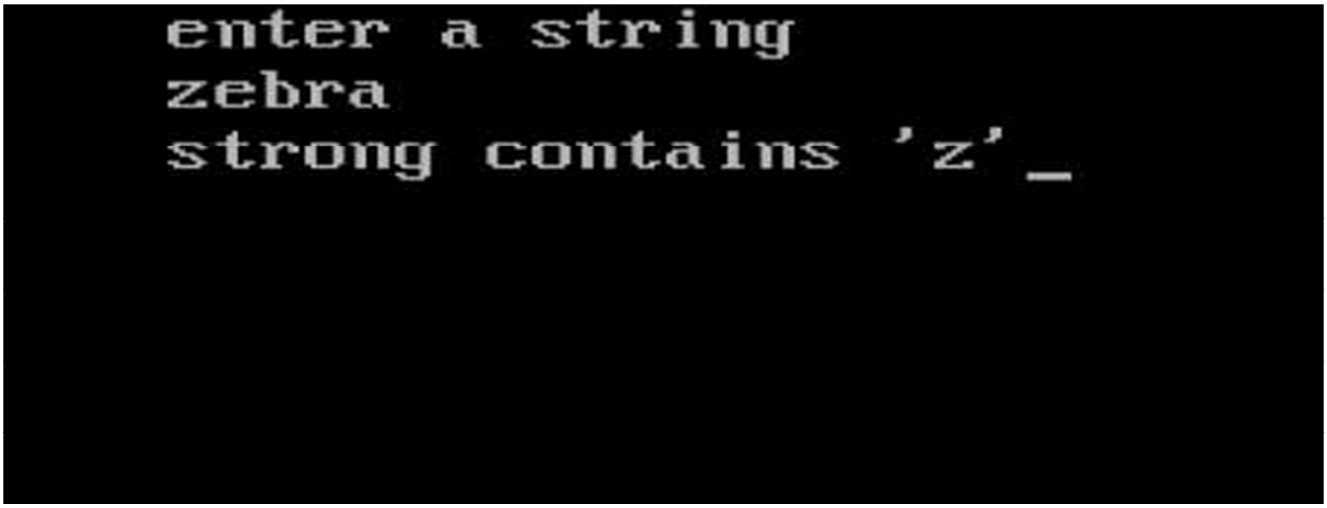
```
    }
    if(flag==0)
    {
        printf("this string does not contain ‘z’");
    }
        getch();
}
```



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## Program 5 : WAP to check whether a string is keyword or not

```
#include<stdio.h>

#include<conio.h>

void main ()

{

   char str[10][10]={ “goto” , ”case” , ”for” , ”if” , ”return” };
```

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```
    char str1[10];
    int flag=1,i;
    clrscr();
    printf(“enter a string”);
    gets(str1);
    for( i=0 ; i<10 ; i++)
   {
     If(strcmp(str1,str[i])==0)
     flag=0;
   }
  If(flag==0)
  {
    printf("string is keyword");
  }
 else
   {
   printf("string is not keyword");
    }
  getch();
}
```

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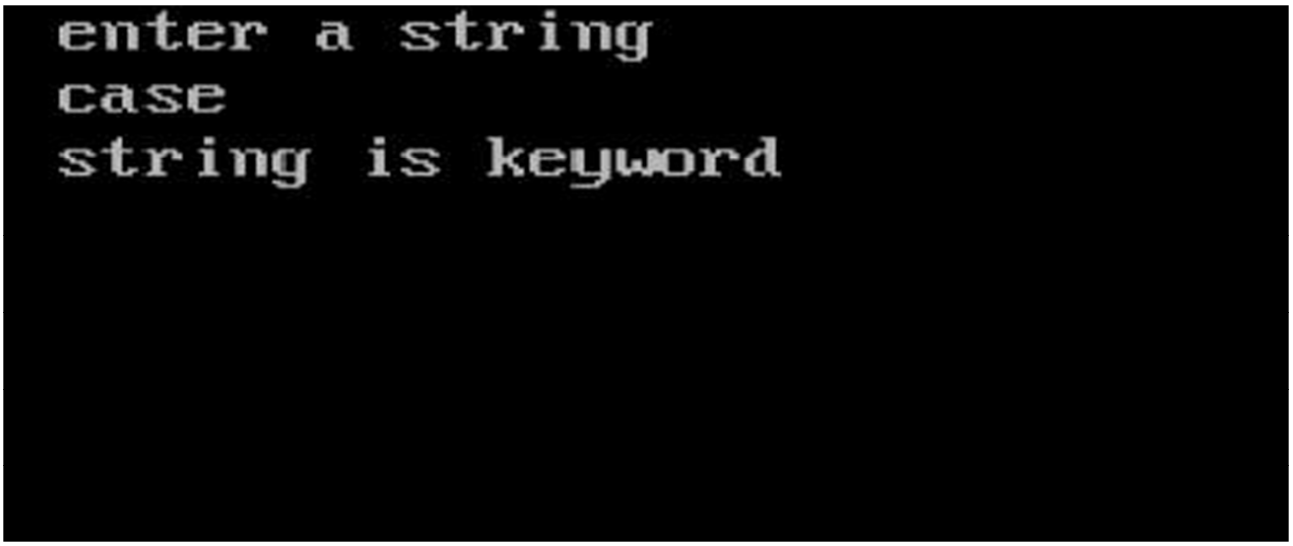

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## Program 6 : WAP to check whether the entered character contains alphabet or not.

