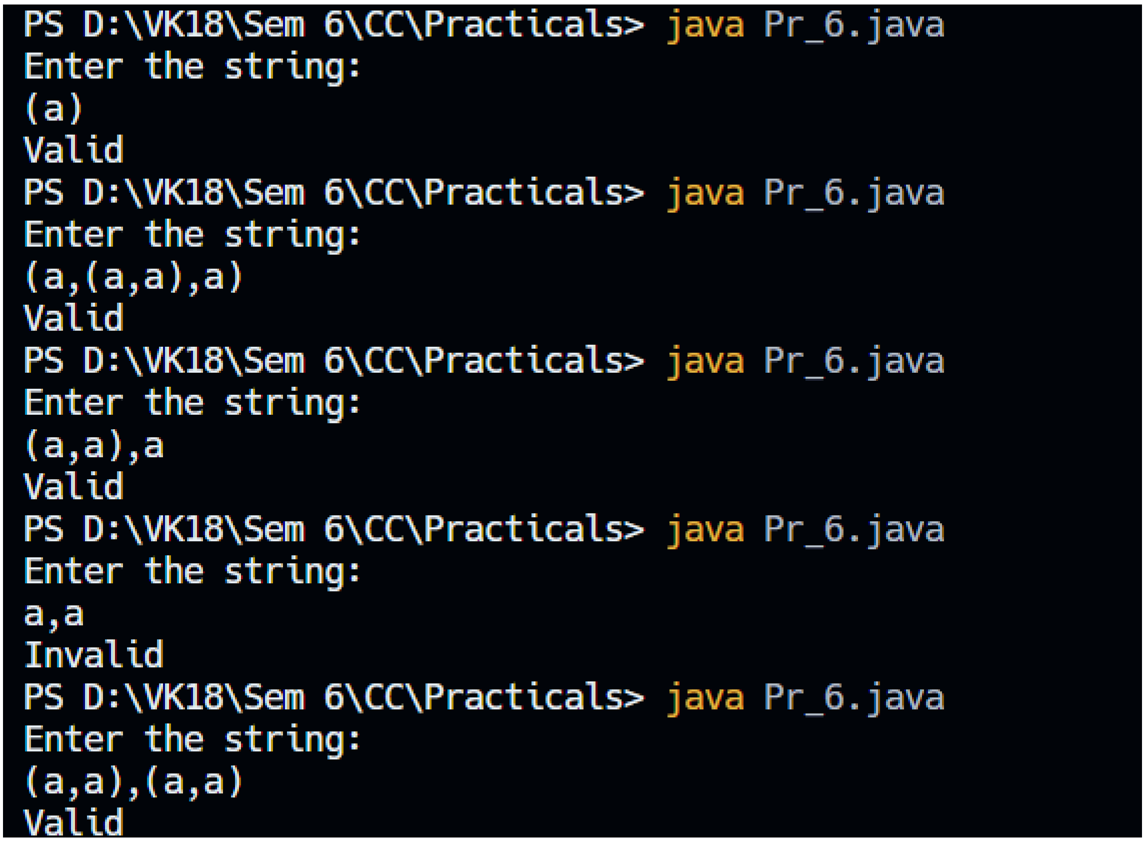
Practical : 6

AIM :

Output :



