CD LAB ASSIGNMENT 9

19CS02006
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Q1 [AST]. There are various intermediate representations such as Abstract-Syntax-Tree (AST), Directed-acyclic-graph (DAG), and 3-address code. Consider your expression grammar from assignment 9 with operations such as addition, subtraction, multiplication and division.

1. Using semantic actions, design S-attributed/L-attributed translation grammar to generate **AST**. Explain all the semantic actions that you considered. Submit a document with brief explanations.

S-ATTRIBUTED GRAMMAR :

```
S -> S Input | epsilon
Input -> E {input.val := E.val; }
Input -> = {input.val := =.val;
                  exit}
E -> NUMBER { E0.val := Number.val; }
E -> ( E ) { E0.val := E1.val; }
E -> E + E { E0.val := E1.val + E2.val; }
E -> E - E { E0.val := E1.val - E2.val; }
E -> E * E { E0.val := E1.val * E2.val;}
E -> E / E { E0.val := E1.val / E2.val;}
E -> E % E {E0.val := (int)E1.val % (int)E2.val;}
```

- Semantic actions are written inside {} where the attribute values are generated and passed to further process and until exits

- Consider the example 2*3+3*3+2*3+3*3=