```
#include<stdio.h>

#include<conio.h>

void main()

{

  char ch;

  printf("enter the character");

  scanf("%c",&ch);

  if(ch>='a' && ch<='z' || ch>='A' && ch<='Z')

   {

    printf("%c is a alphabet",ch);

   }

  else
```

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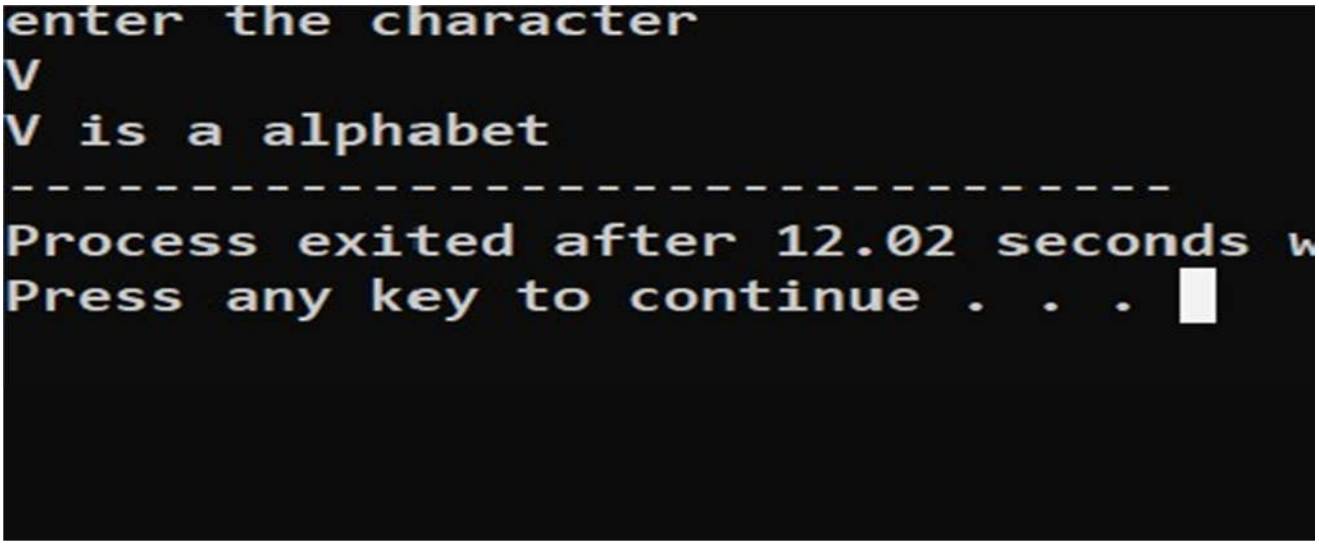
```
    {
     printf("%c is not alphabet",ch);
    }
    getch();
}
```



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## Program 7 : WAP to check whether the entered string contains constant or not.

```
#include<stdio.h>

#include<conio.h>

void main()

{

   char str[10];

   int i,count=0,len=0;
```

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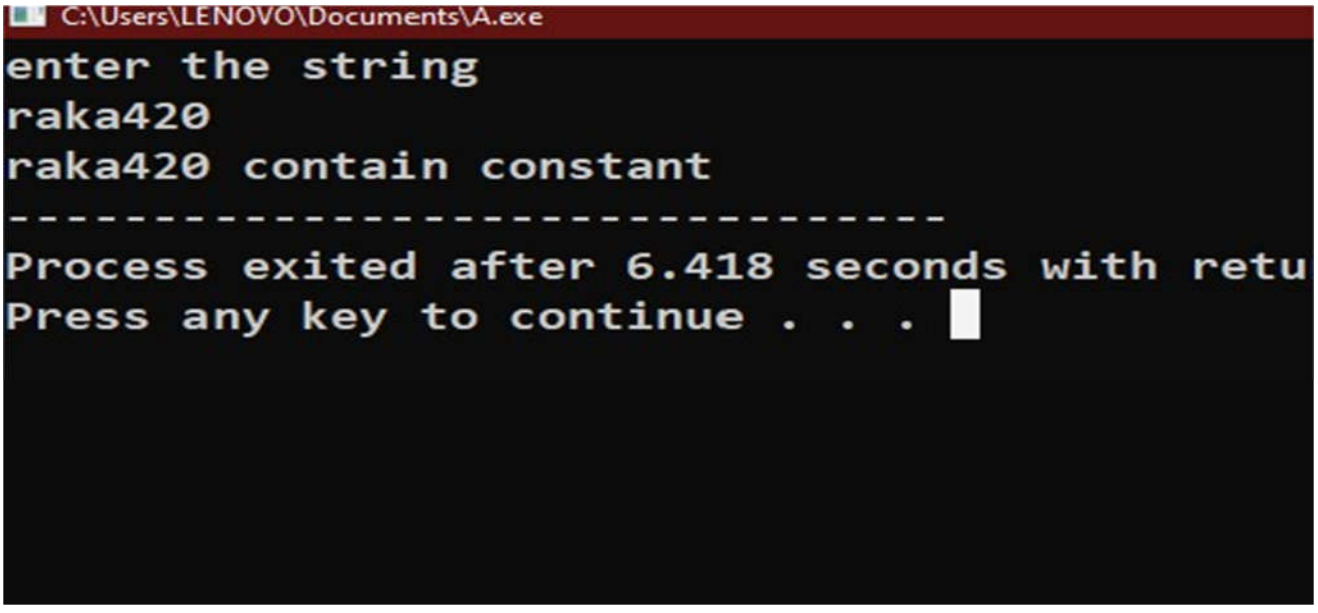
```
    printf("enter the string");
    gets(str);
    for(i=0;str[i]!='\0';i++)
    {
       if(str[i]>='0' && str[i]<='9')
       {
         count++;
    }}
   if(count!=0)
      printf("%s contain constant",str);
  else
      printf("%s doesnot contain constant",str);
   }
```



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## Program 8 : WAP to check whether the entered string is identifier or not.