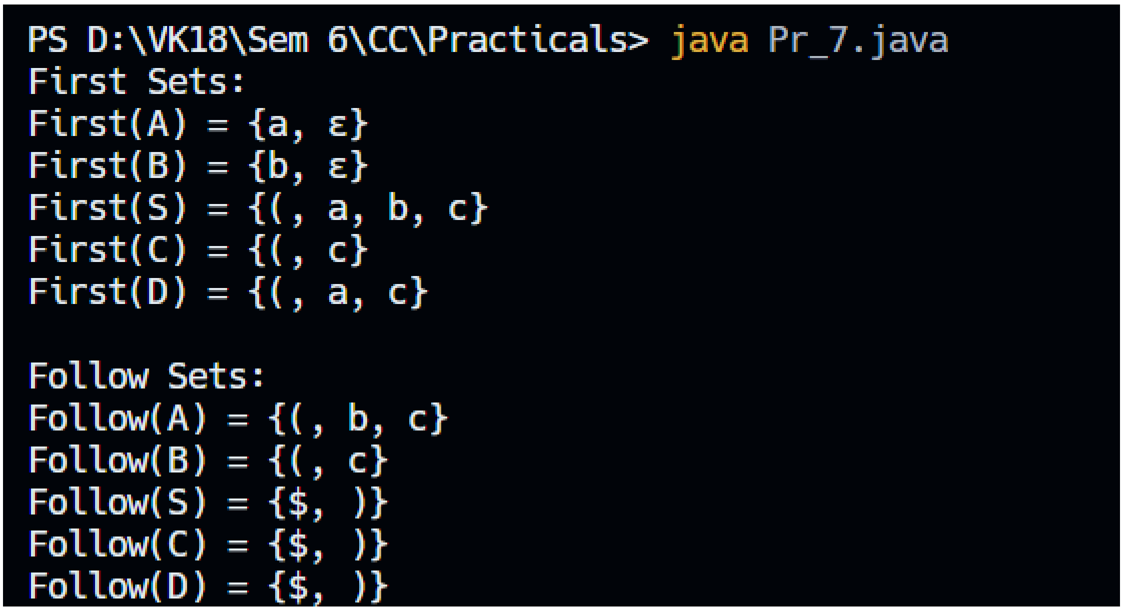
```
PS D:\VK18\Sem 6\CC\Practicals> java Pr_6.java
Enter the string:
(a)
Valid
PS D:\VK18\Sem 6\CC\Practicals> java Pr_6.java
Enter the string:
(a,(a,a),a)
Valid
PS D:\VK18\Sem 6\CC\Practicals> java Pr_6.java
Enter the string:
(a,a),a
Valid
PS D:\VK18\Sem 6\CC\Practicals> java Pr_6.java
Enter the string:
a,a
Invalid
PS D:\VK18\Sem 6\CC\Practicals> java Pr_6.java
Enter the string:
(a,a),(a,a)
Valid
```

Conclusion :

Practical : 7

AIM :

Output :



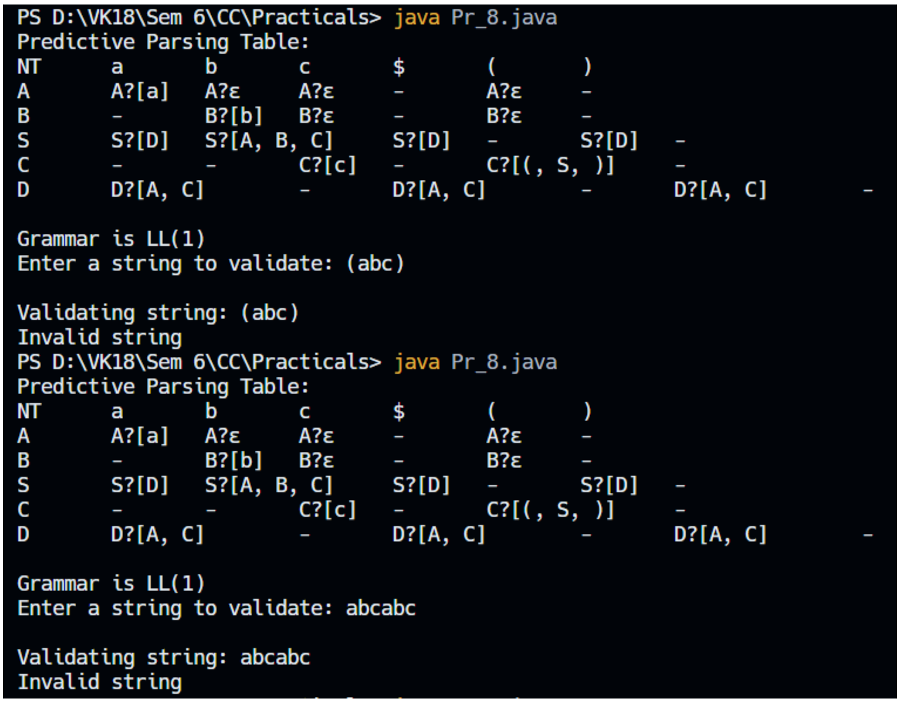
```
PS D:\VK18\Sem 6\CC\Practicals> java Pr_7.java
First Sets:
First(A) = {a, ε}
First(B) = {b, ε}
First(S) = {(, a, b, c}
First(C) = {(, c}
First(D) = {(, a, c}

Follow Sets:
Follow(A) = {(, b, c}
Follow(B) = {(, c}
Follow(S) = {$, )}
Follow(C) = {$, )}
Follow(D) = {$, )}
```

