

# High-Level Pseudocode to Assembly Language Translation

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- Variable Assignment
- Arithmetic Expressions
- If statement
- If-else statement
- While loop

# Variable Assignment

- High-level

```
int value;  
value = 0;
```

- Assembly

```
main:  LDA    0x0000,i  
       STA    value,d  
       STOP  
value: .BLOCK 2
```

# Arithmetic Expressions

- High-level

value = value + 1;

- Assembly

```
main:  LDA    value,d
        ADDA  0x01,1
        STA   value,d
        STOP
value:  .BLOCK 2
```

# If statement

- High-level

```
if (value != 0)
{
    value = 0;
}
```

- Assembly

```
main:  LDA    value,d
        CPA    0x0000,i
        BREQ   iszero
        LDA    0x0000,i
        STA    value,d
iszero: STOP
value:  .BLOCK 2
```

# If-else statement

- High-level

```
value = 0;
while (value < 10)
{
    value += 1;
}
```

- Assembly

```
main:  LDA    value,d
        CPA    0x0000,i
        BREQ   iszero
        LDA    0x0000,i
        BR     isdone
iszero: ADDA    0x0001,i
isdone: STA     value,d
value:  .BLOCK 2
```

# While Loop

- High-level

```
if (value != 0)
{
    value = 0;
}
else
{
    value += 1;
}
```

- Assembly

```
                LDA    0,i
                STA    value,d
loop:           CPA    10,i
                BREQ   one
                LDA    value,d
                ADDA   1,i
                STA    value,d
                BR     loop
done:           STOP
value:         .BLOCK 2
```