```
#include<stdio.h>
#include<string.h>
void main()
{
   char a[20];
   int i=1,count=0;
   printf("enter the string in the array\n");
   gets(a);
   if(a[0]>='a' && a[0]<='z'|| a[0]>='A' && a[0]<='Z'|| a[0]=='_' || a[0]=='$')
   {
      count++;
      while(a[i]!='\0')
      {
        if(a[i]>='a' && a[i]<='z' || a[i]>='A' && a[i]<='Z' || a[i]>='0' && a[i]<='9' ||
         a[i]=='_' || a[i]=='$')
        {
           count++;
        }
           i++;
```

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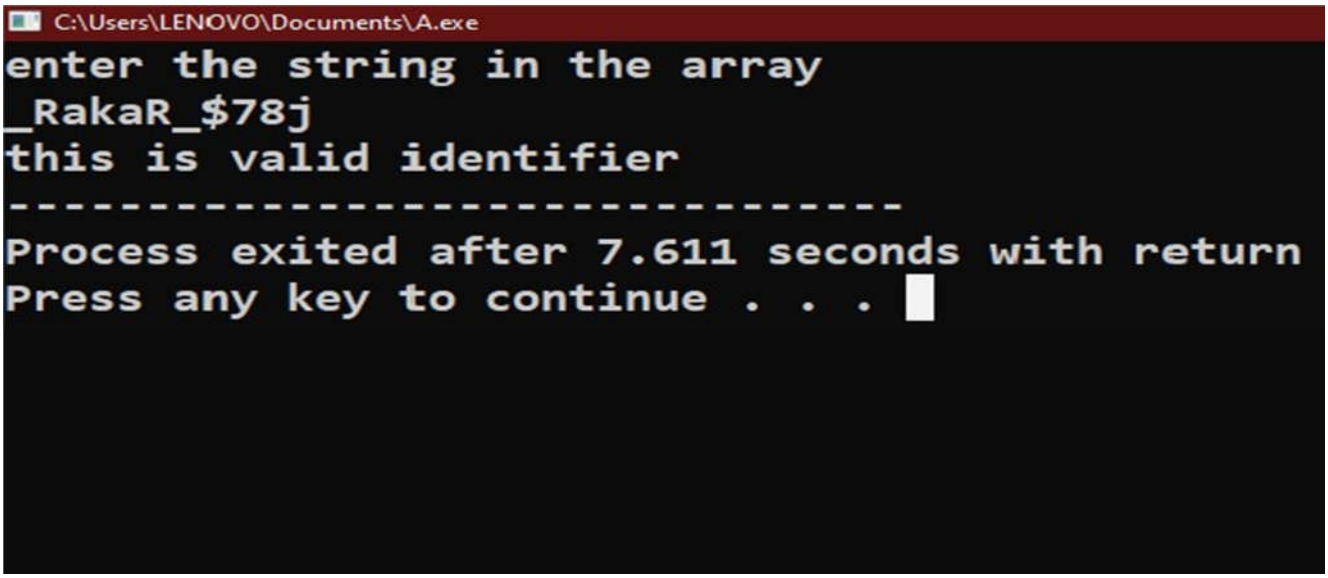
```
      }
 }
   if(count==strlen(a))
   {
         printf("%s is valid identifier",a);
   }
   else
   {
        printf("%s is not valid identifier",a);
   }
}
```



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## Program 9 : WAP to implement finite automata for the relational operator.