Conclusion :

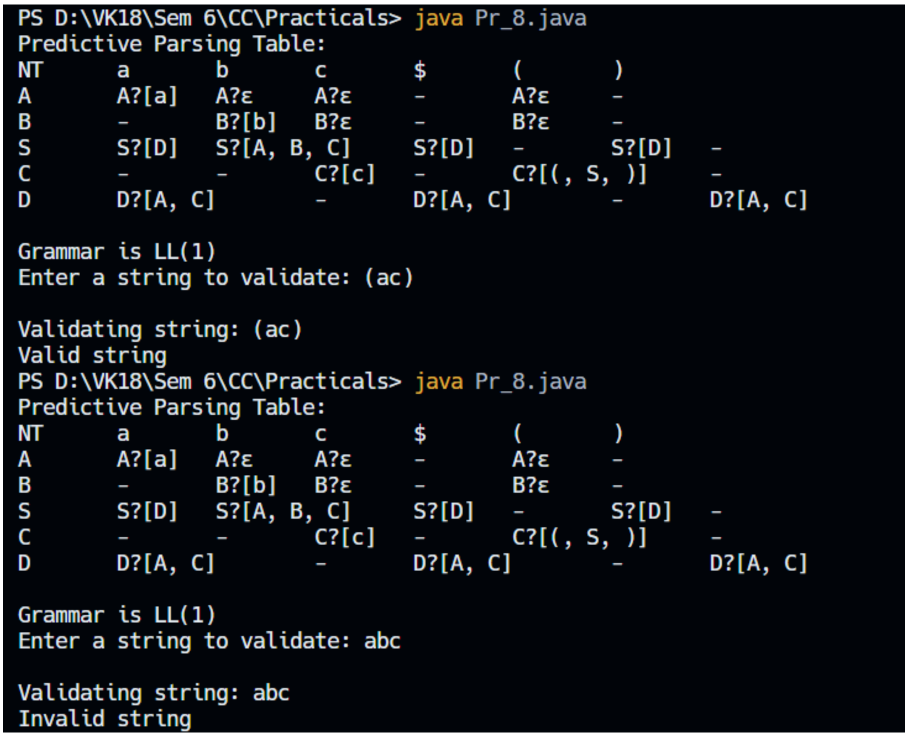
Practical : 8

AIM :

