Model 1 High-Level Languages

In addition to adding the numbers from 1 to 10, this program prints (displays) the result on the screen using Standard I/O.

Standard C
(3rd Generation)

```
#include <stdio.h>

int main()
{
    int upper = 11;
    int sum = 1;
    int val = 2;

    while (val < upper)
    {
        sum = sum + val;
        val++;
    }

    printf("Sum = %d\n", sum);
}
```

Python
(4th Generation)

```
upper = 11
isum = 1
val = 2

while val < upper:

    isum = isum + val
    val = val + 1


print("Sum = " + str(isum))
```

Questions (10 min)

Start time: _____

1. Compare the C code with the Python code.

a) Circle the lines of C code that were not present in **??**.

b) Which lines of C are not present (i.e., needed) in Python?

c) What punctuation used in C is not required in Python?

2. Without using braces, how does Python know which lines are part of the `while` loop?

3. Why does Python use the name `isum` instead of `sum`? Hint: type `sum` into a Python shell.

4. In Python, the `range` function can be used to generate a sequence of numbers. Use a Python shell to answer this question.

a) What is the result of `list(range(5))`?

b) What is the result of `str(range(5))`? `'[0, 1, 2, 3, 4]'`

c) What do the `list` and `str` functions do?

d) What is the result of `sum(range(5))`?

e) What does the `sum` function do?

5. Rewrite the entire program of Model 1 using one line of Python code. Hint: you'll need to use `print`, `str`, `sum`, and `range`.

6. Based on **??** and Model 1, what does it mean to be low-level vs high-level?