04-B1

栈与队列

调用栈：原理与算法

Yessiree. We do not doubt his word, an stack ourselfs into the bus like flapjacks.

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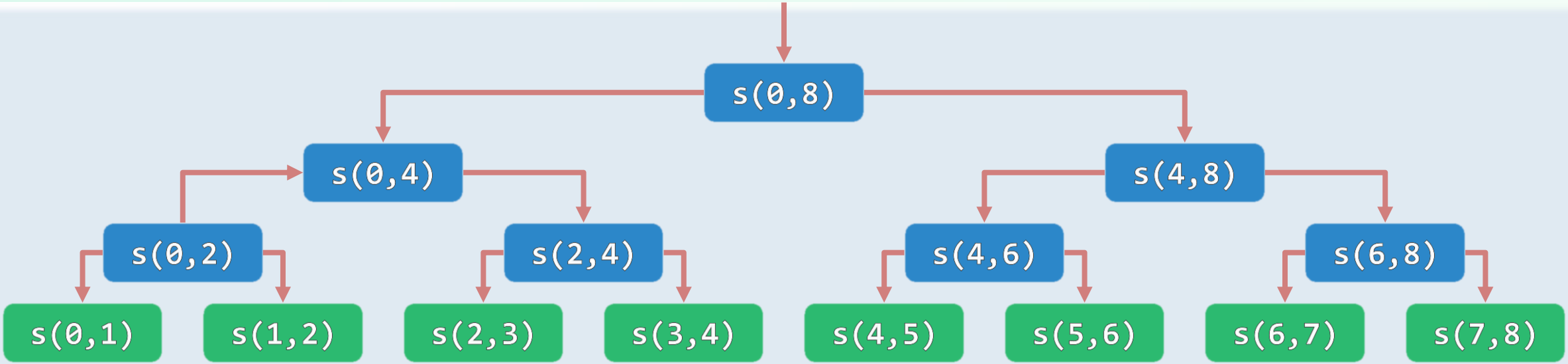
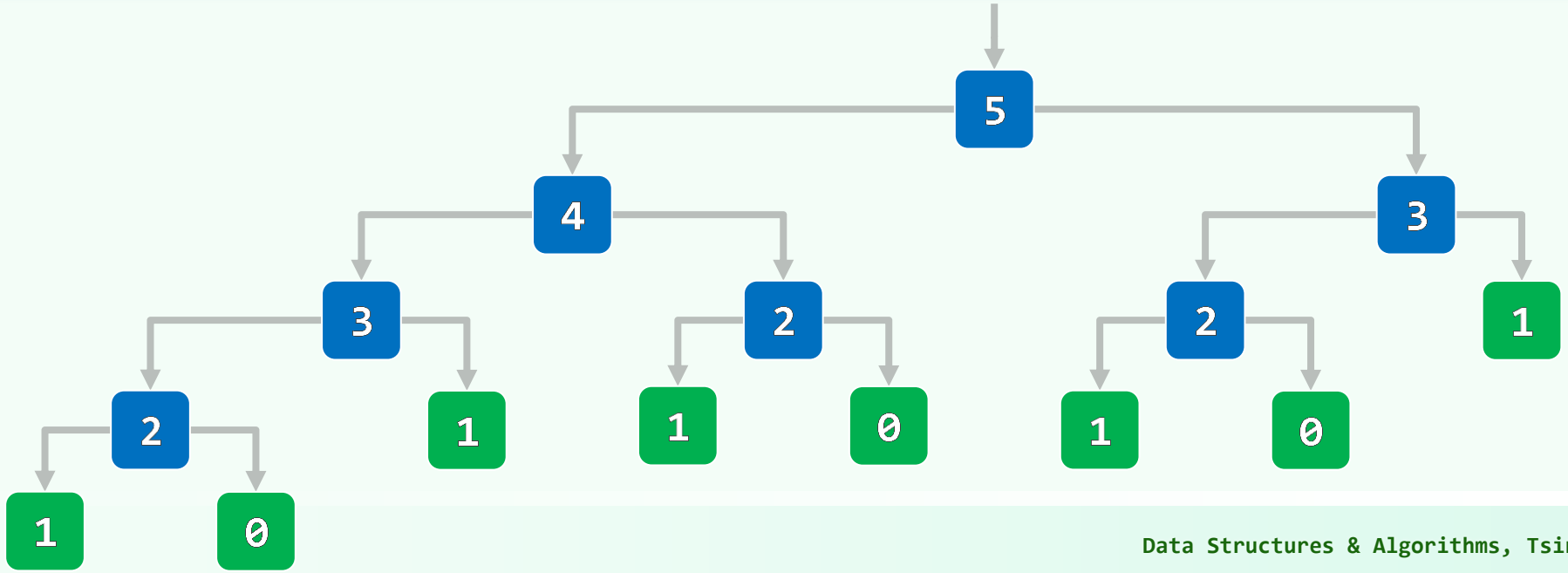
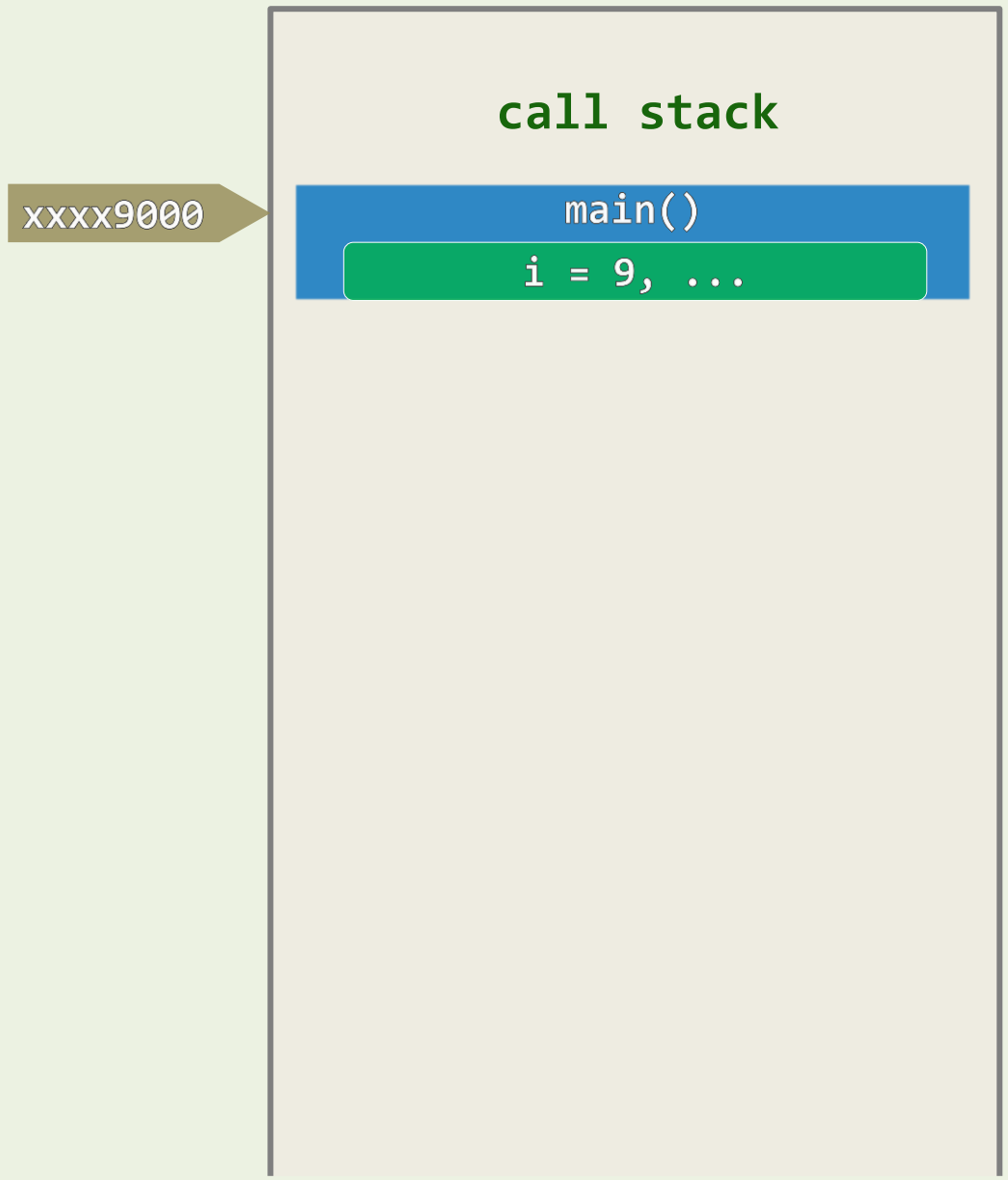
函数调用树：如何实现？