Output :



```
PS D:\VK18\Sem 6\CC\Practicals> java Pr_8.java
Predictive Parsing Table:
NT      a       b       c       $       (       )
A       A?[a]   A?ε     A?ε     -       A?ε     -
B       -       B?[b]   B?ε     -       B?ε     -
S       S?[D]   S?[A, B, C]     S?[D]   -       S?[D]   -
C       -       -       C?[c]   -       C?[(, S, )]     -
D       D?[A, C]        -       D?[A, C]        -       D?[A, C]        -

Grammar is LL(1)
Enter a string to validate: (abc)

Validating string: (abc)
Invalid string
PS D:\VK18\Sem 6\CC\Practicals> java Pr_8.java
Predictive Parsing Table:
NT      a       b       c       $       (       )
A       A?[a]   A?ε     A?ε     -       A?ε     -
B       -       B?[b]   B?ε     -       B?ε     -
S       S?[D]   S?[A, B, C]     S?[D]   -       S?[D]   -
C       -       -       C?[c]   -       C?[(, S, )]     -
D       D?[A, C]        -       D?[A, C]        -       D?[A, C]        -

Grammar is LL(1)
Enter a string to validate: abcabc

Validating string: abcabc
Invalid string
```



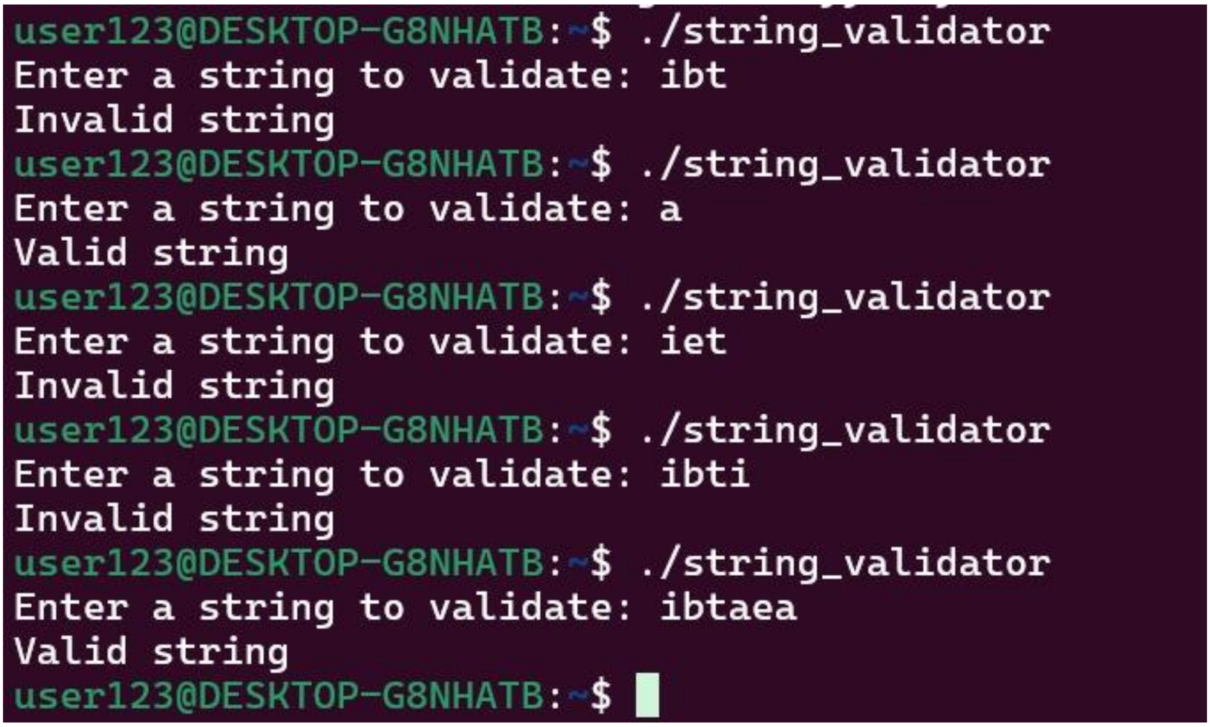
```
PS D:\VK18\Sem 6\CC\Practicals> java Pr_8.java
Predictive Parsing Table:
NT      a       b       c       $       (       )
A       A?[a]   A?ε     A?ε     -       A?ε     -
B       -       B?[b]   B?ε     -       B?ε     -
S       S?[D]   S?[A, B, C]     S?[D]   -       S?[D]   -
C       -       -       C?[c]   -       C?[(, S, )]     -
D       D?[A, C]        -       D?[A, C]        -       D?[A, C]

Grammar is LL(1)
Enter a string to validate: (ac)

Validating string: (ac)
Valid string
PS D:\VK18\Sem 6\CC\Practicals> java Pr_8.java
Predictive Parsing Table:
NT      a       b       c       $       (       )
A       A?[a]   A?ε     A?ε     -       A?ε     -
B       -       B?[b]   B?ε     -       B?ε     -
S       S?[D]   S?[A, B, C]     S?[D]   -       S?[D]   -
C       -       -       C?[c]   -       C?[(, S, )]     -
D       D?[A, C]        -       D?[A, C]        -       D?[A, C]

Grammar is LL(1)
Enter a string to validate: abc

Validating string: abc
Invalid string
```

