Function Calls in Recursive Descent Example

OS	main	x = a + b * c	x
Function Called From	Function Stack	Input	Lookahead

Function Called From	Function Stack	Input	Lookahead
main	start	x = a + b * c	x
OS	main	x = a + b * c	x

Function Called From	Function Stack	Input	Lookahead
start	P	x = a + b * c	x
main	start	x = a + b * c	x
OS	main	x = a + b * c	x

Function Called From	Function Stack	Input	Lookahead
P	S	x = a + b * c	x
start	P	x = a + b * c	x
main	start	x = a + b * c	x
OS	main	x = a + b * c	x

```
S               match(id)            x = a + b * c            x
P                  S                 x = a + b * c            x
start              P                 x = a + b * c            x
main             start               x = a + b * c            x
OS               main                x = a + b * c            x
-------------------------------------------------------------------
Function    Function Stack              Input             Lookahead
Called
From
```

```
P               S                   = a + b * c             =
start           P                   = a + b * c             =
main            start               = a + b * c             =
OS              main                = a + b * c             =
----------------------------------------------------------------
Function    Function Stack              Input           Lookahead
Called
From
```

```
S               match(=)                = a + b * c             =
P                   S                    = a + b * c             =
start               P                    = a + b * c             =
main              start                  = a + b * c             =
OS                main                   = a + b * c             =
----------------------------------------------------------------
Function    Function Stack              Input           Lookahead
Called
From
```

```
P                S                        a + b * c              a
start            P                        a + b * c              a
main             start                    a + b * c              a
OS               main                     a + b * c              a
-----------------------------------------------------------------
Function    Function Stack                Input           Lookahead
Called
From
```

```
S                  E                    a + b * c            a
P                  S                    a + b * c            a
start              P                    a + b * c            a
main               start                a + b * c            a
OS                 main                 a + b * c            a
------------------------------------------------------------------
Function   Function Stack               Input            Lookahead
Called
From
```

Function Called From	Function Stack	Input	Lookahead
E	T	a + b * c	a
S	E	a + b * c	a
P	S	a + b * c	a
start	P	a + b * c	a
main	start	a + b * c	a
OS	main	a + b * c	a

```
T                 F                        a + b * c              a
E                 T                        a + b * c              a
S                 E                        a + b * c              a
P                 S                        a + b * c              a
start             P                        a + b * c              a
main              start                    a + b * c              a
OS                main                     a + b * c              a
------------------------------------------------------------------
Function    Function Stack                 Input              Lookahead
Called
From
```

Function Called	Function Stack	Input	Lookahead
F	match(id)	a + b * c	a
T	F	a + b * c	a
E	T	a + b * c	a
S	E	a + b * c	a
P	S	a + b * c	a
start	P	a + b * c	a
main	start	a + b * c	a
OS	main	a + b * c	a

Function Called From	Function Stack	Input	Lookahead
T	F	+ b * c	+
E	T	+ b * c	+
S	E	+ b * c	+
P	S	+ b * c	+
start	P	+ b * c	+
main	start	+ b * c	+
OS	main	+ b * c	+

Function Called From	Function Stack	Input	Lookahead
E	T	+ b * c	+
S	E	+ b * c	+
P	S	+ b * c	+
start	P	+ b * c	+
main	start	+ b * c	+
OS	main	+ b * c	+

Function Called From	Function Stack	Input	Lookahead
T	T'	+ b * c	+
E	T	+ b * c	+
S	E	+ b * c	+
P	S	+ b * c	+
start	P	+ b * c	+
main	start	+ b * c	+
OS	main	+ b * c	+

```
T                 null -- in T'          + b * c            +
T                     T'                 + b * c            +
E                     T                  + b * c            +
S                     E                  + b * c            +
P                     S                  + b * c            +
start                 P                  + b * c            +
main               start                + b * c            +
OS                  main                 + b * c            +
----------------------------------------------------------------
Function    Function Stack               Input          Lookahead
Called
From
```

T	T'	+ b * c	+
E	T	+ b * c	+
S	E	+ b * c	+
P	S	+ b * c	+
start	P	+ b * c	+
main	start	+ b * c	+
OS	main	+ b * c	+
Function	Function Stack	Input	Lookahead
Called			
From			

```
E               T                      + b * c             +
S               E                      + b * c             +
P               S                      + b * c             +
start           P                      + b * c             +
main            start                  + b * c             +
OS              main                   + b * c             +
-----------------------------------------------------------------
Function    Function Stack             Input               Lookahead
Called
From
```

Function Called From	Function Stack	Input	Lookahead
S	E	+ b * c	+
P	S	+ b * c	+
start	P	+ b * c	+
main	start	+ b * c	+
OS	main	+ b * c	+

Function Called From	Function Stack	Input	Lookahead
E	E'	+ b * c	+
S	E	+ b * c	+
P	S	+ b * c	+
start	P	+ b * c	+
main	start	+ b * c	+
OS	main	+ b * c	+