```
#include<stdio.h>

int main()

{

        char str[3];

        int flag=0;

        printf("\nEnter value: ");

        gets(str);

        if(str[1]==NULL || str[2]==NULL)

        {

                if(str[0]=='=' || str[0]=='!' || str[0]=='>' || str[0]=='<')

                {

                        if(str[1]==NULL)

                        printf("Valid");

                        else if(str[1]=='=')

                        printf("Valid");

                        else

                        printf("Invalid");

                }
```

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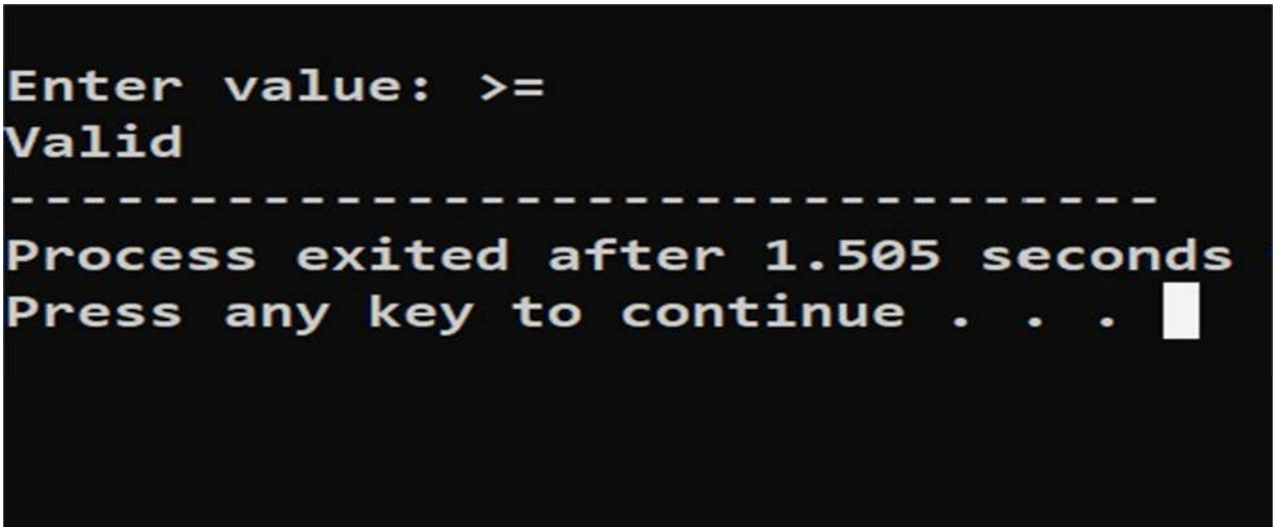
```
        else
            printf("Invalid");
    }
    else
        printf("\nInvalid");
}
```



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## Program 10 : WAP to find the prefix of a given string.

```
#include<stdio.h>

#include<string.h>

void main()

{

   char str[20];
```

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```
    int i=0,n;
    printf("enter the string\n");
    gets(str);
    n=strlen(str);
    while(n)
    {
       printf("%s\n",str);
       str[n-1]='\0';
       n--;
    }
}
```

```
enter the string
COMPUTER
COMPUTER
COMPUTE
COMPUT
COMPU
COMP
COM
CO
C
```

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## Program 11 : WAP to find the suffix of the given string.

```
#include<stdio.h>
#include<string.h>
void main()
{
   char str[20],*p;
   int n,i=0;
   printf("enter the string\n");
   scanf("%s",str);
   n=strlen(str);
   printf("epsilon");
   while(i<=n)
   {
    p=&str[n-i];
    if(str!=p-1)
    {
     printf("%s\n",p);
    }
    i++;
   }
}
```

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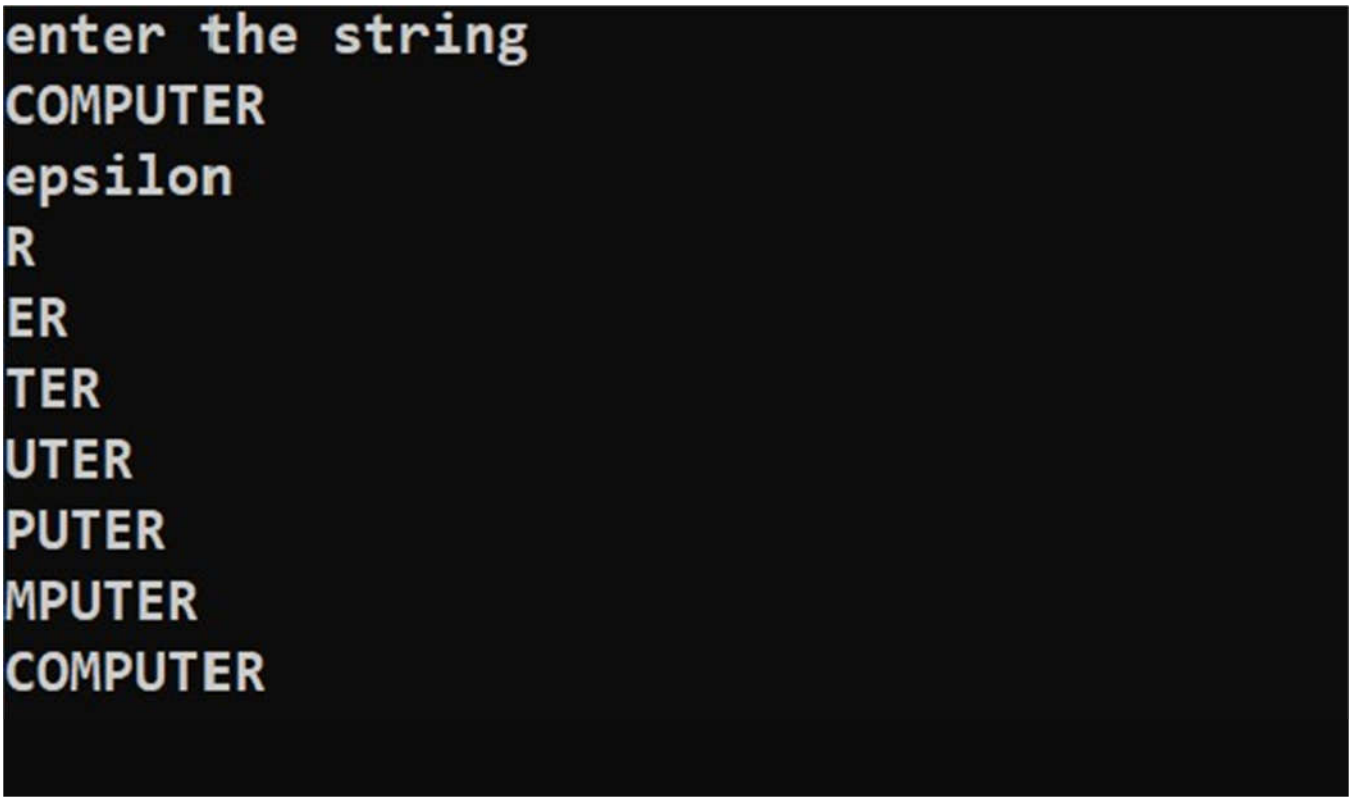