Conclusion :

Practical : 9

AIM :

Output :



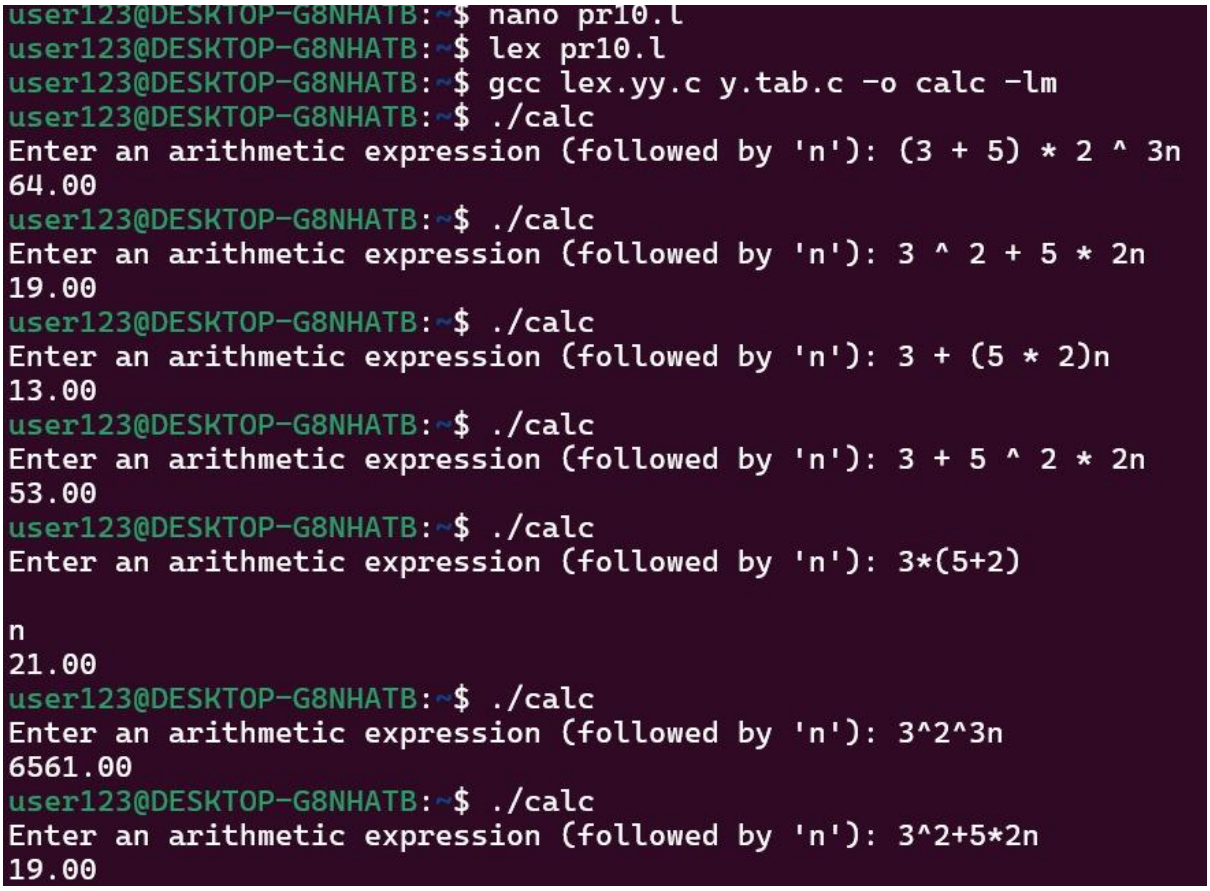
```
user123@DESKTOP-G8NHATB:~$ ./string_validator
Enter a string to validate: ibt
Invalid string
user123@DESKTOP-G8NHATB:~$ ./string_validator
Enter a string to validate: a
Valid string
user123@DESKTOP-G8NHATB:~$ ./string_validator
Enter a string to validate: iet
Invalid string
user123@DESKTOP-G8NHATB:~$ ./string_validator
Enter a string to validate: ibti
Invalid string
user123@DESKTOP-G8NHATB:~$ ./string_validator
Enter a string to validate: ibtaea
Valid string
user123@DESKTOP-G8NHATB:~$
```

