答案

一、 Mark each statement *true* or *false* (20 cents)

1. (F) 2.（F）3.（T）4.（F）5.（F）

6. （F）7. (F) 8.（T）9. (F) 10. (F)

二、 Single Choice (15 cents)

1. A 2. A 3. D 4. A 5. A

6. C 7. C 8. C 9 A **10.** A

三、 Questions (65 cents)

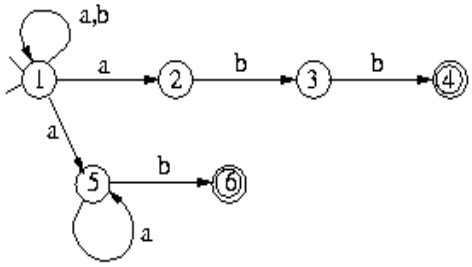
1. (5 cents)

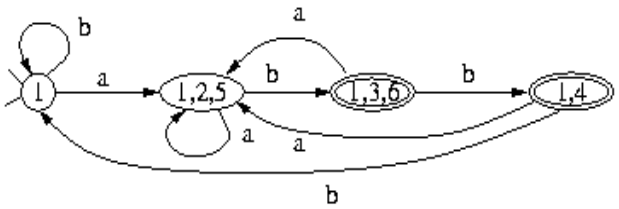
[Solution]

A leftmost derivation is one in which the leftmost symbol is always be expanded.

2. (8 cents)

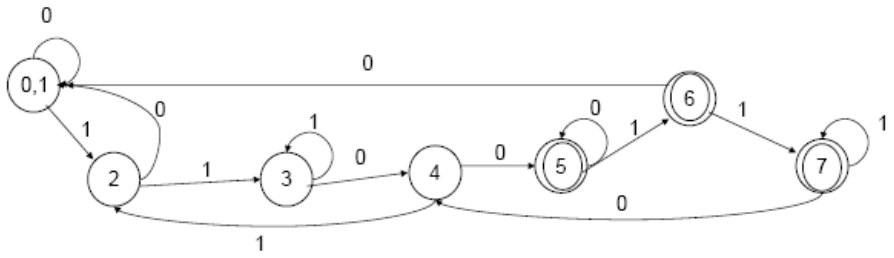
[Solution]





3. (6 cents)

[Solution]



P0={0,1,2,3,4}, P1={5, 6, 7}

$\delta(d4, 0) = d5 \in P1$, but $\delta(d0/d1/d2/d3, 0) \in P2$

P0={0,1,2,3}, P1={4}, P2={5,6,7}

$\delta(d3, 0) = d4 \in P1$, but $\delta(d0/d1/d2, 0) \in P0$

P0={0,1,2}, P1={3}, P2={4}, P3={5,6,7}

$\delta(d2, 1) = d3 \in P1$, but $\delta(d0/d1, 1) \in P0$

P0={0,1}, P1 = {2}, P2={3}, P3={4}, P4={5,6,7}

$\delta(d0/d1, 0) = d1 \in P0$, $\delta(d0/d1, 1) = d2 \in P1$

$\delta(d7, 0) = d4 \in P3$, $\delta(d5, 0) = d5 \in P4$, $\delta(d6, 0) = d1 \in P0$

P0={0,1}, P1 = {2}, P2={3}, P3={4}, P4={5}, P5={6}, P6={7}

4. (12 cents)

[Solution]

	nullable	FIRST	FOLLOW
S	no	a,+,(	)
A	no	a,+,(	*,)
B	yes	*	)

5. (15 cents)

[Solution]

We augment the grammar with a new start symbol S' and a new production as below:

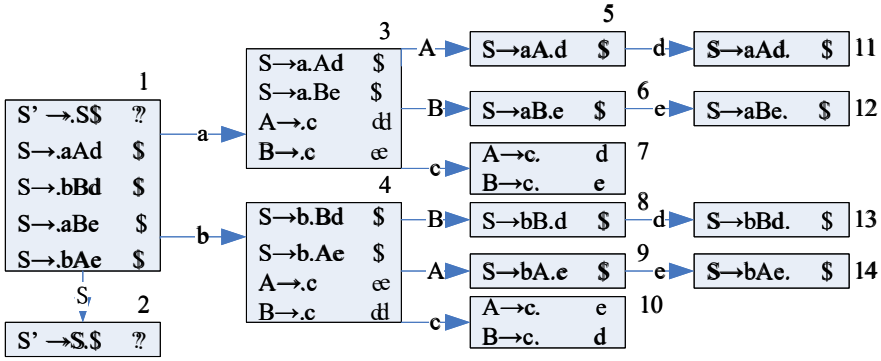
0 S' →S$

1 S→aAd 2 S→bBd

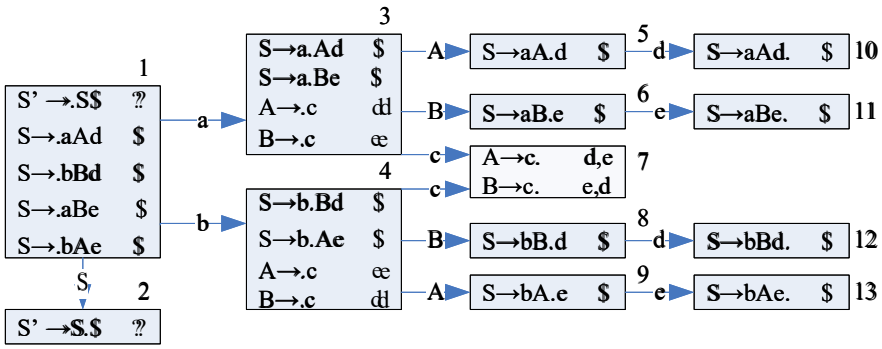
3 S→aBe 4 S→bAe

5 A→c 6 B→c

The LR(1) states diagram as below:



The LALR(1) states diagram as below:

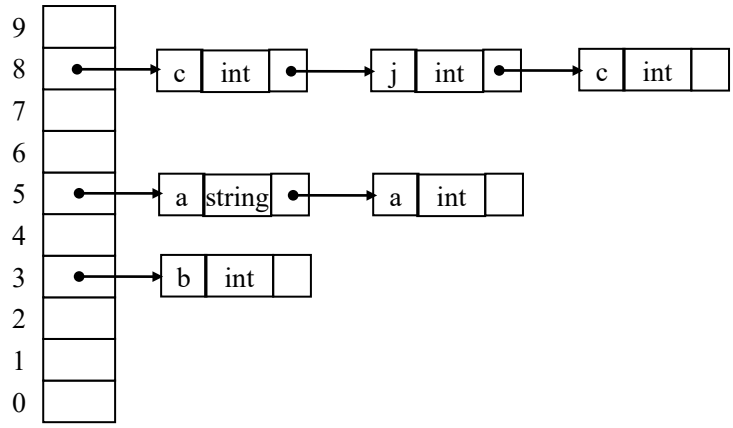


From the graphs, we know that LALR(1) table contains reduce-reduce conflicts, but the LR(1) table has none.

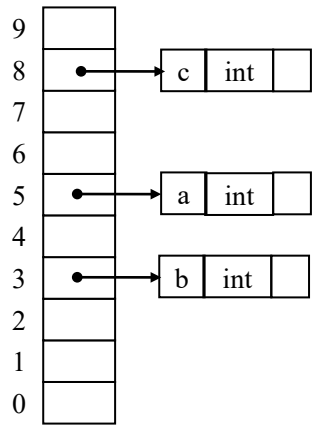
6. (11 cents)

(1) Show the symbol table when line 8 is compiled.[Solution]

[Solution]



(2) Show the symbol table when line 11 is compiled.
[Solution]



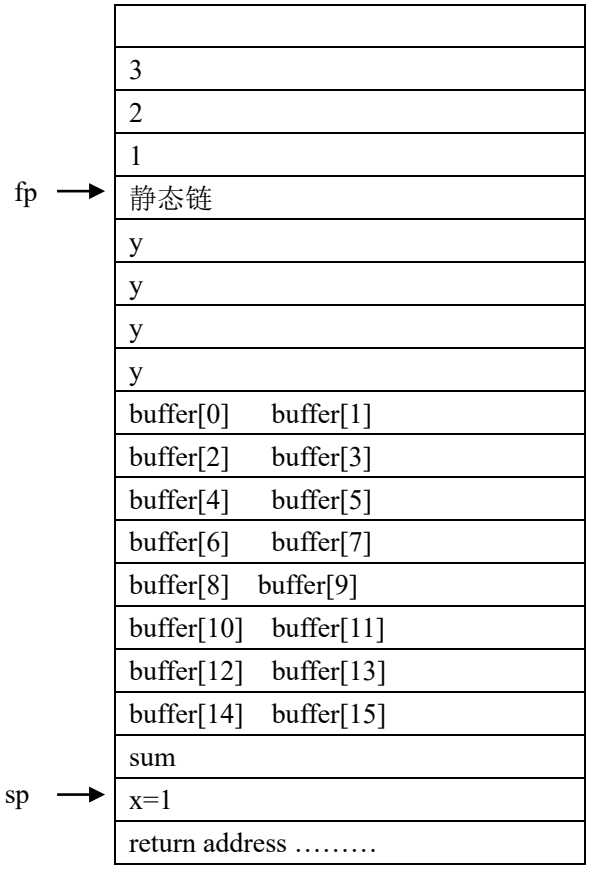
7. (8 cents)

```
void main ( )   {
      int x,y;
      x= 0;
      y = ABC (1,2,3);
      ……

}
```

```
int ABC (int a, int b, int c)   {
   double y;
   char buffer[16];
   int sum, x=1 ;
   …….
   return sum;
}
```

[Solution]



the temporary variables