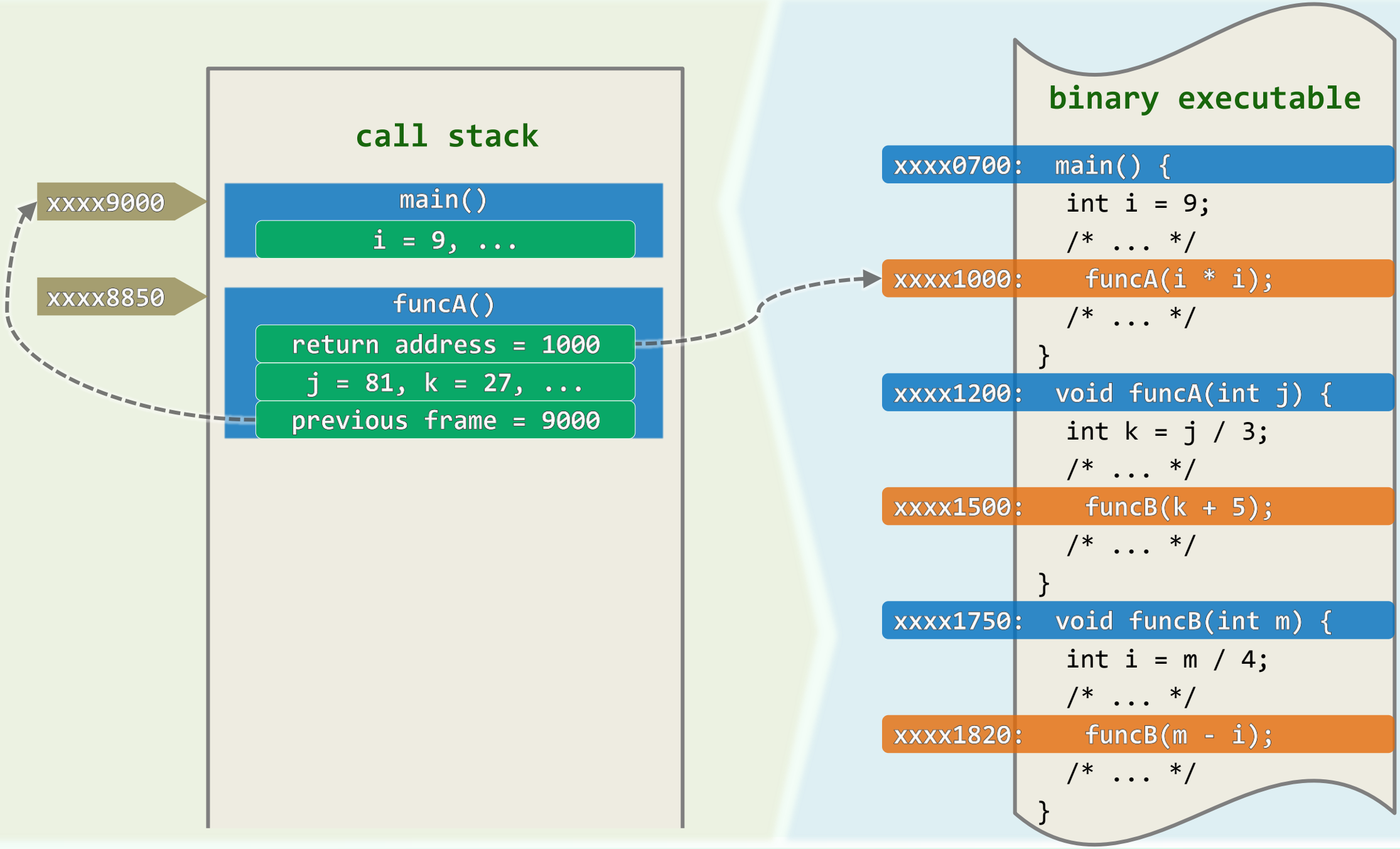

s(0,8)
s(0,4)
s(4,8)
s(0,2)
s(2,4)
s(4,6)
s(6,8)
s(0,1)
s(1,2)
s(2,3)
s(3,4)
s(4,5)
s(5,6)
s(6,7)
s(7,8)