Conclusion :

Practical : 10

AIM :

Output :



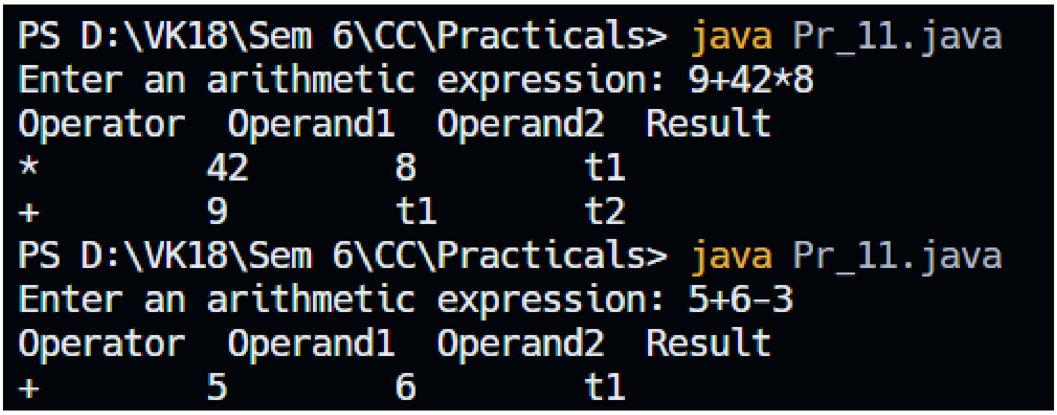
```
user123@DESKTOP-G8NHATB:~$ nano pr10.l
user123@DESKTOP-G8NHATB:~$ lex pr10.l
user123@DESKTOP-G8NHATB:~$ gcc lex.yy.c y.tab.c -o calc -lm
user123@DESKTOP-G8NHATB:~$ ./calc
Enter an arithmetic expression (followed by 'n'): (3 + 5) * 2 ^ 3n
64.00
user123@DESKTOP-G8NHATB:~$ ./calc
Enter an arithmetic expression (followed by 'n'): 3 ^ 2 + 5 * 2n
19.00
user123@DESKTOP-G8NHATB:~$ ./calc
Enter an arithmetic expression (followed by 'n'): 3 + (5 * 2)n
13.00
user123@DESKTOP-G8NHATB:~$ ./calc
Enter an arithmetic expression (followed by 'n'): 3 + 5 ^ 2 * 2n
53.00
user123@DESKTOP-G8NHATB:~$ ./calc
Enter an arithmetic expression (followed by 'n'): 3*(5+2)

n
21.00
user123@DESKTOP-G8NHATB:~$ ./calc
Enter an arithmetic expression (followed by 'n'): 3^2^3n
6561.00
user123@DESKTOP-G8NHATB:~$ ./calc
Enter an arithmetic expression (followed by 'n'): 3^2+5*2n
19.00
```

