## Generating Machine Code

Let's look at some expressions, written in a high-level Programming language and at how they might be compiled into the machine code designed in Lecture 22.

Consider

```
x = 96;
y = 58;
z = x+y;
```

Our Compiler will set aside some space in RAM for each of the variables: x, y and z.

Let's say

the address x is 8,

the address of y is 9

and the address of z is 10

The Compiler will also place the value of x (i.e., 96 or 01100000 in binary) into RAM at address 8.

And it will place the value of y (i.e., 58 or 00111010 in binary) into RAM at address 9.

The value of z will be determined when the program is executed.

The Code generated from our high-Level Code might then be

| | | | | |
|---|---|---|---|---|
| x = 96 ; | → | Load A, 8 | → 00011000 | (18H) |
| y = 58 ; | → | Load B, 9 | → 00101001 | (29H) |
| z = x+y ; | → | Add A, B | → 10000110 | (86H) |
| | | Store A | → 01011010 | (5AH) |
| | | END | → 00000000 | (00H) |

This program is the loaded into memory and executed as shown in the Simulation.