IBCS   Lab 6 Special File Processing   Mr. Brennan

This is an optional Lab Extension. It is intended to introduce you to new topics and/or features of the BASIC programming language, which can be applied to other programming languages as well. You can take the files used in this lab to create your own experiments and investigations. Responsible behavior is expected.

Part I   Sockets

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In Lab 5 you used input files and output files. Using these same type of methods you can establish connections to other computer to send and receive data.

In this lab you will open a network connection to a web server, request a file, and print the contents of the file to the screen.

In future units we will study the network connection in more detail along with other network and communication topics. This Lab is intended for you to see how processes you already understand can be applied to bigger topics.

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This is the program socket.bas.

Before downloading a testing this program lets preview what the program is going to do.

```
110 REM File : socket.bas
120 REM Name :
130 REM Purpose: Open a connection to a web server
140 REM        Send a GET request to retrieve a file
150            Print out the contents of the response.
200 SOCKET "64.71.35.54",80 AS #1
210 PRINT #1,"GET http://hwmath.net/IBCS/message1.txt HTTP/1.0"
220 PRINT #1,"From: someuser@hwmath.net"
230 PRINT #1,"User-Agent: HTTPTool/1.0"
240 PRINT #1,""
300 INPUT #1,A$
310 WHILE NOT EOF(1)
320    PRINT "Rsvp",A$
330    INPUT #1, A$
340    WEND
800 PRINT "<done>"
```

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Lines 110 - 150 are comment lines.

```
110 REM File : socket.bas
120 REM Name :
130 REM Purpose: Open a connection to a web server
140 REM            Send a GET request to retrieve a file
150 REM            Print out the contents of the response.

200 SOCKET "64.71.35.54",80 AS #1

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300 INPUT #1,A$
310 WHILE NOT EOF(1)
320    PRINT "Rsvp",A$
330    INPUT #1, A$
340    WEND
800 PRINT "<done>"
```

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Lines 200 opens a connection to HWMath.net.

Rather than using the host name, a network address is specified. On the HWMath.net server there are many types of services, some for sending and receiving mail, some for transferring files. This services that you are connecting to is on port 80 - the port used most commonly for processing web requests.

You will learn more about network services in future units. For now, understand line 200 to establish an open connection to a web server.

Note that this uses channel #1 similar to how channel #1 was associated with an input file in Lab 5.

```
200 SOCKET "64.71.35.54",80 AS #1

210 PRINT #1,"GET http://hwmath.net/IBCS/message1.txt HTTP/1.0"
220 PRINT #1,"From: someuser@hwmath.net"
230 PRINT #1,"User-Agent: HTTPTool/1.0"
240 PRINT #1,""

300 INPUT #1,A$
310 WHILE NOT EOF(1)
320    PRINT "Rsvp",A$
330    INPUT #1, A$
340    WEND
800 PRINT "<done>"
```

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Lines 210 - 240 send a request to the web server

Each of the four PRINT #1 statements make up a single request to get the file messag1.txt. Additional information could have been sent but these four lines 210-240 make up the "GET" request.

```
200 SOCKET "64.71.35.54",80 AS #1

210 PRINT #1,"GET http://hwmath.net/IBCS/message1.txt HTTP/1.0"
220 PRINT #1,"From: someuser@hwmath.net"
230 PRINT #1,"User-Agent: HTTPTool/1.0"
240 PRINT #1,""

300 INPUT #1,A$
310 WHILE NOT EOF(1)
320    PRINT "Rsvp",A$
330    INPUT #1, A$
340    WEND
800 PRINT "<done>"
```

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Lines 300 - 340 read the response sent from the web server.

Notice that line 300 uses INPUT #1 which is the same channel that was used in the SOCKET statement as well as all of the PRINT statements from line 210 - 240. The loop from 310 to 340 read all of the servers response - which will span multiple lines.

```
200 SOCKET "64.71.35.54",80 AS #1

210 PRINT #1,"GET http://hwmath.net/IBCS/message1.txt HTTP/1.0"
220 PRINT #1,"From: someuser@hwmath.net"
230 PRINT #1,"User-Agent: HTTPTool/1.0"
240 PRINT #1,""

300 INPUT #1,A$
310 WHILE NOT EOF(1)
320    PRINT "Rsvp",A$
330    INPUT #1, A$
340    WEND
800 PRINT "<done>"
```

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Line 320 sends the server's response to the console

Before the lines of text from the web server are displayed on the screen, the string "Rsvp" is printed just to add a notation that the PRINT message is coming from within the loop. When all of the response is displayed the program will send a "<done>" message to the scree, and end.

```
200 SOCKET "64.71.35.54",80 AS #1

210 PRINT #1,"GET http://hwmath.net/IBCS/message1.txt HTTP/1.0"
220 PRINT #1,"From: someuser@hwmath.net"
230 PRINT #1,"User-Agent: HTTPTool/1.0"
240 PRINT #1,""

300 INPUT #1,A$
310 WHILE NOT EOF(1)
320    PRINT "Rsvp",A$
330    INPUT #1, A$
340    WEND
800 PRINT "<done>"
```
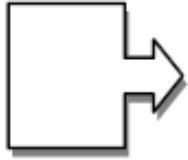
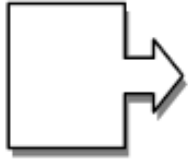IBCS   **Lab 6 Sockets**   **Part I**

1. Download the file socket.bas from HWMath.net/IBCS and save it.

2. Execute the program as is, and see if you can get the message1.txt file.

   Once you are able to download the message1.txt file, move on to the next step.

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3. Open a new tab on your web browser and go to the
   following page on the school's web site.

   http://www.isbos.org/page.cfm?p=4421

4. Change the socket.bas program to open a socket to
   the schools web site by using the following
   address: (also port 80)

   162.222.97.89

   Change the GET request to :
   GET http://www.isbos.org/page.cfm?p=4421
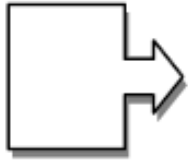
   Verify that you are able to download the web
   page [Note: there will be a lot of text]

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5. Change the print statement on line 320 to only print the text from the web servers response, not the "Rsvp" string.

6. Run the program again, and redirect the output to school.html

    C:>blassic socket.bas > school.html

7. Using your web browser, open the file school.html.
   [File][Open File] select school.html from your working directory.
   The schools web page is made up of many file, your program has asked for only one part. Can you see that this interaction is a smaller part of asking for all of the pieces of the web page?