

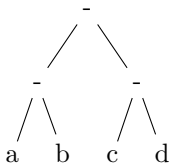
CS536: Homework 10

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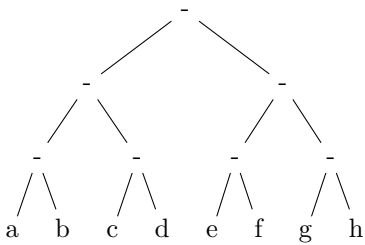
- (a)
- Expression: $(a-b)-(c-d)$
 - AST:



- Pseudo code

```
load a into T0
load b into T1
T0 = T0 - T1
load c into T1
load d into T2
T1 = T1 - T2
T0 = T0 - T1
```

- (b)
- Expression: $((a-b)-(c-d))-((e-f)-(g-h))$
 - AST:



- Pseudo code

```
load a into T0
load b into T1
T0 = T0 - T1
load c into T1
load d into T2
T1 = T1 - T2
T0 = T0 - T1
load e into T1
load f into T2
T1 = T1 - T2
```

```
load g into T2
load h into T3
T2 = T2 - T3
T1 = T1 - T2
T0 = T0 - T1
```

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```
int numRegisters(ASTNode node) {
    if(isLeaf(node)) {
        return 1;
    }
    int l = numRegisters(node.leftChild);
    int r = numRegisters(node.rightChild);
    return max(l, r) + 1;
}
```