

4.13 解: $S' \rightarrow \{S.\text{loop} = \text{false}; \} S$

$S \rightarrow \text{id} = E$

$S \rightarrow \text{if } E \text{ then } \{S_1.\text{loop} = S.\text{loop}\} S_1$

$S \rightarrow \text{while } E \text{ do } \{S_1.\text{loop} = \text{true}; \} S_1$

$S \rightarrow \text{begin } \{S_1.\text{loop} = S.\text{loop}; \} S_1 \text{ then } \{S_2.\text{loop} = S.\text{loop}; \}$

$S \rightarrow \text{break } \{ \text{if } (!S.\text{loop}) \text{ print ('error'); } \} S_2$

4.15. 解: $E \rightarrow E_1 + T \quad \text{val}[\text{ntop}] = \text{mknode}('+', \text{val}[\text{top}-2], \text{val}[\text{top}]);$

$E \rightarrow E_1 - T \quad \text{val}[\text{ntop}] = \text{mknode}('-', \text{val}[\text{top}-2], \text{val}[\text{top}]);$

$E \rightarrow T$

$T \rightarrow (E) \quad \text{val}[\text{ntop}] = \text{val}[\text{top}-1]$

$T \rightarrow \text{id} \quad \text{val}[\text{ntop}] = \text{mkleaf}(\text{id}, \text{val}[\text{top}])$

$T \rightarrow \text{num} \quad \text{val}[\text{ntop}] = \text{mkleaf}(\text{num}, \text{val}[\text{top}])$

5.5. 解. for 的变型表达式为

$\text{array}(0..99, \text{record}((a:\text{integer}) \times (b:\text{integer})))$

for 的变型表达式为

$(\text{integer} \times \text{record}((a:\text{integer}) \times (b:\text{integer})))$

$\rightarrow \text{pointer}(\text{record}((a:\text{integer}) \times (b:\text{integer})))$

6.5. 解: 1. 结构体类型 `sizeof` 为 6

从而保证当 `arr` 作为数组元素类型时,
数组元素之间不同序存储问题,
并且方便计算数组 `sizeof`

6.6. 解: `esp` →
`ebp` →