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## Program 12 : Wap to find the proper prefix of a given string.

```
#include<stdio.h>

#include<string.h>

void main()

{

   char str[20];

   int n,i;

   printf ("enter the string\n");
```

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```
    scanf("%s",str);
    n=strlen(str);
    i=0;
    while (n)
    {
       str[n-1]='\0';
       printf("%s\n",str);
       n--;
    }
}
```

```
enter the string
RAKESH
RAKES
RAKE
RAK
RA
R
```

**Program 13** : **WAP to find the proper suffix of given string.**

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```
#include<stdio.h>

#include<string.h>

void main()

 {

    char str[20],*p;

    int n,i;

    printf("enter the string\n");

    scanf("%s",str);

    n=strlen(str);

    i=0;

    while(i<=n)

    {

     p=&str[n-i];

     if(str!=p)

     {

      printf("%s\n",p);

     }

     i++;

    }

 }
```

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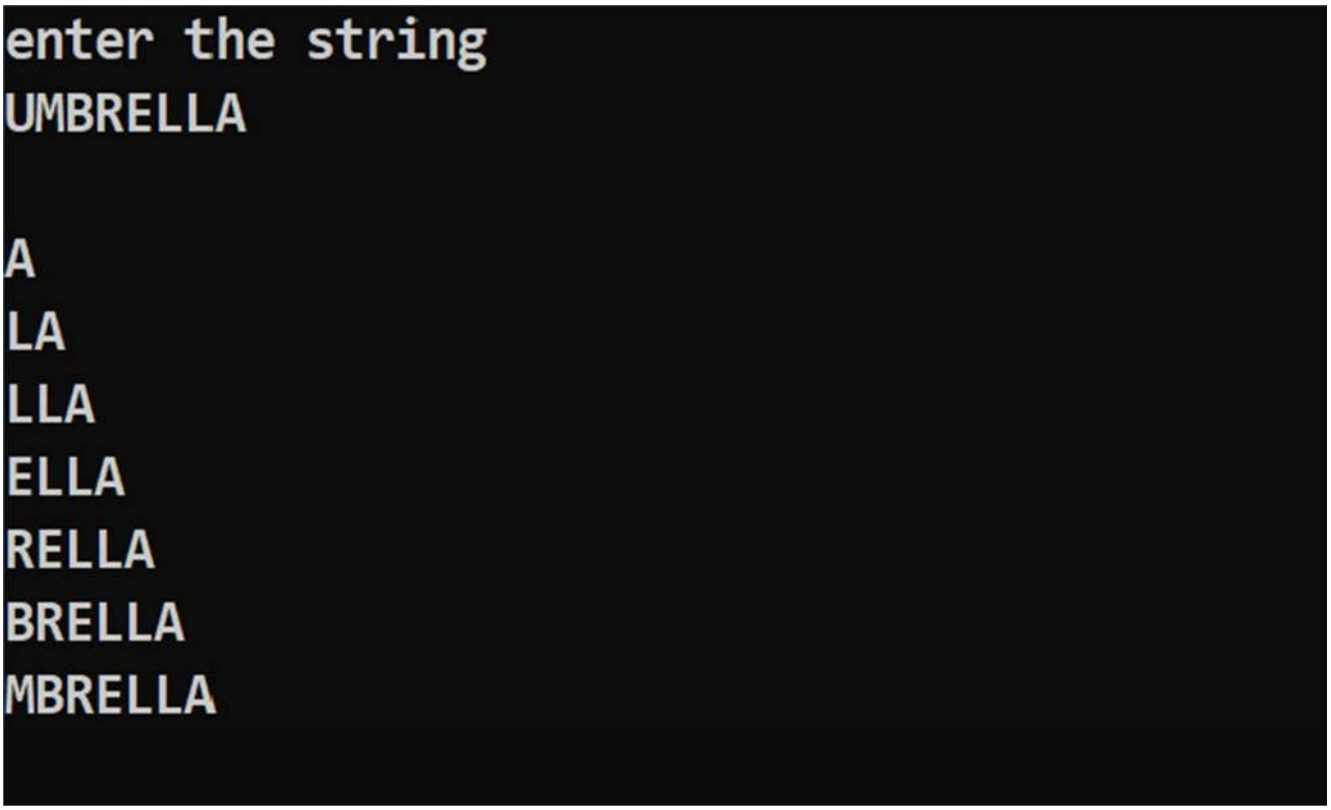

