

Introduction to Operating Systems and the BASIC Programming Language

Command Prompt

echo

cd

REM

LIST

Command Prompt

PATH

dir

SYSTEM

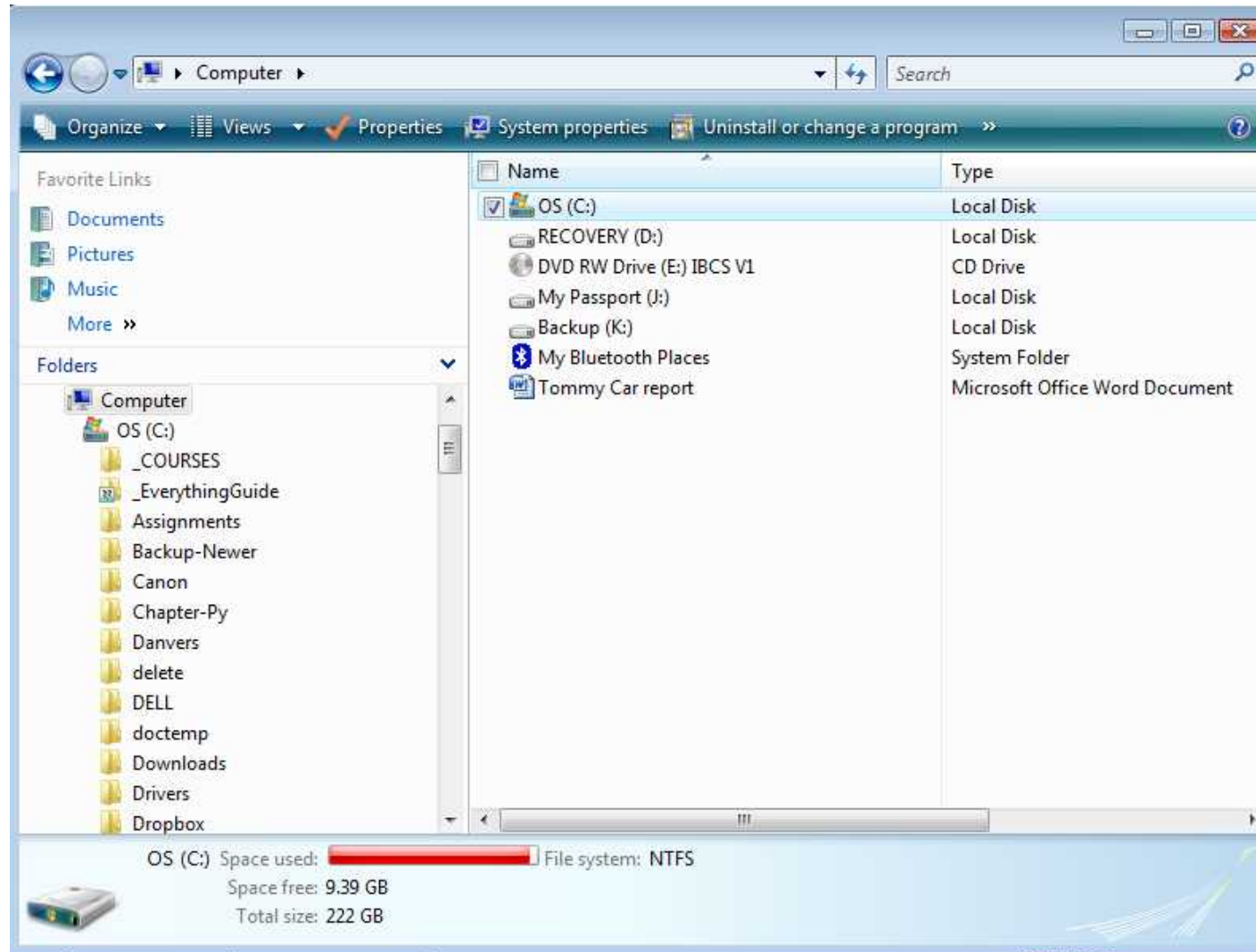
INPUT

PRINT

File Extensions

Starters:

What information can you identify from the following screen shot of Windows Explorer on my PC?



The screenshot shows a Windows Explorer window titled "Computer". The address bar shows "Computer" and a search box. The ribbon includes "Organize", "Views", "Properties", "System properties", and "Uninstall or change a program".