Conclusion :

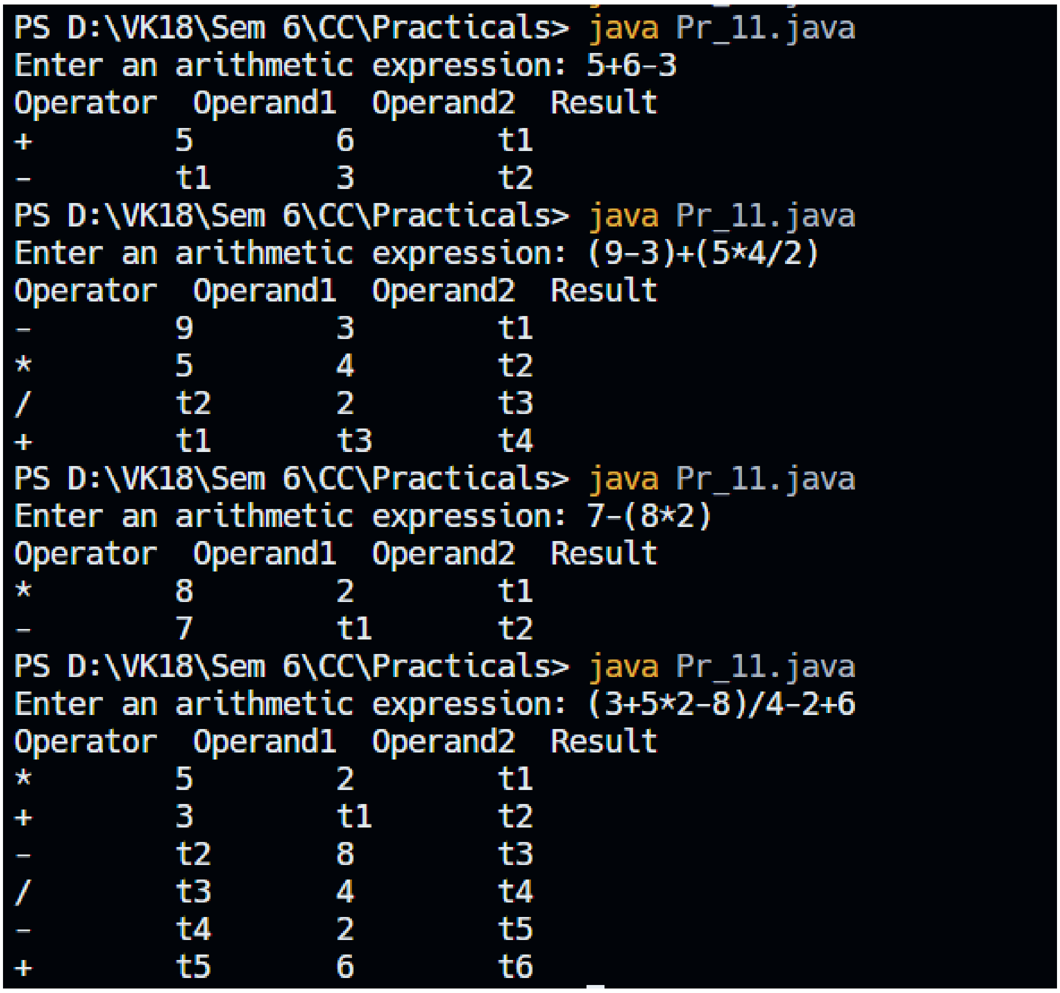
Practical : 11

AIM :

