Program :

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import java.io.*;

public class FirstFollow {
    static char ntermnl[], termnl[];
    static int ntlen, tlen;
    static String grmr[][], fst[], flw[];

    public static void main(String args[]) throws IOException {
        String nt, t;
        int i, j, n;
        BufferedReader br = new BufferedReader(new
InputStreamReader(System.in));
        System.out.println("Enter the non-terminals");
        nt = br.readLine();
        ntlen = nt.length();
        ntermnl = new char[ntlen];
        ntermnl = nt.toCharArray();
        System.out.println("Enter the terminals");
        t = br.readLine();
        tlen = t.length();
        termnl = new char[tlen];
        termnl = t.toCharArray();
        System.out.println("Specify the grammar(Enter 9 for epsilon
production)");
        grmr = new String[ntlen][];
        for (i = 0; i < ntlen; i++) {
            System.out.println("Enter the number of productions for " +
ntermnl[i]);
            n = Integer.parseInt(br.readLine());
            grmr[i] = new String[n];
            System.out.println("Enter the productions");
            for (j = 0; j < n; j++)
                grmr[i][j] = br.readLine();
        }
        fst = new String[ntlen];
        for (i = 0; i < ntlen; i++)
            fst[i] = first(i);
        System.out.println("First Set");
        for (i = 0; i < ntlen; i++)
            System.out.println(removeDuplicates(fst[i]));
        flw = new String[ntlen];
        for (i = 0; i < ntlen; i++)
            flw[i] = follow(i);
        System.out.println("Follow Set");
        for (i = 0; i < ntlen; i++)
            System.out.println(removeDuplicates(flw[i]));
    }

    static String first(int i) {
        int j, k, l = 0, found = 0;
        String temp = "", str = "";
        for (j = 0; j < grmr[i].length; j++)
        {
            for (k = 0; k < grmr[i][j].length(); k++, found = 0)
            {
                for (l = 0; l < ntlen; l++)
                {
                    if (grmr[i][j].charAt(k) == ntermnl[l])
                    {
                        str = first(l);
                        if (!(str.length() == 1
                                && str.charAt(0) == '9'))
                            temp = temp + str;
                        found = 1;
                        break;
                    }
                }
                if (found == 1) {
                    if (str.contains("9"))
                        continue;
                } else
                    temp = temp + grmr[i][j].charAt(k);
                break;
            }
        }
        return temp;
    }