Favorite Links: Documents, Pictures, Music, More >>

Folders: Computer, OS (C:), _COURSES, _EverythingGuide, Assignments, Backup-Newer, Canon, Chapter-Py, Danvers, delete, DELL, doctemp, Downloads, Drivers, Dropbox.

Name	Type
OS (C:)	Local Disk
RECOVERY (D:)	Local Disk
DVD RW Drive (E:) IBCS V1	CD Drive
My Passport (J:)	Local Disk
Backup (K:)	Local Disk
My Bluetooth Places	System Folder
Tommy Car report	Microsoft Office Word Document

Status Bar: OS (C:) Space used: [Progress Bar] File system: NTFS
Space free: 9.39 GB
Total size: 222 GB

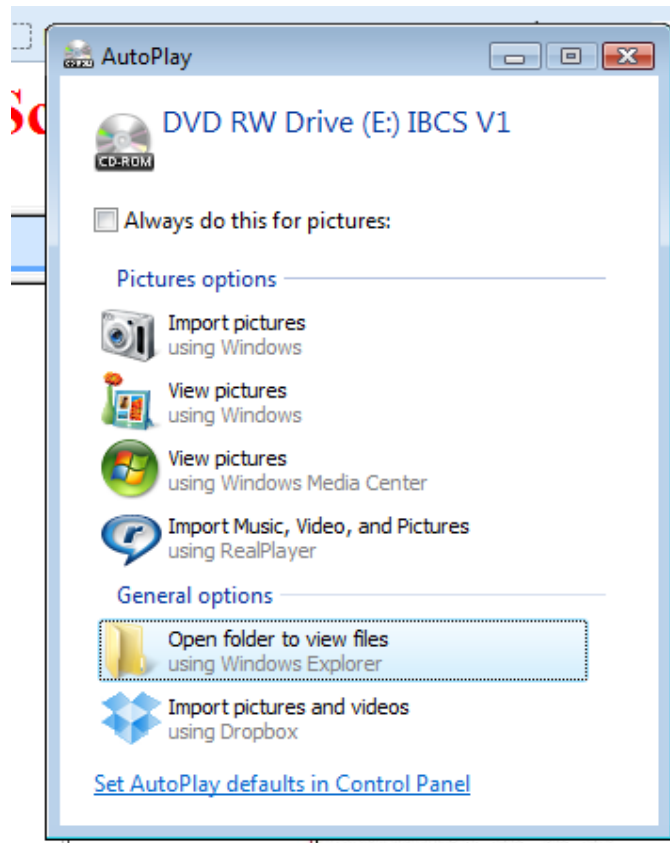
The screenshot shows a Windows Explorer window titled 'Computer'. The address bar shows 'Computer'. The left pane shows 'Favorite Links' (Documents, Pictures, Music) and 'Folders' (Computer, OS (C:), _COURSES, _EverythingGuide, Assignments, Backup-Newer, Canon, Chapter-Py, Danvers, delete, DELL, doctemp, Downloads, Drivers, Dropbox, eclipse-SDK-4.2-win32, Edline, HWRHS-BACKUP-2011, HWRHS-Migrate, inetpub, Intel, ITT-Tech). The main pane shows a table of drives and folders.

Name	Type	Total Size	Free Space
OS (C:)	Local Disk	222 GB	9.39 GB
RECOVERY (D:)	Local Disk	9.99 GB	162 MB
DVD RW Drive (E:) IBCS V1	CD Drive	423 MB	0 bytes
My Passport (J:)	Local Disk	277 GB	11.5 GB
Backup (K:)	Local Disk	19.5 GB	4.08 GB
My Bluetooth Places	System Folder		
Tommy Car report	Microsoft Office Word Document		