Output :



```
PS D:\VK18\Sem 6\CC\Practicals> java Pr_11.java
Enter an arithmetic expression: 9+42*8
Operator  Operand1  Operand2  Result
*         42        8         t1
+         9         t1        t2
PS D:\VK18\Sem 6\CC\Practicals> java Pr_11.java
Enter an arithmetic expression: 5+6-3
Operator  Operand1  Operand2  Result
+         5         6         t1
```



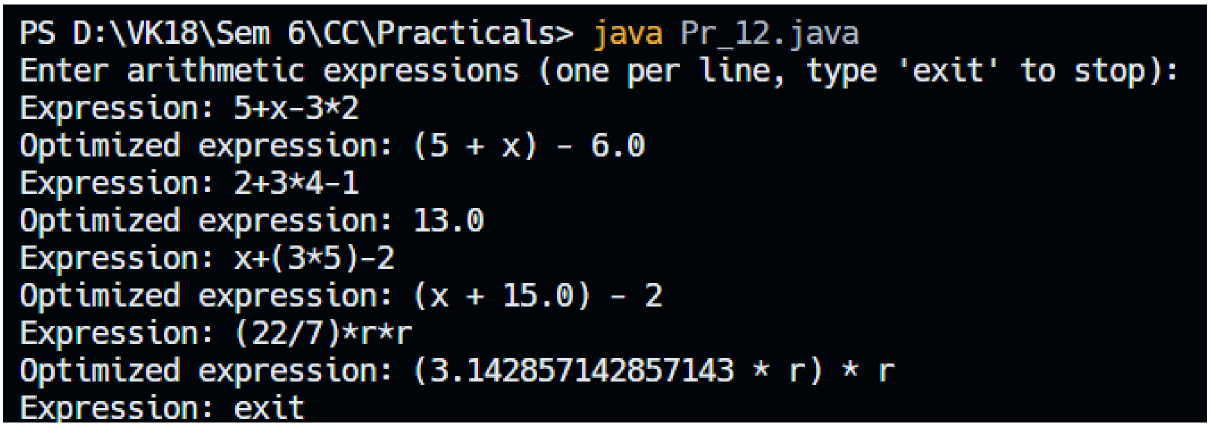
```
PS D:\VK18\Sem 6\CC\Practicals> java Pr_11.java
Enter an arithmetic expression: 5+6-3
Operator  Operand1  Operand2  Result
+         5         6         t1
-         t1        3         t2
PS D:\VK18\Sem 6\CC\Practicals> java Pr_11.java
Enter an arithmetic expression: (9-3)+(5*4/2)
Operator  Operand1  Operand2  Result
-         9         3         t1
*         5         4         t2
/         t2        2         t3
+         t1        t3        t4
PS D:\VK18\Sem 6\CC\Practicals> java Pr_11.java
Enter an arithmetic expression: 7-(8*2)
Operator  Operand1  Operand2  Result
*         8         2         t1
-         7         t1        t2
PS D:\VK18\Sem 6\CC\Practicals> java Pr_11.java
Enter an arithmetic expression: (3+5*2-8)/4-2+6
Operator  Operand1  Operand2  Result
*         5         2         t1
+         3         t1        t2
-         t2        8         t3
/         t3        4         t4
-         t4        2         t5
+         t5        6         t6
```

Conclusion :

Practical : 12

AIM :

Output :



```
PS D:\VK18\Sem 6\CC\Practicals> java Pr_12.java
Enter arithmetic expressions (one per line, type 'exit' to stop):
Expression: 5+x-3*2
Optimized expression: (5 + x) - 6.0
Expression: 2+3*4-1
Optimized expression: 13.0
Expression: x+(3*5)-2
Optimized expression: (x + 15.0) - 2
Expression: (22/7)*r*r
Optimized expression: (3.142857142857143 * r) * r
Expression: exit
```

Conclusion :