For – Next Loop

- We have worked with the For-Next Loop so far
- The formal description of this structure is

For – Next Statement

```
For counter = start to end [step step]
  [statements]
  Next counter
```

- The purpose of this type of loop is as shown
- We want to do something a fixed number of times

Repeats a group of statements a specified number of times.
For – Next Loop

- The formal syntax of the statement is

```plaintext
For counter = start To end [Step step]
[statements]
[Exit For]
[statements]
Next [counter]
```

- For now, ignore the Exit For construct
- It is a statement that isn’t used in structured programming and can lead to really messy code

- Anything in brackets is considered optional code
- Of course, if you leave the statements out, you have a loop that does nothing but kill time (almost like my lectures)

- The syntax breaks down as

```plaintext
For counter = start To end [Step step]
[statements]
[Exit For]
[statements]
Next [counter]
```

- The `counter` is a required numeric variable used as a loop counter. The variable can’t be a `Boolean` or an `Array` element.
- `start` and `end` are required. The initial value of the counter.
- `Step` is optional. The amount counter is changed each time through the loop. If not specified, step defaults to one.
For – Next Loop

- With a provision on step

<table>
<thead>
<tr>
<th>Value</th>
<th>Loop executes if</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive or 0</td>
<td>counter = end</td>
</tr>
<tr>
<td>Negative</td>
<td>counter = end</td>
</tr>
</tbody>
</table>

Remarks
- The step argument can be either positive or negative. The value of the step argument determines loop processing as follows:

For – Next Loop

- We can look at a flow diagram of the loop structure

Another Type of Loop

- For-Next Loops work fine as long as we know how many times we need to execute the loop
- If we don’t we need to use another type of loop a Do Loop
There are actually four types of Do loops. Each is based on when the test for the condition is made and how to proceed if the condition tests to true.

Do Until loop

Do While loop
An Example

- We have worked with the For-Next Loop so far
- The formal description of this structure is