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CS7B – Roll No :31

Question 2

Write program to find Simulate First and Follow of any given grammar.

Program :

```c
#include <stdio.h>
#include <math.h>
#include <string.h>
#include <ctype.h>
#include <stdlib.h>
int n, m = 0, p, i = 0, j = 0;
char a[10][10], f[10];
void follow(char c);
void first(char c);
int main()
{

    int i, z;
    char c, ch;
    //clrscr();
    printf("Enter the no of productions:\n");
    scanf("%d", &n);
    printf("Enter the productions:\n");
    for (i = 0; i < n; i++)
        scanf("%s%c", a[i], &ch);
    do
    {
        m = 0;
        printf("Enter the elemets whose fisrt & follow is to be
found:");
        scanf("%c", &c);
        first(c);
        printf("First(%c)={", c);
        for (i = 0; i < m; i++)
            printf("%c", f[i]);
        printf("}\n");
        strcpy(f, " ");
        //flushall();
        m = 0;
        follow(c);
        printf("Follow(%c)={", c);
        for (i = 0; i < m; i++)
            printf("%c", f[i]);
        printf("}\n");
        printf("Continue(0/1)?");
        scanf("%d%c", &z, &ch);
    } while (z == 1);
    return (0);
}
void first(char c)

{
    int k;
```

```c
        if (!isupper(c))
            f[m++] = c;
        for (k = 0; k < n; k++)
        {
            if (a[k][0] == c)
            {
                if (a[k][2] == '$')
                    follow(a[k][0]);
                else if (islower(a[k][2]))
                    f[m++] = a[k][2];
                else
                    first(a[k][2]);
            }
        }
}
void follow(char c)
{
    if (a[0][0] == c)
        f[m++] = '$';
    for (i = 0; i < n; i++)
    {
        for (j = 2; j < strlen(a[i]); j++)
        {
            if (a[i][j] == c)
            {
                if (a[i][j + 1] != '\0')
                    first(a[i][j + 1]);
                if (a[i][j + 1] == '\0' && c != a[i][0])
                    follow(a[i][0]);
            }
        }
    }
}
```

Output:

```
mec@cl1-1-1:~/CS7B$ gcc pg2.c
mec@cl1-1-1:~/CS7B$ ./a.out
Enter the no of productions:
3
Enter the productions:
A=abc
A=def
A=ghi
Enter the elemets whose fisrt & follow is to be found:A
First(A)={adg}
Follow(A)={$}
Continue(0/1)?0
mec@cl1-1-1:~/CS7B$
mec@cl1-1-1:~/CS7B$ ./a.out
Enter the no of productions:
3
Enter the productions:
B->AB
A->a
B->b
Enter the elemets whose fisrt & follow is to be found:A
First(A)={>}
Follow(A)={>>}
Continue(0/1)?1
Enter the elemets whose fisrt & follow is to be found:B
First(B)={>>}
Follow(B)={$}
Continue(0/1)?
```