What is BASIC

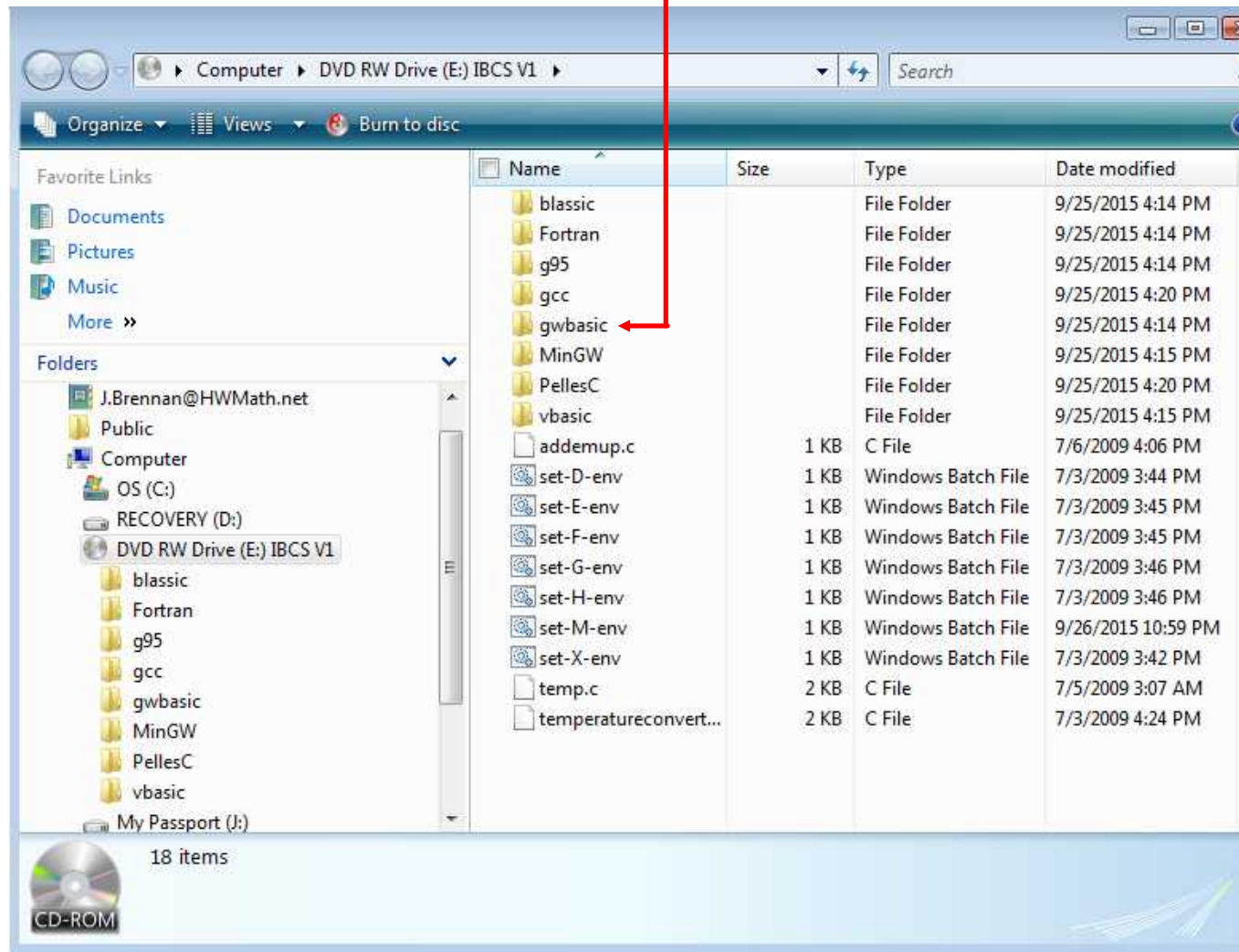
Running GWBasic from the CD

- 1) Insert the CD (supplied)
- 2) Select open folder to view files

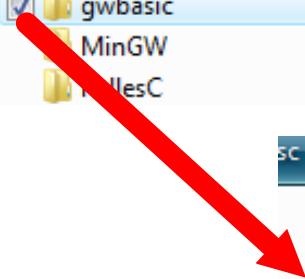


Note: If the AutoPlay screen does not pop-up after you insert the CD, then open the CD from Windows Explorer.

3) Double click on the gwbasic directory to view the list of files and directories under gwbasic.

