Assignment

- What is the meaning of assignment?
- Let's add assignment to our calc language

$$Calc \rightarrow Calc \; ; Assign$$
$$| \quad Assign$$
$$Assign \rightarrow Id := Expr$$

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3.add.sl

PROGRAM exprAdd;   ➡   Generate prologue code

VAR i,j,k,l : INTEGER;

BEGIN
    WRITE(10+20);
    i := 1; k := 3; l := 4;
    j := i + l + k;
    WRITE(j)
END.

```
          .data
.newline: .asciiz "\n"
          .text
          .globl main
main:  nop
       move   $fp,$sp
```

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3.add.sl

PROGRAM exprAdd;

VAR i,j,k,l : INTEGER;   ➡   Fill symbol table info for all variables

BEGIN
    WRITE(10+20);
    i := 1; k := 3; l := 4;
    j := i + l + k;
    WRITE(j)
END.

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3.add.sl

PROGRAM exprAdd;

VAR i,j,k,l : INTEGER;

BEGIN
    WRITE(10+20);
    i := 1; k := 3; l := 4;
    j := i + l + k;
    WRITE(j)
END.

```
.newline: .asciiz "\n"
          .text
          .globl main
main:  nop
       move   $fp,$sp
       li $s0, 10
       li $s1, 20
       add $s2, $s0, $s1
       move $a0, $s2
       li $v0, 1
       syscall
       li $v0, 4
       la, $a0, .newline
       syscall
```

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3.add.sl

```
PROGRAM exprAdd;

VAR i,j,k,l : INTEGER;

BEGIN
    WRITE(10+20);
    i := 1; k := 3; l := 4;
    j := i + l + k;
    WRITE(j)
END.
```

```
…
add $s0, $gp, 0
li $s1, 1
sw $s1, 0($s0)
add $s0, $gp, 8
li $s1, 3
sw $s1, 0($s0)
add $s0, $gp, 12
li $s1, 4
sw $s1, 0($s0)
```

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3.add.sl

```
PROGRAM exprAdd;

VAR i,j,k,l : INTEGER;

BEGIN
    WRITE(10+20);
    i := 1; k := 3; l := 4;
    j := i + l + k;
    WRITE(j)
END.
```

```
…
add $s0, $gp, 4
add $s1, $gp, 0
lw $s2, 0($s1)
add $s1, $gp, 12
lw $s3, 0($s1)
add $s1, $s2, $s3
add $s2, $gp, 8
lw $s3, 0($s2)
add $s2, $s1, $s3
sw $s2, 0($s0)
```

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3.add.sl

```
PROGRAM exprAdd;

VAR i,j,k,l : INTEGER;

BEGIN
    WRITE(10+20);
    i := 1; k := 3; l := 4;
    j := i + l + k;
    WRITE(j)
END.
```

```
…
add $s0, $gp, 4
lw $s1, 0($s0)
move $a0, $s1
li $v0, 1
syscall
li $v0, 4
la, $a0, .newline
syscall
li $v0, 10
syscall
```

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