Sample Code – Counted Loop

```
var count : int              %create a counter

count := 1                     %set a starting value
loop
   put count
   count := count + 1        %increment the counter
   exit when count > 10     %set end value
end loop
```

The For Loop

The counted loop is so common that a special type of loop was created to streamline the code.

```
for count : 1 .. 10
  put count
end for
```

Notes:
1. Do NOT declare the variable count. The for loop will take care of that automatically

Counting Down with a For Loop

When we count upwards, the counter is <u>incremented</u> (i.e., we add 1 each time). It is also possible to count downwards by <u>decrementing</u> the counter. In Turing:

```
for decreasing count : 10 .. 1
  put count
end for
```

Example – Blast Off!

```
put "Begin Count Down..."

for decreasing count : 10 .. 1
  put count
  delay(1000)
end for

put "Blast Off!"
```

Changing the Increment/Decrement

So far, we have incremented or decremented by 1. It is possible to take larger steps using the "by" command to specify the (integer) step size.

```
for count : 1 .. 10 by 2
  put count
end for


for decreasing count : 10 .. 1 by 3
  put count
end for
```

Nested Loops

A nested loop is a loop within a loop. Consider the following:

```
for i : 1 .. 3
  for j : 1 .. 3
    put i * j
  end for
end for
```

What is the output?

Nested Loops

```
for i : 1 .. 3
  for j : 1 .. 3
    put i * j
  end for
end for
```

Try a "walkthrough" of
the code to determine
what it does

i	j	i * j

Nested Loops

```
for i : 1 .. 3
  for j : 1 .. 3
    put i * j
  end for
end for
```

i	j	i * j
1	1	1
1	2	2
1	3	3
2	1	2
2	2	4
2	3	6
3	1	3
3	2	6
3	3	9

Exercises

See additional exercises and extensions on the course wiki:

http://stevesweeney.pbwiki.com/Exercises+-+Intro+to+Counted+Loops