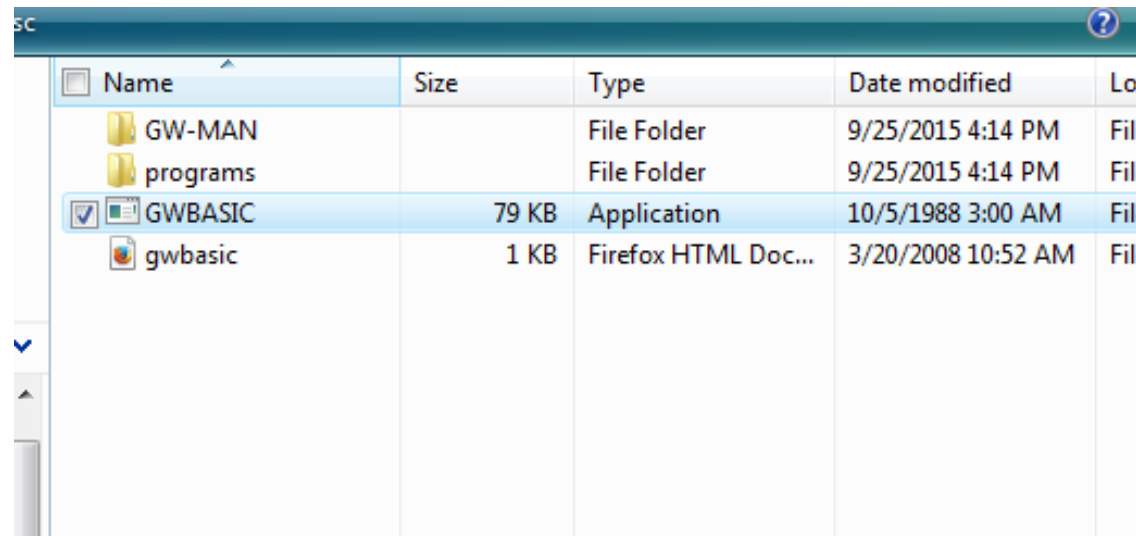


<input type="checkbox"/> Name	Size	Type	Date modified
blassic		File Folder	9/25/2015 4:14 PM
Fortran		File Folder	9/25/2015 4:14 PM
g95		File Folder	9/25/2015 4:14 PM
gcc		File Folder	9/25/2015 4:20 PM
<input checked="" type="checkbox"/> gwbasic		File Folder	9/25/2015 4:14 PM
MinGW		File Folder	9/25/2015 4:15 PM
VisualC		File Folder	9/25/2015 4:20 PM



<input type="checkbox"/> Name	Size	Type	Date modified	Lo
GW-MAN		File Folder	9/25/2015 4:14 PM	File
programs		File Folder	9/25/2015 4:14 PM	File
<input checked="" type="checkbox"/> GWBASIC	79 KB	Application	10/5/1988 3:00 AM	File
gwbasic	1 KB	Firefox HTML Doc...	3/20/2008 10:52 AM	File

4) Double-click on GWBASIC to start the application



The image shows a Windows File Explorer window with a table of files and folders. The 'GWBASIC' file is selected, indicated by a checkmark in the left column and a blue highlight. The table has columns for Name, Size, Type, Date modified, and Location.

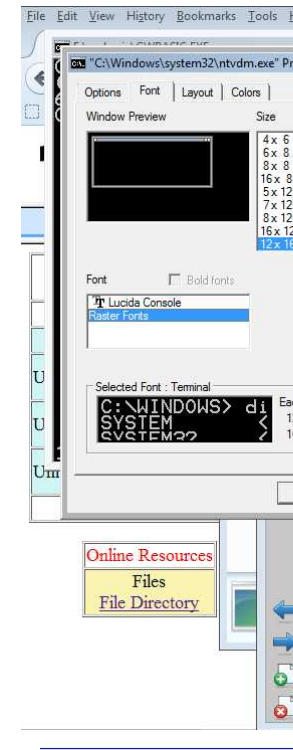
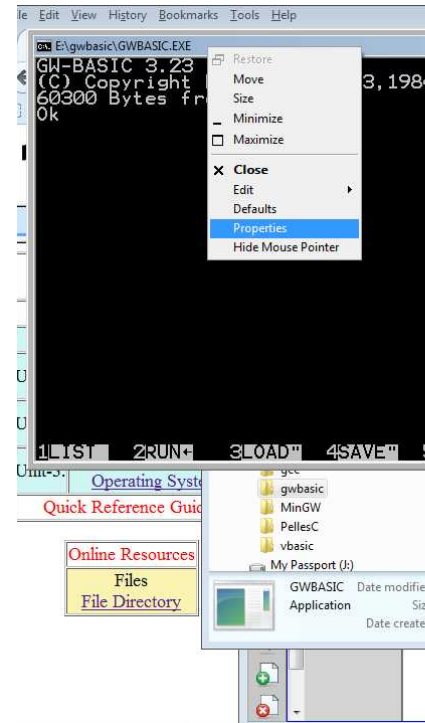
<input type="checkbox"/>	Name	Size	Type	Date modified	Lo
	GW-MAN		File Folder	9/25/2015 4:14 PM	File
	programs		File Folder	9/25/2015 4:14 PM	File
<input checked="" type="checkbox"/>	GWBASIC	79 KB	Application	10/5/1988 3:00 AM	File
	gwbasic	1 KB	Firefox HTML Doc...	3/20/2008 10:52 AM	File