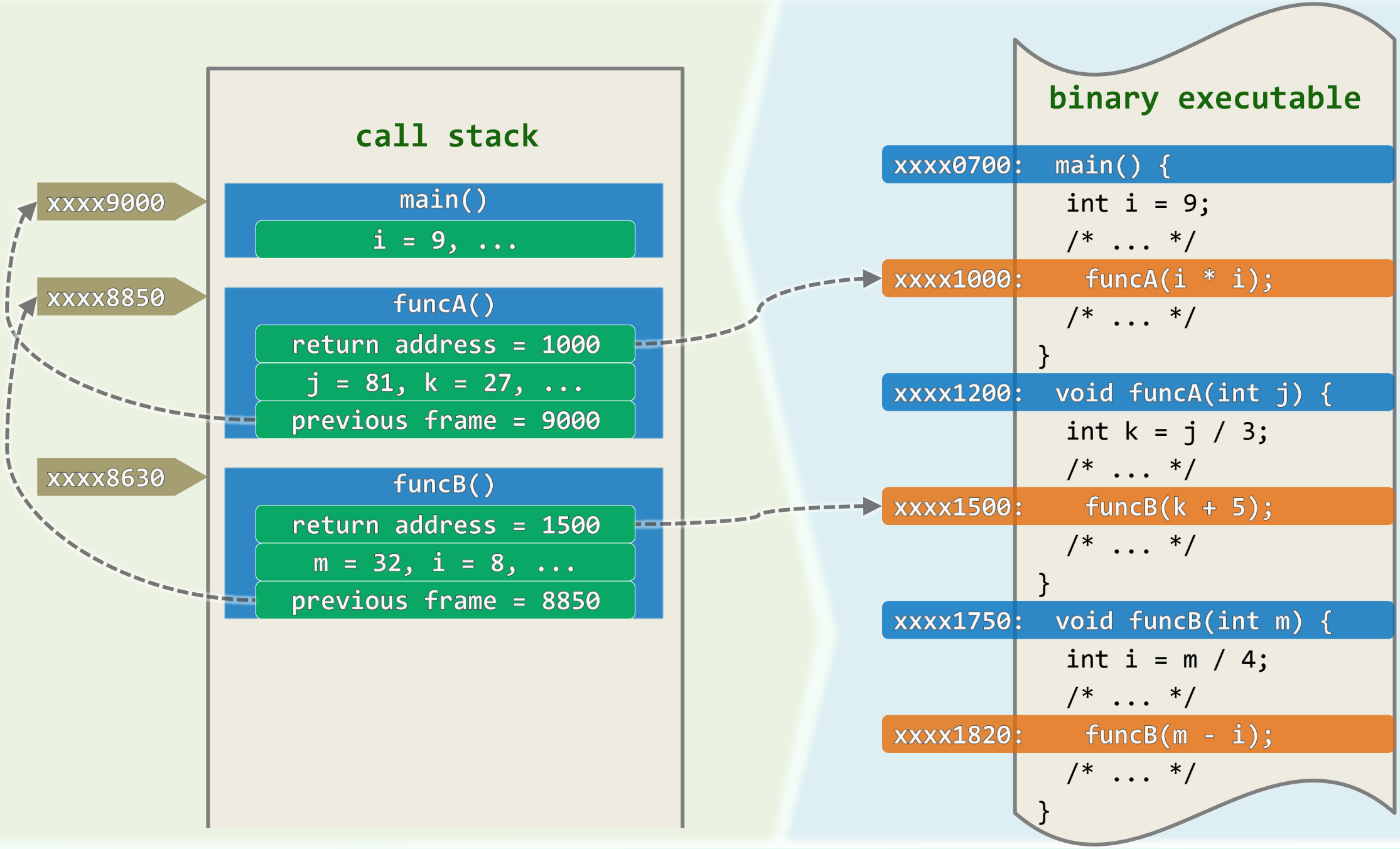

5
4
3
3
2
2
1
2
1
1
0
1
0
1
0

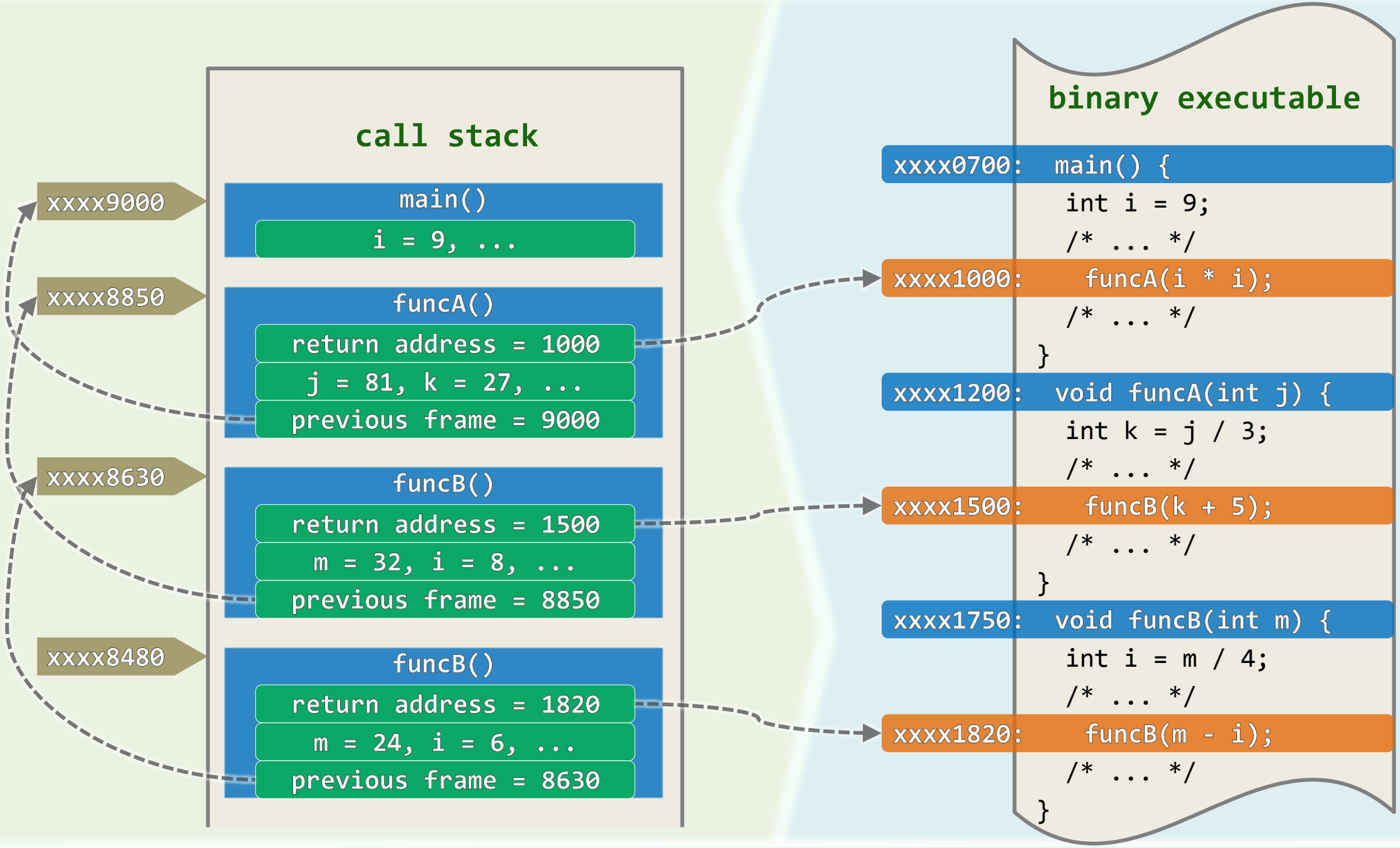


binary executable

```
xxxx0700:  main() {
             int i = 9;
             /* ... */
xxxx1000:    funcA(i * i);
             /* ... */
           }
xxxx1200:  void funcA(int j) {
             int k = j / 3;
             /* ... */
xxxx1500:    funcB(k + 5);
             /* ... */
           }
xxxx1750:  void funcB(int m) {
             int i = m / 4;
             /* ... */
xxxx1820:    funcB(m - i);
             /* ... */
           }
```


call stack
xxxx9000
main()
i = 9, ...
xxxx8850
funcA()
return address = 1000
j = 81, k = 27, ...
