|  |  |  |
| --- | --- | --- |
| S.No | Production | Semantic Rule |
| 1. | N → **.**L | {N.v = L.v; L.c = -1} |
| 2. | L → B L1 | {L.v=B.v+L1.v; L1 .c=L.c-1; B.c=L.c} |
| 3. | L → ε | {L.v=0} |
| 4. | B → 0 | {B.v=0} |
| 5. | B → 1 | {B.v=2\*B.c} |

1. Given the following attribute grammar, parse and evaluate the string **.1001**

|  |  |  |
| --- | --- | --- |
| S.No. | Production | Semantic Rules |
| 1. | N 🡪 D | N.trans := spell(D.val) |
| 2. | N 🡪 D S | S.in ::= D.val  N.trans ::= S.trans |
| 3. | S 🡪 D | S.val := **if** D.val = 0 **then** *decade*(S.in)  **else if** S.in ≤ 1 **then** *spell*(10\*S.in +D.val)  **else** *decade*(P.in) || *spell*(D.val) |
| 4. | D 🡪 0 | D.val := 0 |
| 5. | D 🡪 1 | D.val := 1 |
| 6. | D 🡪 2 | D.val := 2 |
| 7. | D 🡪 3 | D.val := 3 |
| 8. | D 🡪 4 | D.val := 4 |
| 9. | D 🡪 5 | D.val := 5 |
| 10. | D 🡪 6 | D.val := 6 |
| 11. | D 🡪 7 | D.val := 7 |
| 12. | D 🡪 8 | D.val := 8 |
| 13. | D 🡪 9 | D.val := 9 |

The functions *spell* and *decade* works as follows*:*

*spell*(1) = one, *spell*(2) = two, …, *spell*(19) = nineteen

*decade*(0) = zero, *decade*(1) = ten, …, *decade*(9) = ninety

Show the annotated parse tree, dependency graph and evaluation order using topological sort for the input string **92**. Provide the list of synthesized and inherited attributes.