GWBasic is a program interpreter - but it is also its own program environment.

You can select which programs to open (load), edit, and run.

First, change the size of the window font by right clicking on the top bar and select Properties.

5) Select size 12x16



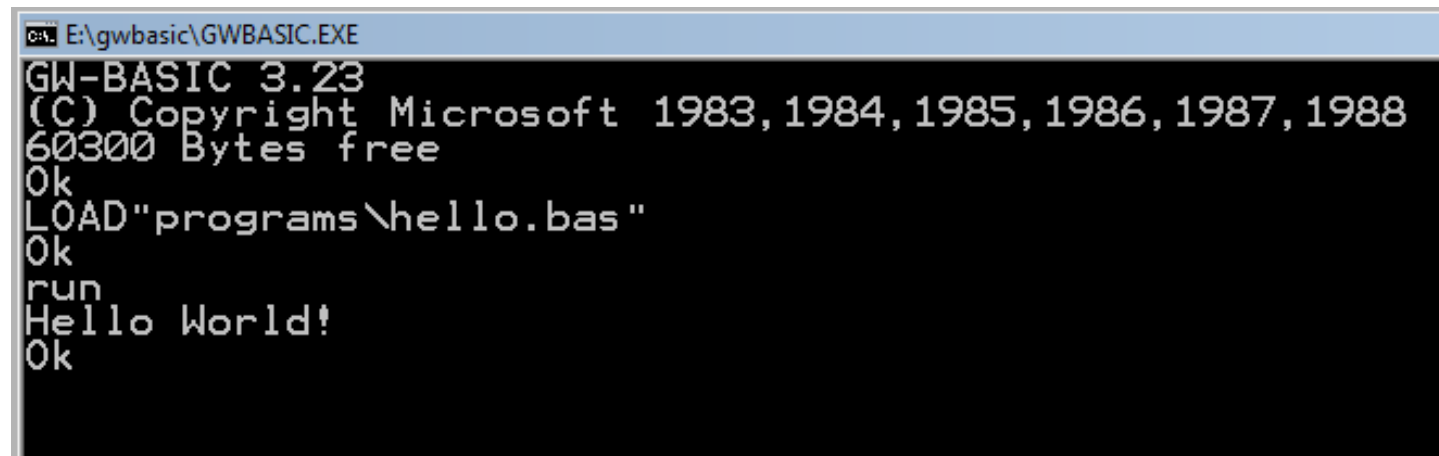
Running your first BASIC Program

6) Load the program hello.bas which is located in a directory named programs. Issue the command:

```
LOAD "programs\hello.bas"
```