    static String follow(int i) {
        char pro[], chr[];
        String temp = "";
        int j, k, l, m, n, found = 0;
        if (i == 0)
        temp = "$";
    for (j = 0; j < ntlen; j++) {
        for (k = 0; k < grmr[j].length; k++){
            pro = new char[grmr[j][k].length()];
            pro = grmr[j][k].toCharArray();
            for (l = 0; l < pro.length; l++){
                if (pro[l] == ntermnl[i]){
                    if (l == pro.length - 1){
                        if (j < i)
                            temp = temp + flw[j];
                    } else {
                        for (m = 0; m < ntlen; m++) {
                            if (pro[l + 1] == ntermnl[m])
                            {
                                chr = new char[fst[m].length()];
                                chr = fst[m].toCharArray();
                                for (n = 0; n < chr.length; n++) {
                                    if (chr[n] == '9')
                                    {
                                        if (l + 1 == pro.length - 1)
                                            temp = temp + follow(j);
                                        else
                                            temp = temp + follow(m);
                                    } else
                                        temp = temp + chr[n];
                                }
                                found = 1;
                            }
                        }
                        if (found != 1)
                            temp = temp+ pro[l + 1];
                    }
                }
            }
        }
    }
    return temp;
}
static String removeDuplicates(String str) {
    int i;
    char ch;
    boolean seen[] = new boolean[256];
```

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        StringBuilder sb = new StringBuilder(seen.length);
        for (i = 0; i < str.length(); i++) {
            ch = str.charAt(i);
            if (!seen[ch]) {
                seen[ch] = true;
                sb.append(ch);
            }
        }
        return sb.toString();
    }
}
```
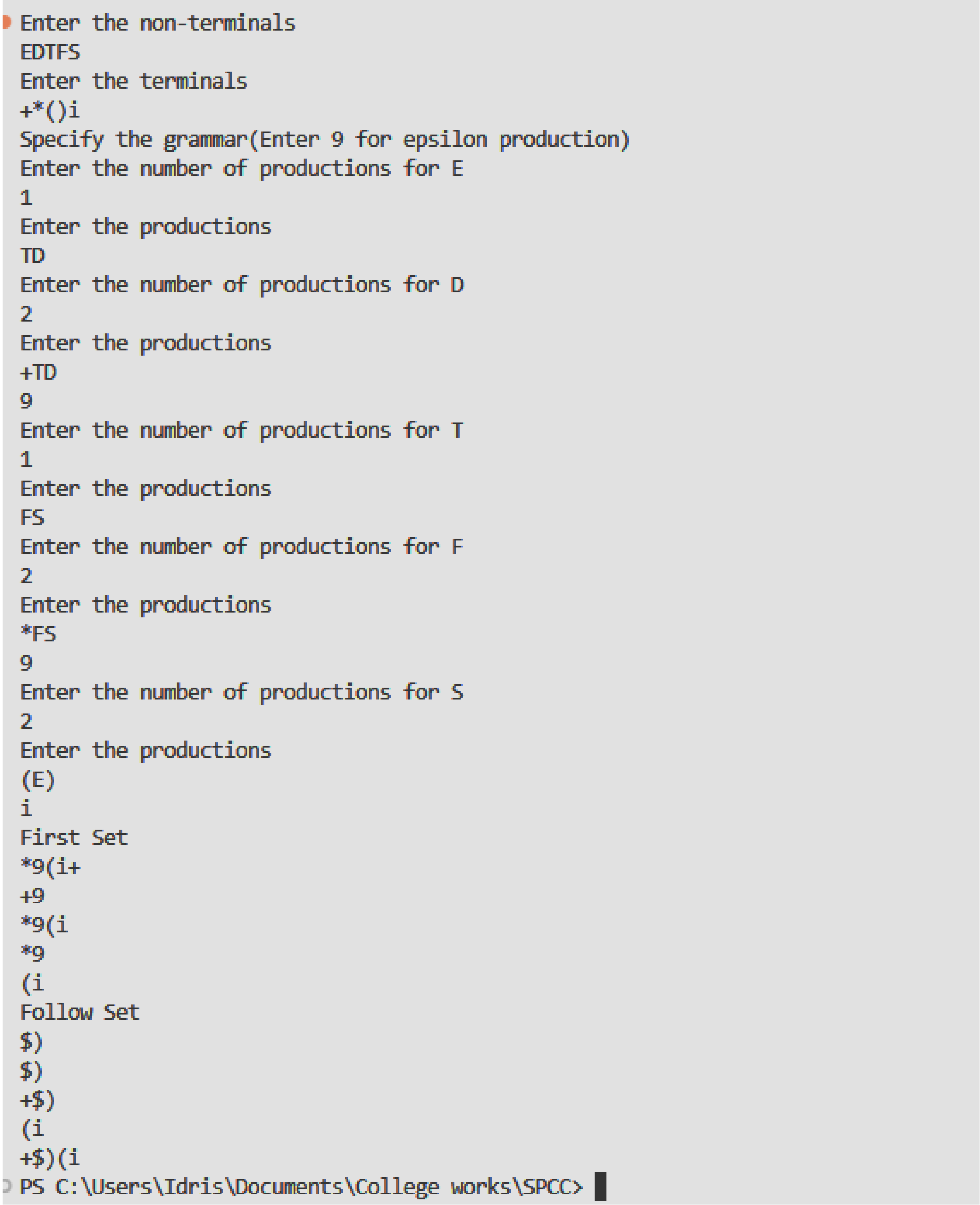

Output:



```
Enter the non-terminals
EDTFS
Enter the terminals
+*()i
Specify the grammar(Enter 9 for epsilon production)
Enter the number of productions for E
1
Enter the productions
TD
Enter the number of productions for D
2
Enter the productions
+TD
9
Enter the number of productions for T
1
Enter the productions
FS
Enter the number of productions for F
2
Enter the productions
*FS
9
Enter the number of productions for S
2
Enter the productions
(E)
i
First Set
*9(i+
+9
*9(i
*9
(i
Follow Set
$)
$)
+$)
(i
+$)(i
PS C:\Users\Idris\Documents\College works\SPCC>
```