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## Program 14 : WAP to find all substrings of a given string.

```
#include<stdio.h>

#include<string.h>

int main()

{

        char ch[20];

        int i,len,t,j;

        printf("Enter string: ");

        gets(ch);

        len=strlen(ch);
```

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```
        t=j=len;
        while(len>0)
        {
                for(i=0;i<len;i++)
                {
                        printf("%c",ch[i]);
                }
                        printf("\n");
                        len--;
        }
        while(t>0)
        {
                for(i=t;i<j;i++)
                {
                        printf("%c",ch[i]);
                }
                        printf("\n");
                        t--;
        }
}
```

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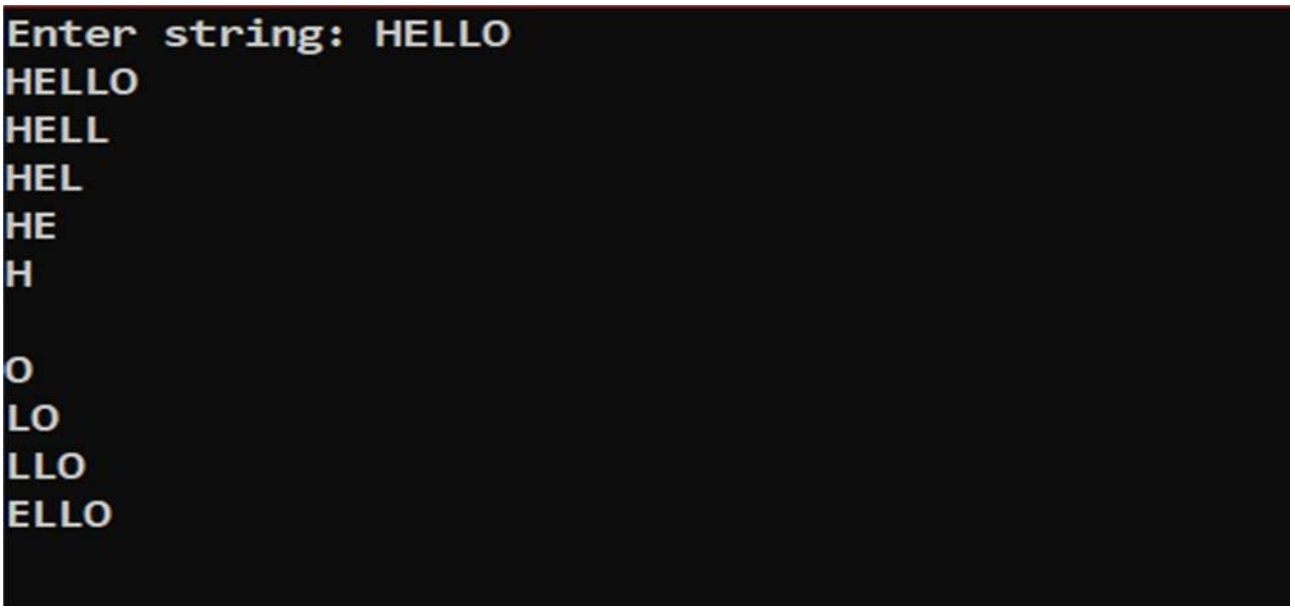

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## Program 15 : WAP to open a file in read mode.

```
#include<stdio.h>

void main ()

{

        FILE *fp;

        char ch;

        fp=fopen("C:\\MCA\\3rd-SEm\\CoRe_JaVa\\new.txt","r");

        ch=getc(fp);

        while(ch!=EOF)

