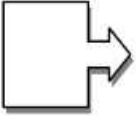# Lab 4   Using the FOR Loop

Instruction Conventions

	When the "process" icon appears in the box on the left, then this box will contain one or more instructions that you will need to follow. The instructions will be a specific as is practical but could be different for different users and computer configurations.
	When the "note" icon appears in the box to the left, this box will contain notes, hints, or tips that may be helpful to the lab activities.
	<user input>
	When the keyboard icon appears in the box to the left, the box above will contain a line of input to be entered by the user, and this box will contain an explanation of what the user input will do.
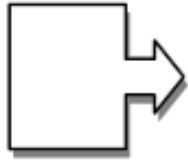
1. Using a web browser, goto HWMath.net/IBCS and open the link ForLoop.bas.

   This is a copy of Trace-2.bas which you have already seen. Save this to your C: drive where you have blassic.exe installed and other BASIC programs.

   You can do this by starting Notepad, copying the text from the open ForLoop.bas program, or by right-clicking on the link and using:
   Save Link As
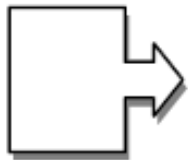
2. Open a Command Prompt window, and test the program.
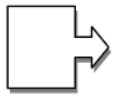
1) From the
start menu
select
All Programs

2) From
Accessories
Select
Command Prompt

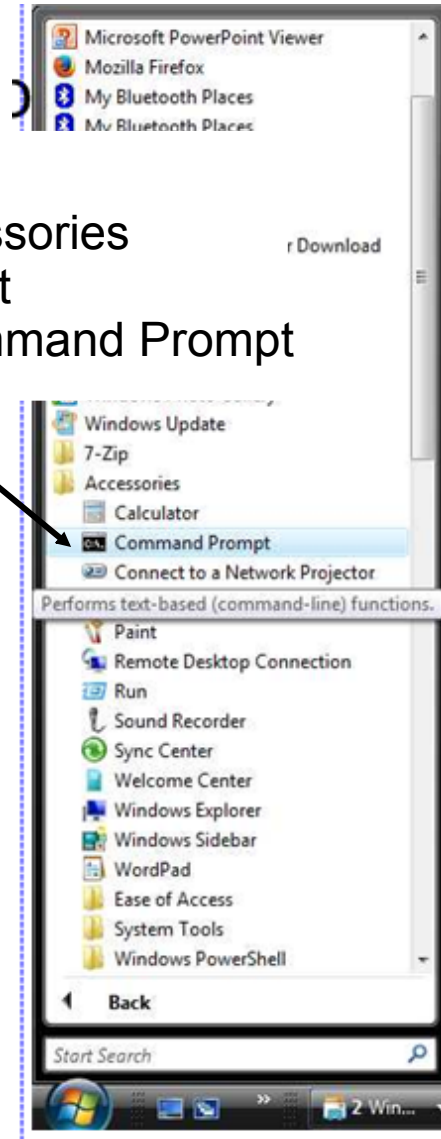If you are using a different computer than you have used before, be sure to copy blassic.exe from the CD into your work space.

copy d:\blassic\blassic.exe

3. Add your name on line 100.

4. On line 210, initialize the value of P to 14

5. Change lines 300 - 360 to use a FOR statement.

6. Instead of printing

   N: 1

   .

   .

   N: 10

   Change the print statement to print out the multiples of P

7. Add a nice title

```
The First 10 Multiples of 14:
1      x      14      =      14
2      x      14      =      28
3      x      14      =      42
4      x      14      =      56
5      x      14      =      70
6      x      14      =      84
7      x      14      =      98
8      x      14      =      112
9      x      14      =      126
10     x      14      =      140
Program terminating.
```

The PRINT USING Command

Notice how the output is spaced:
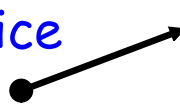
```
The First  10 Multiples of  14:
1           x          14          =           14
2           x          14          =           28
3           x          14          =           42
4           x          14          =           56
5           x          14          =           70
6           x          14          =           84
7           x          14          =           98
8           x          14          =          112
9           x          14          =          126
10          x          14          =          140
Program terminating.
```

A somewhat neater output would be:

```
The First  10 Multiples of  14:
 1 x  14 =   14
 2 x  14 =   28
 3 x  14 =   42
 4 x  14 =   56
 5 x  14 =   70
 6 x  14 =   84
 7 x  14 =   98
 8 x  14 =  112
 9 x  14 =  126
10 x  14 =  140
Program terminating.
```

The PRINT USING Command

The USING clause of the PRINT statement is used to tell the blassic.exe program how to format the output.

A template for each line printed in the loop is:

x ## =

The value of I   The value of P   The value of P*I

Notice:
- that there are two ## specified for I since I could be 1 or 2 digits.
- P is always 2 digits.
- P * I could be 2 or 3 digits long.
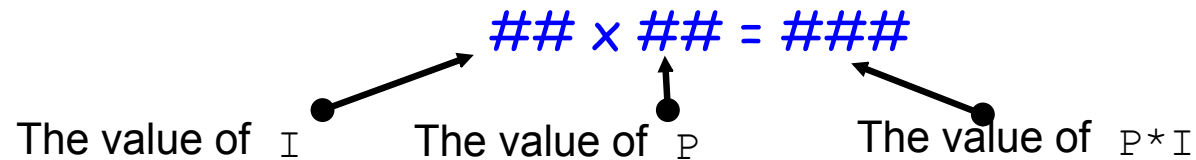
```
The First 10 Multiples of 14:
 1 x  14 =   14
 2 x  14 =   28
 3 x  14 =   42
 4 x  14 =   56
 5 x  14 =   70
 6 x  14 =   84
 7 x  14 =   98
 8 x  14 =  112
 9 x  14 =  126
10 x  14 =  140
Program terminating.
```

The PRINT USING Command

A sample PRINT Using statement using the template *## x ## = ###* is:

PRINT USING "## x ## = ###", I, P, I*P

The leftmost ## says to print the leftmost variable using two-spaces.

Notice:
- that there are two *##* specified for I since I could be 1 or 2 digits.
- P is always 2 digits.
- P * I could be 2 or 3 digits long.

```
The First  10 Multiples of  14:
 1 x  14 =    14
 2 x  14 =    28
 3 x  14 =    42
 4 x  14 =    56
 5 x  14 =    70
 6 x  14 =    84
 7 x  14 =    98
 8 x  14 =   112
 9 x  14 =   126
10 x  14 =   140
Program  terminating.
```

The PRINT USING Command

Most programming languages have a similar method to create formatted output.

```
The First  10 Multiples  of  14:
 1 x  14 =   14
 2 x  14 =   28
 3 x  14 =   42
 4 x  14 =   56
 5 x  14 =   70
 6 x  14 =   84
 7 x  14 =   98
 8 x  14 =  112
 9 x  14 =  126
10 x  14 =  140
Program  terminating.
```

8. Change your PRINT statement to PRINT USING to format the output similar to the sample above.