**Week 5 – Notes from the Lecture**

**How Do You Stop the Execution of an Infinite Loop in IDLE?**

To stop the execution of an infinite loop in IDLE (Python's Integrated Development and Learning Environment), you can use Ctrl + C (on Windows/Linux) or Cmd + . (period) (on macOS). This sends an interruption signal to halt the loop.

**Difference Between `break` and `continue`**

- `break`:

- The `break` statement is used to exit a loop completely. When encountered inside a loop, it immediately terminates the loop, and the program continues with the next statement after the loop.

- Example:

for i in range(5):

if i == 3:

break # Exits the loop when i equals 3

print(i)

# Output: 0 1 2

- `continue`:

- The `continue` statement is used to skip the current iteration and move on to the next iteration of the loop. It does not terminate the loop but only skips the current cycle.

- Example:

for i in range(5):

if i == 3:

continue # Skips the iteration when i equals 3

print(i)

Output: 0 1 2 4

In short:

- `break` exits the loop entirely.

- `continue` skips to the next iteration.

**Recommendation on When to Use a `while` Loop Versus a `for` Loop**

- Use a `while` loop when:

* You don't know in advance how many times the loop will run.
* The loop needs to run based on a condition that may change dynamically during the loop’s execution.
* Examples include waiting for user input, processing until a certain condition is met, or working with unpredictable data.

- Example:

while not user\_input.isdigit():

user\_input = input("Please enter a number: ")

- Use a `for` loop when:

* You know in advance how many iterations are needed or you are iterating over a collection (like a list, tuple, or range of numbers).
* The number of iterations or items to process is fixed or predictable.
* Examples include iterating over a range of numbers, a list, or a string.

- Example:

for i in range(10):

print(i)

In summary:

* Use a `while` loop for indeterminate or condition-based repetition.
* Use a `for` loop for definite iteration over a sequence or fixed range.