

Runtime Environment Part-II

Complete Course on Compiler Design

Representation of 3-address code

1. Quadruple
2. Tripple
3. Indirect Tripple.

et

$$x = a + b \times c - d / e + f$$

Quadruple

S.N	OP ₁	OP ₂	OP	result
1	b	c	*	t ₁
2	d	e	/	t ₂
3	a	t ₁	+	t ₃
4	t ₃	t ₂	-	t ₄
5	t ₄	f	+	t ₅
	t ₅		=	x

①
②

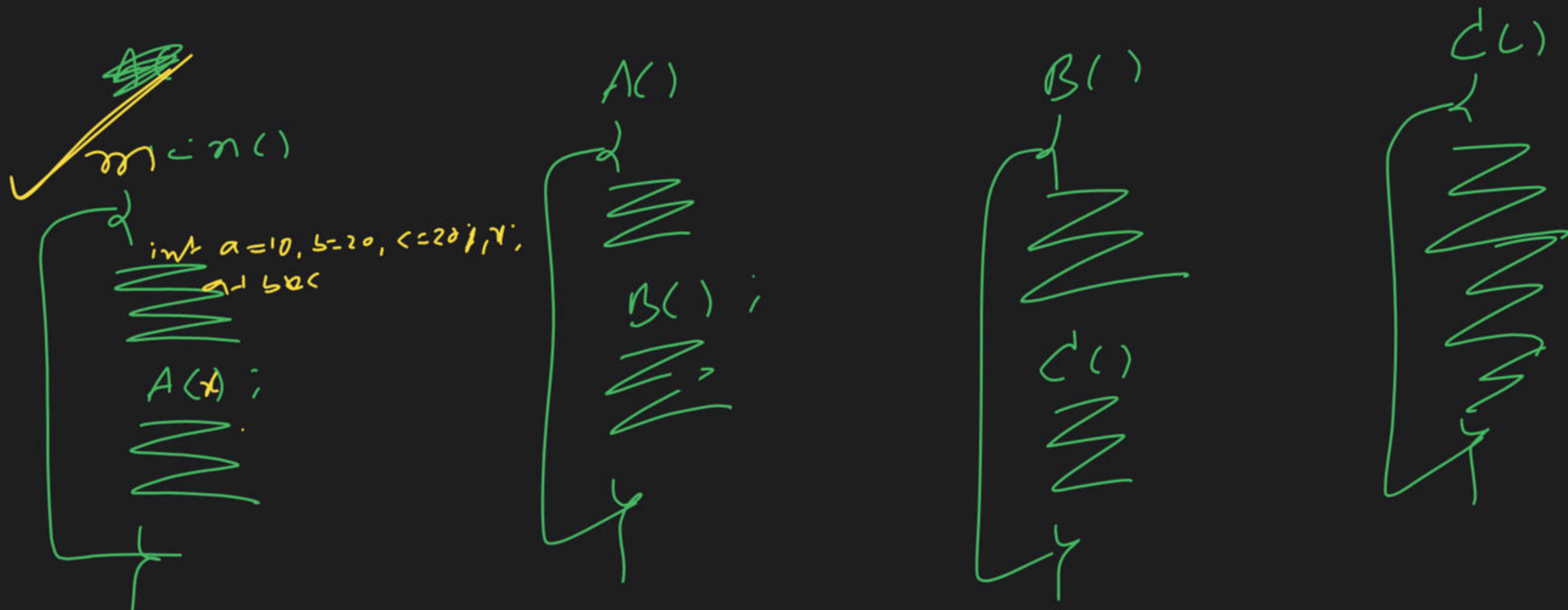
Indirect Triple

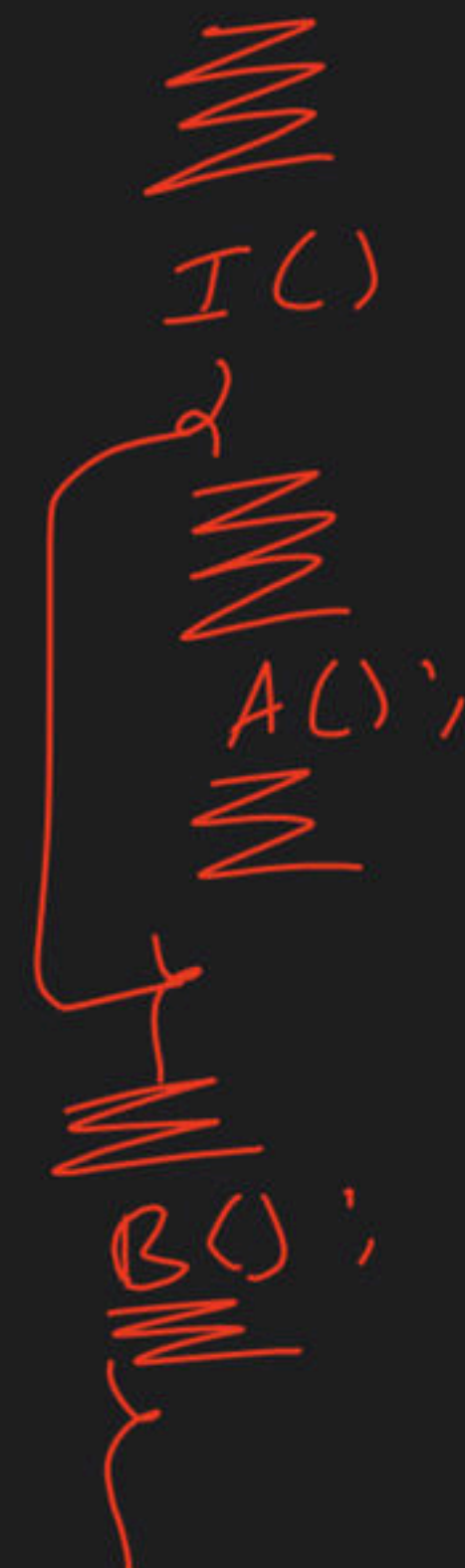
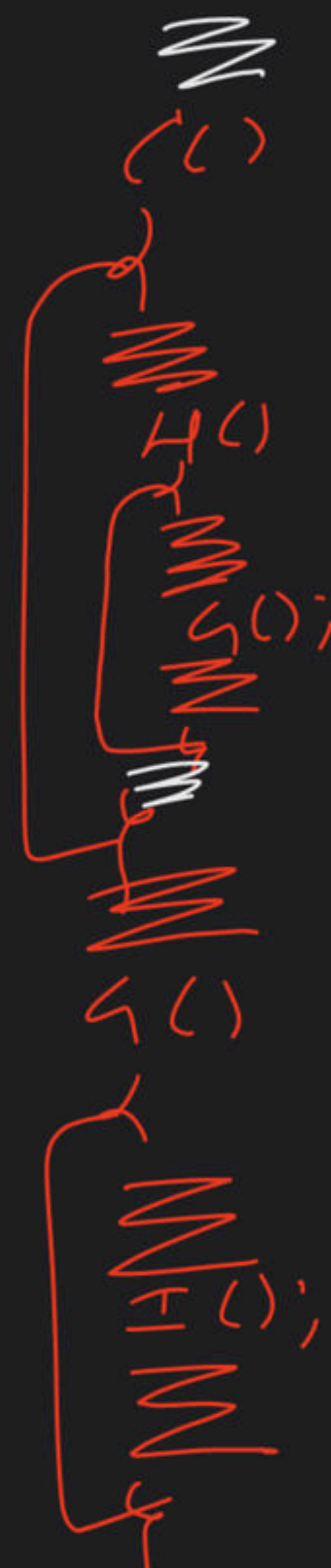
1	
2	→ 500
3	
4	→ 6000
5	

