

System Software

Lab Assignment – 3

U20CS110

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Ques: 1. Write a C program to recognize strings under 'a*', 'a*b+'.

Ans:

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
#include <stdlib.h>
void main()
{
    char s[20], c;
    int state = 0, i = 0;
    printf("\n Enter a string:");
    gets(s);
    while (s[i] != '\0')
    {
        switch (state)
        {
            case 0:
                c = s[i++];
                if (c == 'a')
                    state = 1;
                else if (c == 'b')
                    state = 2;
                else
                    state = 6;
                break;
            case 1:
                c = s[i++];
                if (c == 'a')
                    state = 3;
                else if (c == 'b')
                    state = 4;
```

```
    else
        state = 6;
    break;
case 2:
    c = s[i++];
    if (c == 'a')
        state = 6;
    else if (c == 'b')
        state = 2;
    else
        state = 6;
    break;
case 3:
    c = s[i++];
    if (c == 'a')
        state = 3;
    else if (c == 'b')
        state = 2;
    else
        state = 6;
    break;
case 4:
    c = s[i++];
    if (c == 'a')
        state = 6;
    else if (c == 'b')
        state = 5;
    else
        state = 6;
    break;
case 5:
    c = s[i++];
    if (c == 'a')
        state = 6;
    else if (c == 'b')
        state = 2;
    else
        state = 6;
    break;
```

```

    case 6:
        printf("\n %s is not recognised.", s);
        exit(0);
    }
}
if (state == 1)
    printf("\n %s is accepted under rule 'a*'", s);
else if ((state == 2) || (state == 4))
    printf("\n %s is accepted under rule 'a*b+', s);
else if (state == 5)
    printf("\n %s is accepted under rule 'abb'", s);
getch();
}

```

Output:

```

PROBLEMS OUTPUT TERMINAL COMMENTS DEBUG CONSOLE
PS C:\Users\daddu\Desktop\cp> cd "c:\Users\daddu\Desktop\cp\System_software\assign3\" ; if ($?) { gcc 1.c -o 1 } ; if ($?) { .\1 }

Enter a string:abbbb

abbbb is accepted under rule 'a*b+'
PS C:\Users\daddu\Desktop\cp\System_software\assign3> cd "c:\Users\daddu\Desktop\cp\System_software\assign3\" ; if ($?) { gcc 1.c -o 1 } ; if ($?) { .\1 }

Enter a string:bbaaa

bbaaa is not recognised.
PS C:\Users\daddu\Desktop\cp\System_software\assign3> cd "c:\Users\daddu\Desktop\cp\System_software\assign3\" ; if ($?) { gcc 1.c -o 1 } ; if ($?) { .\1 }

Enter a string:aaab

aaab is accepted under rule 'a*b+'
PS C:\Users\daddu\Desktop\cp\System_software\assign3> cd "c:\Users\daddu\Desktop\cp\System_software\assign3\" ; if ($?) { gcc 1.c -o 1 } ; if ($?) { .\1 }

Enter a string:a

a is accepted under rule 'a*'
PS C:\Users\daddu\Desktop\cp\System_software\assign3>

```

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