        {

                printf("%c",ch);

                ch=getc(fp);
```

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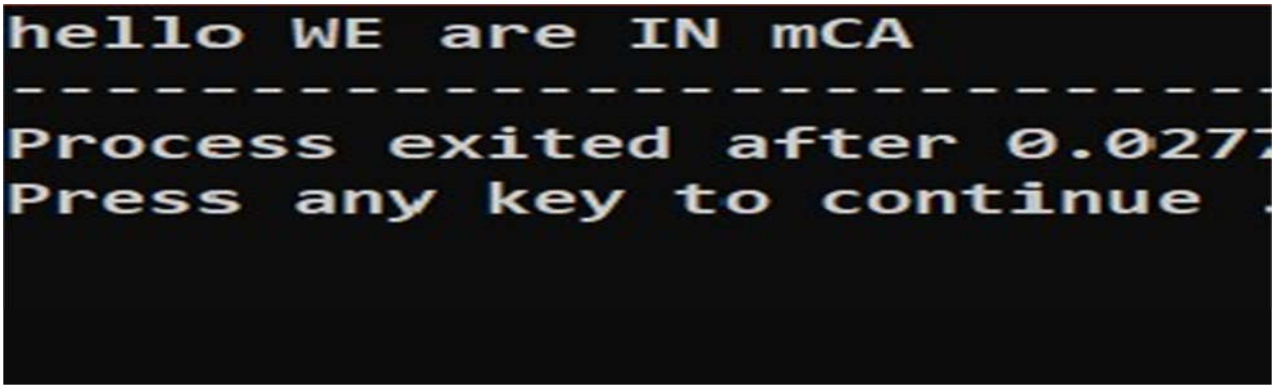
```
    }

        fclose(fp);

    }
```



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## Program 16 : WAP to write in a file.

```
#include<stdio.h>

void main()

{

        FILE *fp;

        char ch;

        fp=fopen("C:\\MCA\\3rd-SEm\\CoRe_JaVa\\new.txt","w");

        printf("Enter any character:");

        scanf("%c",&ch);

        fputc(ch,fp);

        fclose(fp);

    }
```

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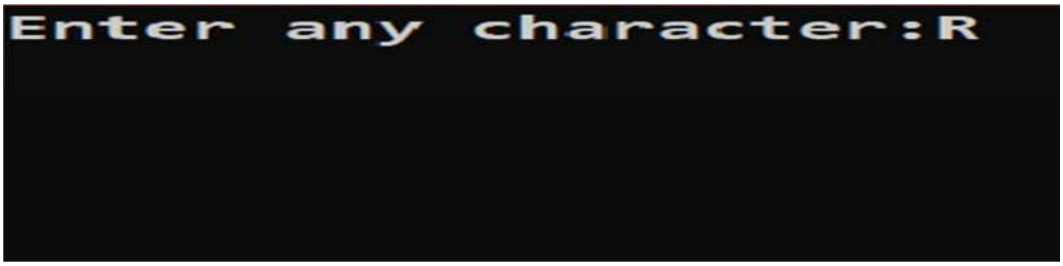


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## Program 17 : WAP to count no. of lines in a program.

```
#include<stdio.h>

int main()

{

        FILE *fp;

        int count=1;

        char ch;

        fp=fopen("C:\\MCA\\3rd-SEm\\CoRe_JaVa\\new.txt","r");

        printf("1. ");

        while((ch=getc(fp))!=EOF)

        {

                if(ch=='\n')
```

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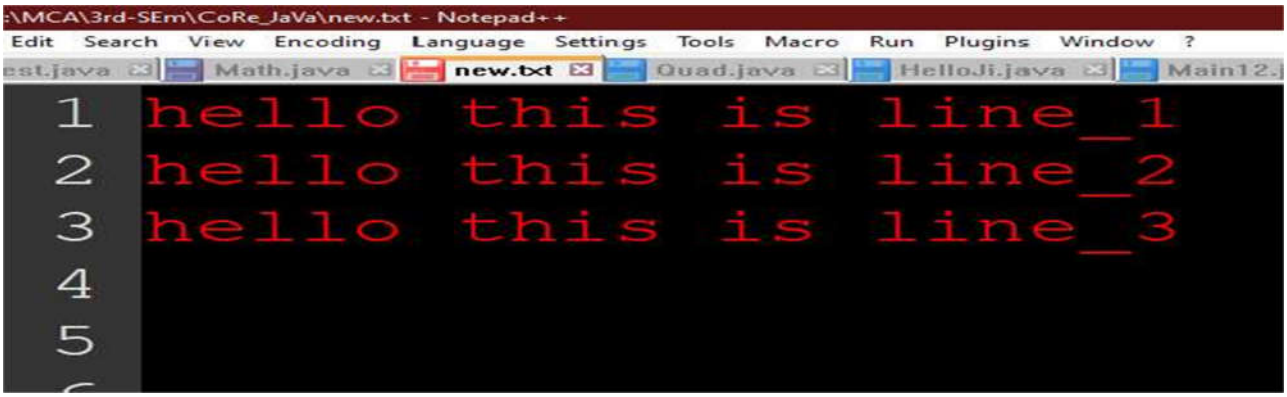
```
            {
                    count++;
                    printf("%c%d. ",ch,count);
            }
            else
            printf("%c",ch);
        }
        fclose(fp);
}
```