Triple

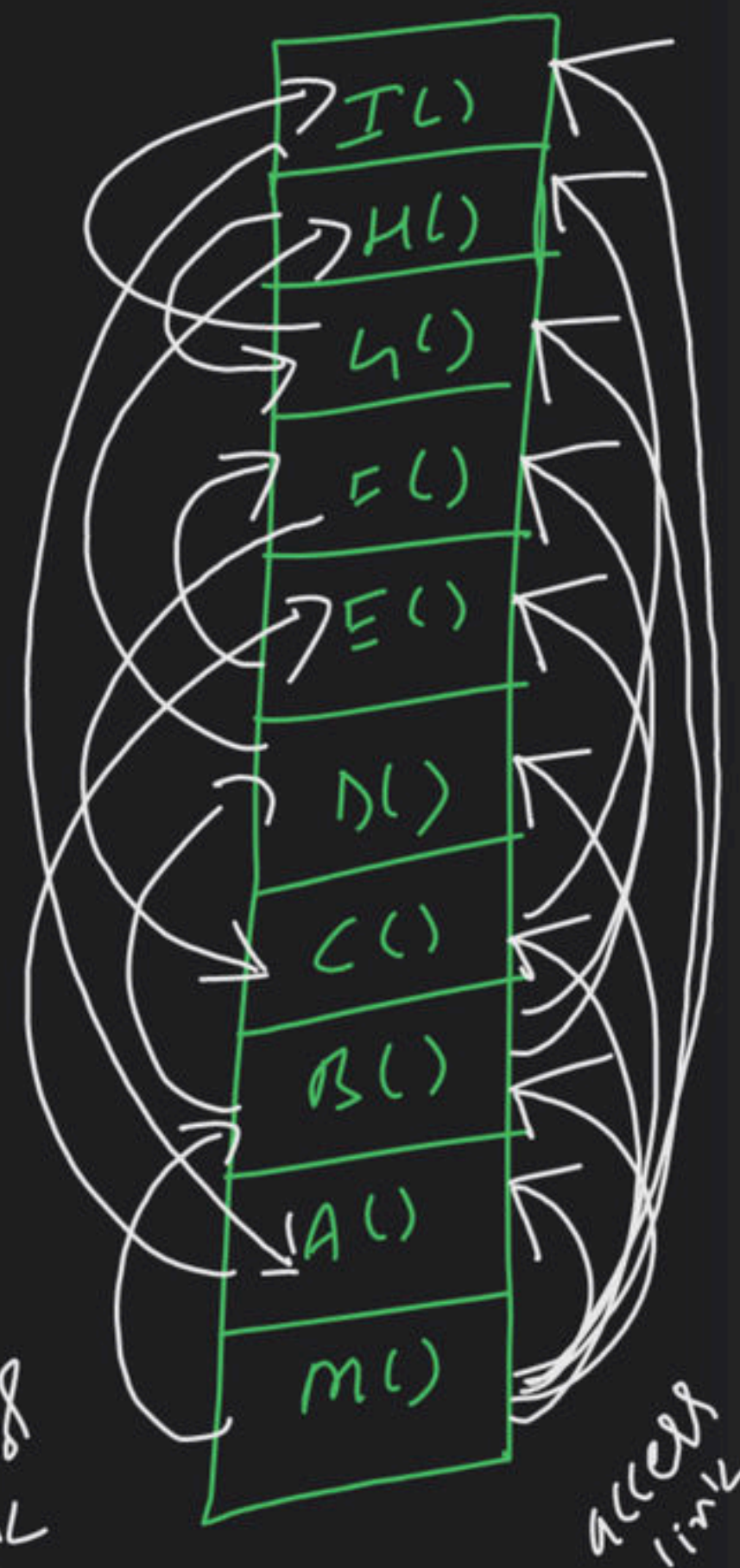
S.NO	OP ₁	OP ₂	OP
1	b	c	*
2	d	e	/
3	a	①	+
4	③	②	-
5	④	f	+
6	x	⑤	=

Runtime Environment





Control
link



Storage allocation technique (1 0 1 1 0 1 0 1 0 1)

- ① Static storage allocation
- ② Stack " "
- ③ Heap " "

main memory
RAM

et

fact(^{static}int n)

if (n ≤ 1)

return 1;

else

return n * fact(n-1);

~~allocation~~

~~malloc()~~

~~new()~~

~~deletion~~

~~free()~~

~~delete()~~

1	f(n)	$\frac{n}{1}$
2	f(n)	$\frac{n}{2}$
3	f(n)	$\frac{n}{3}$
4	f(n)	$\frac{n}{4}$
5	f(n)	$\frac{n}{5}$
6	f(n)	$\frac{n}{6}$

Stack storage

720

1	f(n)
2	f(n)
3	f(n)
4	f(n)
5	f(n)
6	f(n)

1000

1000

Code - Optimization

intermediate code

target code

Intermediate code