

Simulazione run-time

```
let x = 1;;
```

```
let f1 = fun y z -> let f2 = fun x -> x * (y + z) in f2 x * (y - z);;
```

```
let rev lst =  
  let rec aux acc = function  
    | [] -> acc  
    | h::t -> aux (h::acc) t in aux [] lst
```

```
let rec apply g n (lst : int list) =  
  match (rev lst) with  
  | [] -> []  
  | hd::ls -> (g hd n):: apply g n ls;;
```

```
let res = apply f1 (x + 1) [2; 5; 1];;
```

| A | SL=Init | CL=init |
|---|---------|---------|
| | x | 1 |

let x =1;;

let f1 = fun y z -> let f2 = fun x -> x * (y+ z) in f2 x * (y-z);;

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let res = apply f1 (x+1) [2;5;1];;



| | | |
|---|-----------|-----------|
| A | SL = init | CL = init |
| | x | 1 |
| B | SL= A | CL=A |
| | f1 | M1 |

| | |
|----|----------|
| M1 | <cf1, A> |
|----|----------|



```
let x = 1;;

let f1 = fun y z -> let f2 =
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| | | |
|---|-----------|-----------|
| A | SL = init | CL = init |
| | x | 1 |
| B | SL= A | CL=A |
| | f1 | M1 |
| C | SL = B | CL = B |
| | rev | M2 |

| | |
|----|-----------|
| M1 | <cf1, A> |
| M2 | <crev, B> |



```
let x = 1;;  
let f1 = fun y z -> let f2 = fun x -> x * (y + z) in f2 x * (y - z);;
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```
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| | | |
|---|-----------|-----------|
| A | SL = init | CL = init |
| | x | 1 |
| B | SL= A | CL=A |
| | f1 | M1 |
| C | SL = B | CL = B |
| | rev | M2 |
| D | SL = C | CL = C |
| | Apply | M3 |

| | |
|----|-----------|
| M1 | <cf1, A> |
| M2 | <crev, B> |
| M3 | <capp, D> |



```
let x = 1;;
let f1 = fun y z -> let f2 = fun x -> x * (y + z) in f2 x * (y - z);;
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```
let res = apply f1 (x+1) [2;5;1];;
```



Apply
f1
x+1
[2;5;1]

| | | |
|---|-----------|-----------|
| A | SL = init | CL = init |
| | x | 1 |
| B | SL= A | CL=A |
| | f1 | M1 |
| C | SL = B | CL = B |
| | rev | M2 |
| D | SL = C | CL = C |
| | Apply | M3 |
| E | SL = D | CL=D |
| | g | M1 |
| | n | 2 |
| | lst | [2,5,1] |
| | hd | 0 |
| | lst | [] |
| | result | |

| | |
|----|-----------|
| M1 | <cf1, A> |
| M2 | <crev, B> |
| M3 | <capp, D> |

```
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let f1 = fun y z -> let f2 = fun x -> x * (y + z) in f2 x * (y - z);;
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```



Apply
f1
x+1
[2;5;1]

rev
lst

| | | |
|---|-----------|-----------|
| A | SL = init | CL = init |
| | x | 1 |
| B | SL= A | CL=A |
| | f1 | M1 |
| C | SL = B | CL = B |
| | rev | M2 |
| D | SL = C | CL = C |
| | Apply | M3 |
| E | SL = D | CL=D |
| | g | M1 |
| | n | 2 |
| | lst | [2,5,1] |
| | hd | 0 |
| | lst | [] |
| | result | |
| F | SL = B | CL= E |
| | l | [2,5,1] |
| | aux | M4 |

| | |
|----|-----------|
| M1 | <cf1, A> |
| M2 | <crev, B> |
| M3 | <capp, D> |
| M4 | <caux, F> |

```

let x=1;;
let f1 = fun y z -> let f2 = fun x -> x * (y+z) in f2 x * (y-z);;
let rev lst =
  let rec aux acc = function
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let res = apply f1 (x+1) [2;5;1];;

```



Apply
f1
x+1
[2;5;1]

rev
lst

aux
[]
l

aux
h::a
t

aux

| | | |
|---|-----------|-----------|
| A | SL = init | CL = init |
| | x | 1 |
| B | SL= A | CL=A |
| | f1 | M1 |
| C | SL= B | CL= B |
| | rev | M2 |
| D | SL= C | CL= C |
| | Apply | M3 |
| E | SL= D | CL=D |
| | g | M1 |
| | n | 2 |
| | lst | [2,5,1] |
| | hd | 0 |
| | lst | [] |
| | result | |
| F | SL= B | CL= E |
| | l | [2,5,1] |
| | aux | M4 |
| G | SL= F | CL=F |
| | acc | [] |
| | tmp | [2,5,1] |
| | h | 2 |
| | t | [5;1] |
| H | result | |
| | SL=L | CL=G |
| | acc | [2] |
| | tmp | [5;1] |
| | h | 5 |
| | t | [1] |
| | result | |
| | | |

| | |
|----|-----------|
| M1 | <cf1, A> |
| M2 | <crev, B> |
| M3 | <capp, D> |
| M4 | <caux, F> |

```
let x = 1;;
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let res = apply f1 (x+1) [2;5;1];;
```




Apply
f1
x+1
[2;5;1]

g
hd
n

f2
x*(y-z)

| | | |
|---|-----------|-----------|
| A | SL = init | CL = init |
| | x | 1 |
| B | SL= A | CL=A |
| | f1 | M1 |
| C | SL = B | CL = B |
| | rev | M2 |
| D | SL = C | CL = C |
| | Apply | M3 |
| E | SL = D | CL=D |
| | g | M1 |
| | n | 2 |
| | lst | [2,5,1] |
| | hd | 1 |
| F | lst | [5;2] |
| | res | [1;5;2] |
| | SL=A | CL= E |
| | y | 1 |
| | z | 2 |
| G | result | |
| | f2 | M5 |
| | SL= F | CL=F |
| | x | -1 |
| | result | |

| | |
|----|-----------|
| M1 | <cf1, A> |
| M2 | <crev, B> |
| M3 | <capp, D> |
| M4 | <caux, F> |
| M5 | <cf2, F> |

```
let x=1;;
let f1 = fun y z -> let f2 = fun x -> x * (y+ z) in f2 x * (y-z);;
let rev lst =
  let rec aux acc = function
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let res = apply f1 (x+1 ) [2;5;1];;
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