previous frame = 9000
binary executable
xxxx0700: main() {
int i = 9;
/* ... */
xxxx1000: funcA(i * i);
/* ... */
}
xxxx1200: void funcA(int j) {
int k = j / 3;
/* ... */
xxxx1500: funcB(k + 5);
/* ... */
}
xxxx1750: void funcB(int m) {
int i = m / 4;
/* ... */
xxxx1820: funcB(m - i);
/* ... */
}


call stack
xxxx9000
main()
i = 9, ...
xxxx8850
funcA()
return address = 1000
j = 81, k = 27, ...
previous frame = 9000
xxxx8630
funcB()
return address = 1500
m = 32, i = 8, ...
previous frame = 8850
binary executable
xxxx0700: main() {
int i = 9;
/* ... */
xxxx1000: funcA(i * i);
/* ... */
}
xxxx1200: void funcA(int j) {
int k = j / 3;
/* ... */
xxxx1500: funcB(k + 5);
/* ... */
}
xxxx1750: void funcB(int m) {
int i = m / 4;
/* ... */
xxxx1820: funcB(m - i);
/* ... */
}


call stack
xxxx9000
main()
i = 9, ...
xxxx8850
funcA()
return address = 1000
j = 81, k = 27, ...
previous frame = 9000
xxxx8630
funcB()
return address = 1500
m = 32, i = 8, ...
previous frame = 8850
xxxx8480
funcB()
return address = 1820
m = 24, i = 6, ...
previous frame = 8630
binary executable
xxxx0700: main() {
int i = 9;
/* ... */
xxxx1000: funcA(i * i);
/* ... */
}
xxxx1200: void funcA(int j) {
int k = j / 3;
/* ... */
xxxx1500: funcB(k + 5);
/* ... */
}
xxxx1750: void funcB(int m) {
int i = m / 4;
/* ... */
xxxx1820: funcB(m - i);
/* ... */
}