```
1. hello this is line_1
2. hello this is line_2
3. hello this is line_3
--------------------------------
Process exited after 0.2855 seconds with return v
Press any key to continue . . .
```



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**Program 18. WAP in C to check validity of binary expression**.

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
char s[30];
int i,l,flag=0;
clrscr();
printf("Enter expression  : ");
gets(s);

l=strlen(s);

for(i=0;i<l;i=i+2)
{//for loop
 if(s[i]>='a' && s[i]<='z' || s[i]>='0' && s[i]<='9')

    flag=1;
    else
    flag=0;


 }//end of for

  for(i=1;i<l;i=i+2)
  {
 if(s[i]=='+'|| s[i]=='-'|| s[i]=='/'|| s[i]=='%')
   flag=1;
   else
   flag=0;

   if(s[l-1]=='+' || s[l-1]=='-' ||s[l-1]=='*' ||s[l-1]=='/')
   flag=0;
```

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```
  }



 if(flag==1)
 printf("valid");
else
printf("invalid");

getch();
}
```

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**Program 19) WAP in C to implement transition diagram for a real number.**

```
#include<stdio.h>
#include<conio.h>
main()
{
char n[20];
int i,l,flag=0,flag1=0,flag2=0;
clrscr();
printf("Enter a number  : ");
gets(n);
l=strlen(n);


if(n[0]=='+' || n[0]=='-'|| n[0]>='0'&&n[0]<='9' )
flag1=1;
else
flag1=0;



for(i=1;i<l;i++)
{
if(n[i]>='0'&&n[i]<='9')
flag=1;

if(n[i]=='.' || n[i]=='e')
{
  if(n[i+1]>='0' && n[i+1]<='9')
  flag2=1;
  }
}
```

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```
if(flag==1 && flag1==1 && flag2==1)
printf("Entered number is real number");
else
printf("not real number");
getch();
}
```

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**Program 20) WAP in C to find unit production of a string.**

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
char null[20];
int j;
typedef struct productionrule{
char lhs[5],rhs[100];
}RULES;
int isnull(char ch,char null[])
 {
   int l;
for(l=0;l<j;l++)
{
if(ch==null[l])
return 1;

}
return 0;
}
void removefromnull(char ch,char null[])
{
int i,k;
 for(i=0;i<j;i++)
 {
 if(ch==null[i])
 {
 for(k=i+1;k<j;k++)
 null[k-1]=null[k];
 j--;
 }
 }
 }
 void main()
```

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```
 {
int n,k,i,l;
 RULES r[20];
 char null[20];

 clrscr();
 puts("\n\nRemoval of null Production");
 printf("Enter number of production:");
 scanf("\n%d",&n);
 j=0;
   for(i=0;i<n;i++)

 {
 printf("Rule %d\nLHS:",i+1);
 scanf("\n%s",r[i].lhs);
 printf("RHS:");
 scanf("%s",r[i].rhs);
 if(isnull(r[i].lhs[0],null))
 removefromnull(r[i].lhs[0],null);
 if(strcmp(r[i].rhs,"null")==0){
 null[j++]=r[i].lhs[0];
 }
 }
 printf("\n\n Result:\n\nLHS  RHS\n\n");
 for(k=0;k<i;k++)
 {
 if(!isnull(r[k].lhs[0],null))
 printf("%s\t",r[k].lhs);
 else continue;
 for(l=0;l<strlen(r[k].rhs);l++)
 if(isnull(r[k].rhs[l],null)==0)
 printf("%c",r[k].rhs[l]);
 puts(" ");
 }
```

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```
getch();
}
```

```
Removal of null Production
Enter number of production:3
Rule 1
LHS:A
RHS:B
Rule 2
LHS:B
RHS:C
Rule 3
LHS:C
RHS:cD


 Result:

LHS  RHS

A       B
B       C
C       cD
```

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**Program 21) WAP in C to find NULL production of a string**.

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
typedef struct productionrule
{
char lhs[2],rhs[100];
int isunit,isconsidered;
}RULES;
int isunitproduction(RULES r)
{
if(r.rhs[1]=='\0')
return 1;
return 0;
}
void main()
{
RULES r[20];
int i,j,k,n;
clrscr();

printf("\n\nEnter no.of production:");
scanf("%d",&n);
for(i=0;i<n;i++)
    {
    printf("Rules %d\n\n LHS:",i+1);
    scanf("%s",r[i].lhs);
    printf("RHS:");
    scanf("%s",r[i].rhs);
  if(isunitproduction(r[i]))
  r[i].isunit=1;
  else
  r[i].isunit=0;
  r[i].isconsidered=0;
```

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```
 }


 for(i=0;i<n;i++)
 {
 if((r[i].isunit==1 )&& (r[i].isconsidered==0))
 {
 RULES ru;
 char next[2];
 strcpy(ru.lhs,r[i].lhs);
 strcpy(next,r[i].rhs);
 for(j=i+1;j<n;j++)
 {
 if(strcmp(next,r[j].lhs)==0)
 {
 strcpy(next,r[j].rhs);
 r[j].isconsidered=1;
 }
 }
 strcpy(ru.rhs,next);
 ru.isunit=0;
 r[n++]=ru;
 }
 }
 printf("\n\n Result:\nLHS      RHS\n\n");
 for(k=0;k<n;k++)

 {
 if(r[k].isunit==0)
 printf("%s \t %s\n",r[k].lhs,r[k].rhs);
 }
 getch();
 }
```

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