Function Called From	Function Stack	Input	Lookahead
E'	match(+)	+ b * c	+
E	E'	+ b * c	+
S	E	+ b * c	+
P	S	+ b * c	+
start	P	+ b * c	+
main	start	+ b * c	+
OS	main	+ b * c	+

E	E'	b * c	b
S	E	b * c	b
P	S	b * c	b
start	P	b * c	b
main	start	b * c	b
OS	main	b * c	b

| Function Called From | Function Stack | Input | Lookahead |

```
E                  T                        b * c           b
E                  E'                       b * c           b
S                  E                        b * c           b
P                  S                        b * c           b
start              P                        b * c           b
main               start                    b * c           b
OS                 main                     b * c           b
--------------------------------------------------------------------
Function    Function Stack              Input           Lookahead
Called
From
```

Function Called From	Function Stack	Input	Lookahead
T	F	b * c	b
E	T	b * c	b
E	E'	b * c	b
S	E	b * c	b
P	S	b * c	b
start	P	b * c	b
main	start	b * c	b
OS	main	b * c	b

```
F              match(id)                    b * c            b
T                   F                        b * c            b
E                   T                        b * c            b
E                   E'                       b * c            b
S                   E                        b * c            b
P                   S                        b * c            b
start               P                        b * c            b
main              start                      b * c            b
OS                main                       b * c            b
-------------------------------------------------------------------
Function   Function Stack          Input              Lookahead
Called
From
```

Function Called From	Function	Stack	Input	Lookahead
T	F		* c	*
E	T		* c	*
E	E'		* c	*
S	E		* c	*
P	S		* c	*
start	P		* c	*
main	start		* c	*
OS	main		* c	*

Function Called From	Function Stack	Input	Lookahead
E	T	* c	*
E	E'	* c	*
S	E	* c	*
P	S	* c	*
start	P	* c	*
main	start	* c	*
OS	main	* c	*

```
T                   T'                          * c           *
E                   T                           * c           *
E                   E'                          * c           *
S                   E                           * c           *
P                   S                           * c           *
start               P                           * c           *
main                start                       * c           *
OS                  main                        * c           *
-----------------------------------------------------------------
Function    Function Stack              Input           Lookahead
Called
From
```

Function Called From	Function Stack	Input	Lookahead
T'	match(*)	* c	*
T	T'	* c	*
E	T	* c	*
E	E'	* c	*
S	E	* c	*
P	S	* c	*
start	P	* c	*
main	start	* c	*
OS	main	* c	*

```
T                   T'                          c           c
E                   T                           c           c
E                   E'                          c           c
S                   E                           c           c
P                   S                           c           c
start               P                           c           c
main                start                       c           c
OS                  main                        c           c
----------------------------------------------------------------
Function    Function Stack              Input           Lookahead
Called
From
```

Function Called From	Function Stack	Input	Lookahead
T'	F	c	c
T	T'	c	c
E	T	c	c
E	E'	c	c
S	E	c	c
P	S	c	c
start	P	c	c
main	start	c	c
OS	main	c	c

Function Called From	Function Stack	Input	Lookahead
F	match(id)	c	c
T'	F	c	c
T	T'	c	c
E	T	c	c
E	E'	c	c
S	E	c	c
P	S	c	c
start	P	c	c
main	start	c	c
OS	main	c	c

T'	F		
T	T'		
E	T		
E	E'		
S	E		
P	S		
start	P		
main	start		
OS	main		

| Function Called From | Function Stack | Input | Lookahead |

```
T                 T'
E                 T
E                 E'
S                 E
P                 S
start             P
main              start
OS                main
-----------------------------------------------------------------
Function   Function Stack              Input          Lookahead
Called
From
```

```
T'                T' (in T')
T                 T'
E                 T
E                 E'
S                 E
P                 S
start             P
main              start
OS                main
```

Function Called From	Function Stack	Input	Lookahead

```
T                 T'
E                 T
E                 E'
S                 E
P                 S
start             P
main              start
OS                main
----------------------------------------------------------------
Function   Function Stack            Input         Lookahead
Called
From
```

```
E                T
E                E'
S                E
P                S
start            P
main             start
OS               main
----------------------------------------------------------------
Function    Function Stack            Input           Lookahead
Called
From
```

```
E                 E'
S                 E
P                 S
start             P
main              start
OS                main
------------------------------------------------------------------
Function   Function Stack              Input          Lookahead
Called
From
```

```
S                  E
P                  S
start              P
main               start
OS                 main
------------------------------------------------------------------
Function   Function Stack              Input          Lookahead
Called
From
```

```
P              S
start          P
main           start
OS             main
----------------------------------------------------------------
Function   Function Stack              Input          Lookahead
Called
From
```

```
start            P
main             start
OS               main
-----------------------------------------------------------------
Function   Function Stack                Input          Lookahead
Called
From
```

```
main            start
OS              main
----------------------------------------------------------------
```

```
OS                main
----------------------------------------------------------------
```