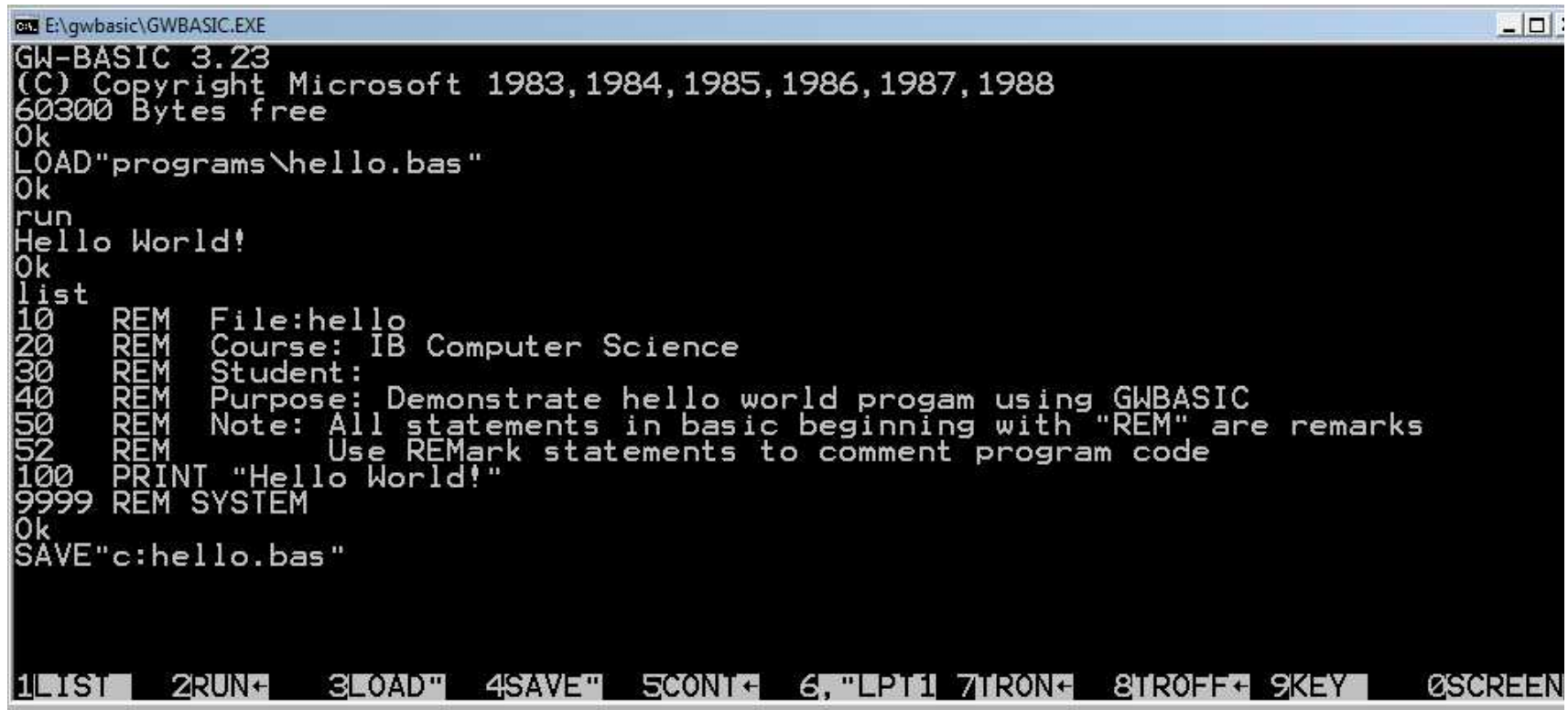
The Ok prompt tells you that gwbasic has completed a command and is waiting for your input.

7) run the hello.bas program by issuing the command:
run



```
GW-BASIC 3.23
(C) Copyright Microsoft 1983,1984,1985,1986,1987,1988
60300 Bytes free
Ok
LOAD"programs\hello.bas"
Ok
run
Hello World!
Ok
```

