

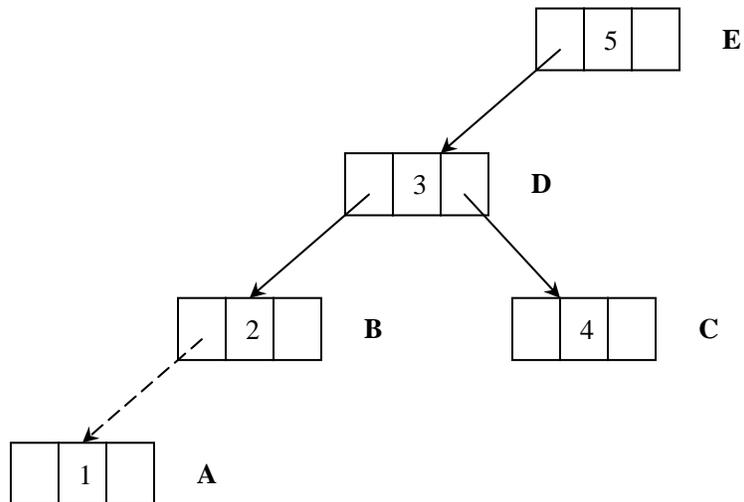
22C:050 assignment #2 solution

2.a

EAL V0.0 by Douglas W. Jones; Fri Sep 12 22:33:04 2003

```
1          |NULL    =      0
2          |
3 0000: 0000 |A:      W      NULL    ; left
4 0002: 0000 |        W      NULL    ; right
5 0004: 01   |        B      1       ; data
6          |
7 0005: 0000 |B:      W      A
8 0007: 0000 |        W      NULL
9 0009: 02   |        B      2
10         |
11 000A: 0000 |C:      W      NULL
12 000C: 0000 |        W      NULL
13 000E: 04   |        B      4
14         |
15 000F: 0005 |D:      W      B
16 0011: 000A |        W      C
17 0013: 03   |        B      3
18         |
19 0014: 000F |E:      W      D
20 0016: 0000 |        W      NULL
21 0018: 05   |        B      5
22
```

2.b



2.c

In the assembly listing, we can see that the address of node A is 0000, which is also used to represent a NULL pointer value. In the diagram above, the left pointer in node B is supposed to point to A but has value 0000, i.e., NULL, which is normally thought to point to nothing. In this case, the Node A might get lost. Anyway, we should avoid this situation.

3.a) EAL grammar of *parse_definition()*

in figure 2.9: $\langle \text{definition} \rangle ::= \langle \text{identifier} \rangle = \langle \text{operand} \rangle$

in Assembler: $\langle \text{definition} \rangle ::= (\langle \text{identifier} \rangle | \cdot) = \langle \text{operand} \rangle$

The difference is that in addition to grammar $\langle \text{identifier} \rangle = \langle \text{operand} \rangle$ *parse_definition()* in Assembler parses grammar $\cdot = \langle \text{operand} \rangle$

b) EAL grammar of *parse_line ()*

in figure 2.10: $\langle \text{line} \rangle ::= (\langle \text{definition} \rangle | \langle \text{statement} \rangle)[; \text{text}] \langle \text{line end} \rangle$

in Assembler: $\langle \text{line} \rangle ::= \langle \text{definition} \rangle | \langle \text{statement} \rangle$

The difference is that *parse_line ()* in figure 2.10 parses comment but it does not in Assembler;