

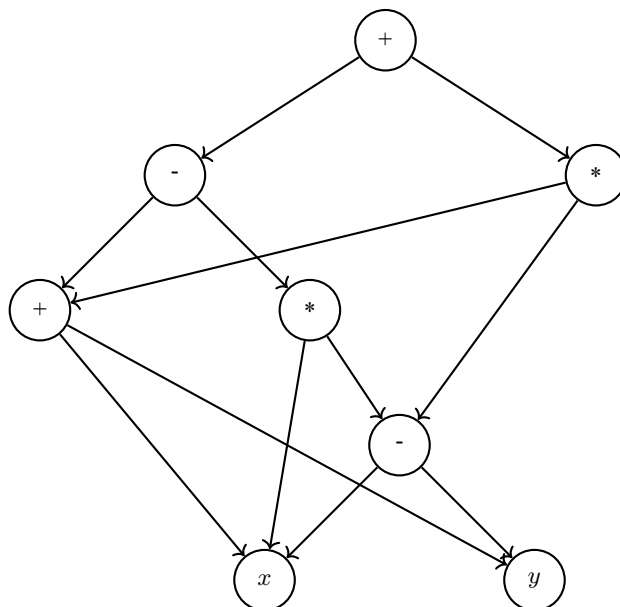
Homework 8 — May 12

Lecturer: Feng Xiaobing

Completed by: 2022K8009929010 Zhang Jiawei

8.1

画出 DAG 如下图所示:

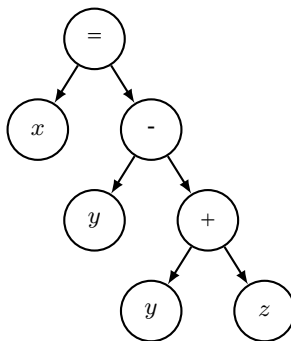


每个子表达式的值编码如下表所示:

1	id	x	
2	id	y	
3	+	1	2
4	-	1	2
5	*	1	4
6	-	3	5
7	*	3	4
8	+	5	7

8.2

1. 翻译出的抽象语法树如下图所示:



2. 先写成三地址代码,如下所示:

```

1      t1 = y + z
2      t2 = y - t1
3      x = t2
  
```

实现这个三地址代码的四元式序列如下表所示:

	<i>op</i>	<i>arg₁</i>	<i>arg₂</i>	<i>result</i>
0	+	y	z	t1
1	-	y	t1	t2
2	=	t2		x

3. 三元式序列如下所示:

	<i>op</i>	<i>arg₁</i>	<i>arg₂</i>
0	+	y	z
1	-	y	(0)
2	=	x	(1)

4. 间接三元式序列如下所示:

	<i>instruction</i>
35	(0)
36	(1)
37	(2)

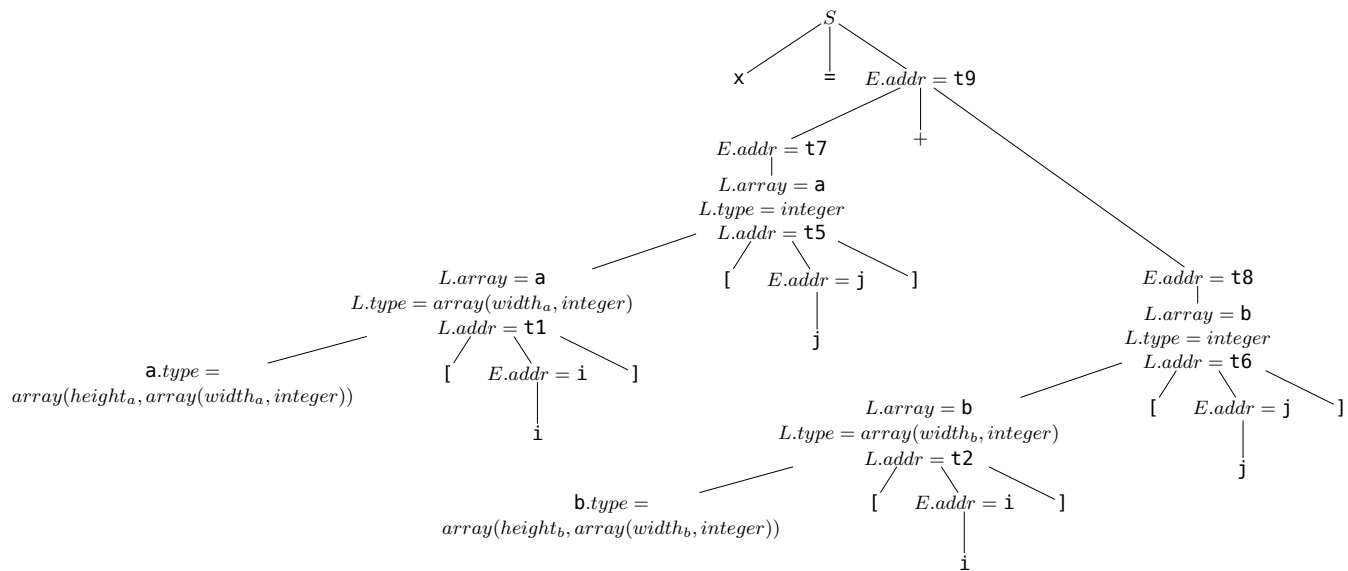
8.3

各个标识符的类型和相对地址如下表所示:

标识符	类型	大小	环境	相对地址
x	float	4	0	0
p.x	float	4	1	0
p.y	float	4	1	4
p	record	8	0	8
q.m.tag	int	4	2	0
q.m.float	float	4	2	4
q.m	record	8	1	0
q.n.idx	int	4	2	0
q.n.y	float	4	2	4
q.n	record	8	1	8
q	record	16	0	16

8.4

(1) 该表达式的注释语法分析树如下所示：



翻译成三地址代码如下所示：

```

1  t1 = i * 4width_a
2  t2 = i * 4width_b
3  t3 = j * 4
4  t4 = j * 4
5  t5 = t1 + t3
6  t6 = t2 + t4
7  t7 = a[t5]

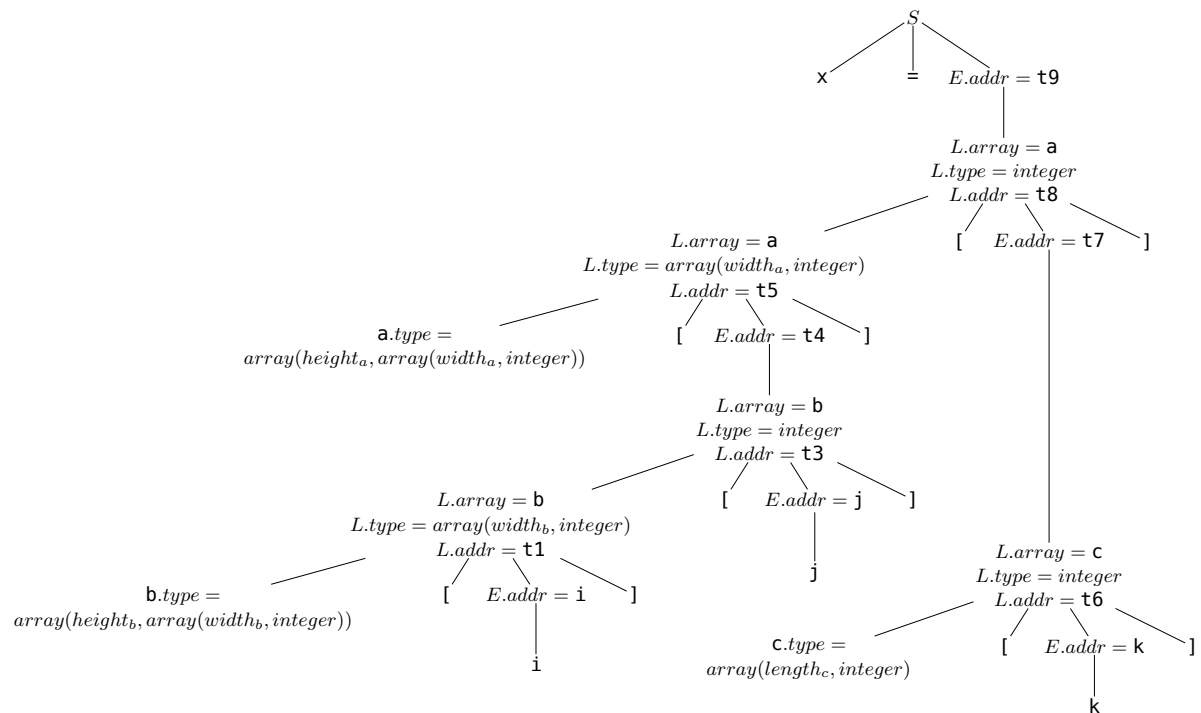
```

```

8   t8 = b[t6]
9   t9 = t7 + t8
10  x = t9

```

(2) 该表达式的注释语法分析树如下所示：



翻译成三地址代码如下所示：

```

1  t1 = i * 4width_b
2  t2 = j * 4
3  t3 = t1 + t2
4  t4 = b[t3]
5  t5 = t4 * 4width_a
6  t6 = k * 4
7  t7 = c[t6]
8  t8 = t5 + t7
9  t9 = a[t8]
10 x = t9

```