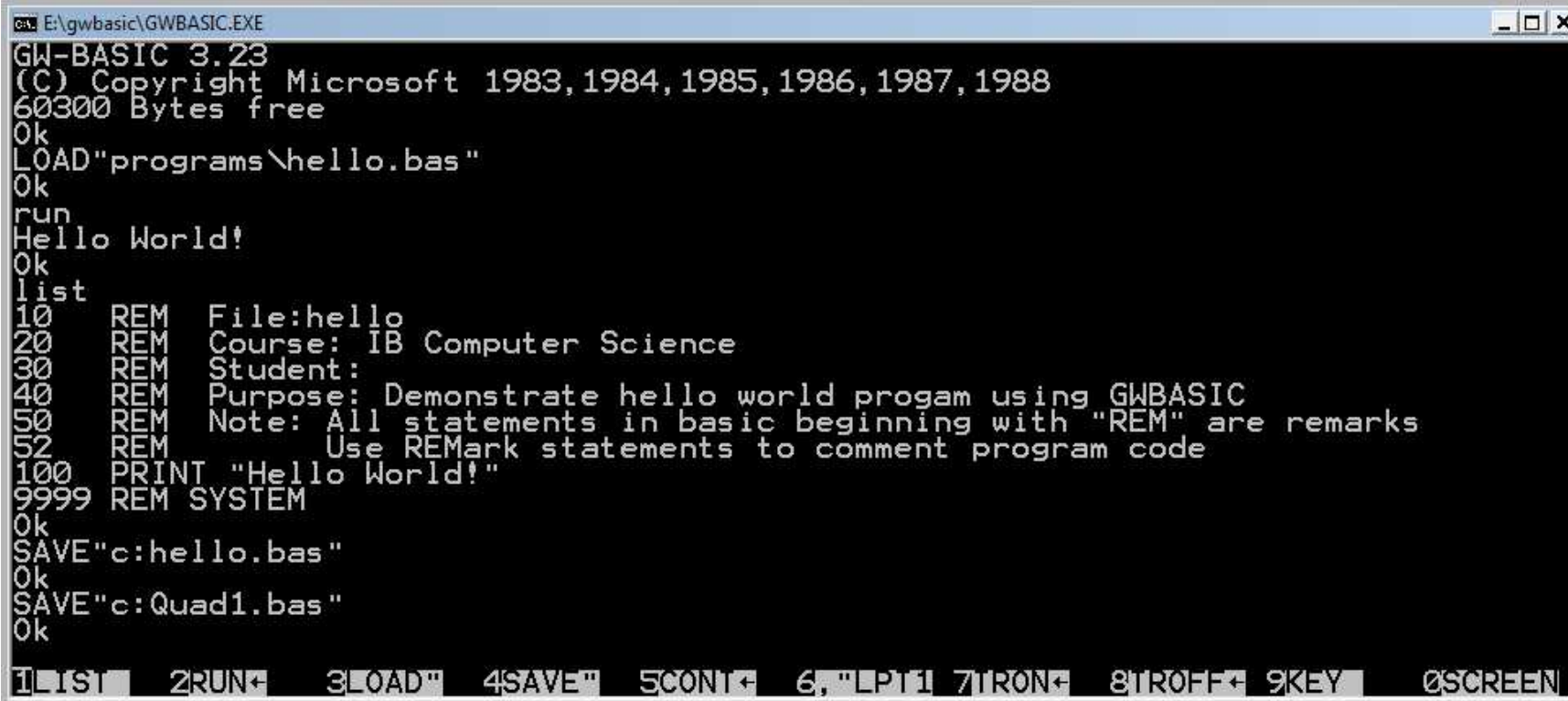
8) Issue the LIST command to view the program hello.bas



```
E:\gwbasic\GWBASIC.EXE
GW-BASIC 3.23
(C) Copyright Microsoft 1983,1984,1985,1986,1987,1988
60300 Bytes free
Ok
LOAD"programs\hello.bas"
Ok
run
Hello World!
Ok
list
10 REM File:hello
20 REM Course: IB Computer Science
30 REM Student:
40 REM Purpose: Demonstrate hello world program using GWBASIC
50 REM Note: All statements in basic beginning with "REM" are remarks
52 REM Use REMark statements to comment program code
100 PRINT "Hello World!"
9999 REM SYSTEM
Ok
SAVE"c:hello.bas"

1LIST 2RUN+ 3LOAD" 4SAVE" 5CONT+ 6,"LPT1 7IRON+ 8TROFF+ 9KEY 0SCREEN
```

9) Save the program on the c: drive with the command
SAVE C:hello.bas



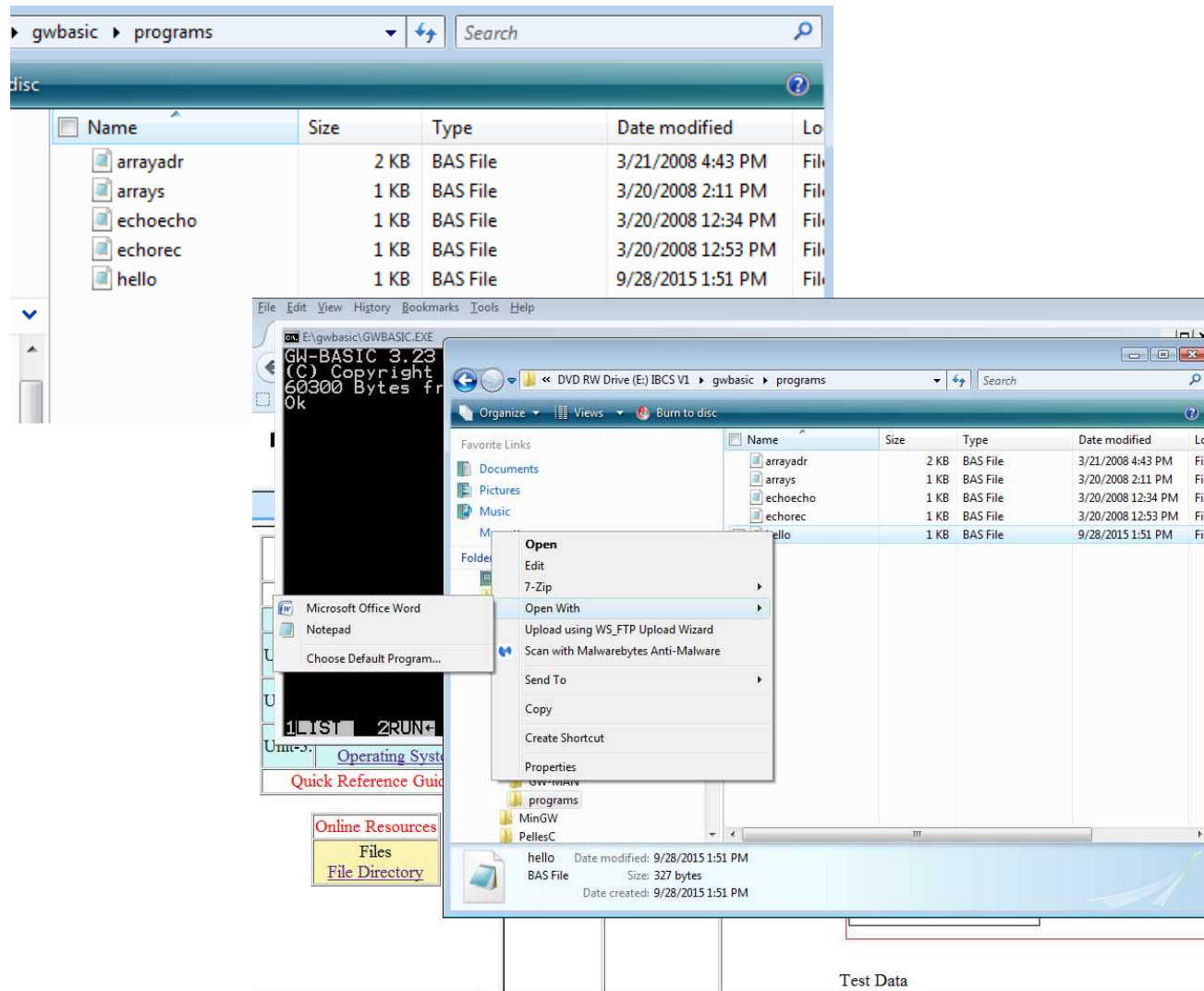
```
GW-BASIC 3.23
(C) Copyright Microsoft 1983,1984,1985,1986,1987,1988
60300 Bytes free
Ok
LOAD"programs\hello.bas"
Ok
run
Hello World!
Ok
list
10 REM File:hello
20 REM Course: IB Computer Science
30 REM Student:
40 REM Purpose: Demonstrate hello world program using GWBASIC
50 REM Note: All statements in basic beginning with "REM" are remarks
52 REM Use REMark statements to comment program code
100 PRINT "Hello World!"
9999 REM SYSTEM
Ok
SAVE"c:hello.bas"
Ok
SAVE"c:Quad1.bas"
Ok
1LIST 2RUN+ 3LOAD" 4SAVE" 5CONT+ 6,"LPT1 7IRON+ 8TROFF+ 9KEY 0SCREEN
```

10) Save the program again using the command
SAVE C:Quad1.bas

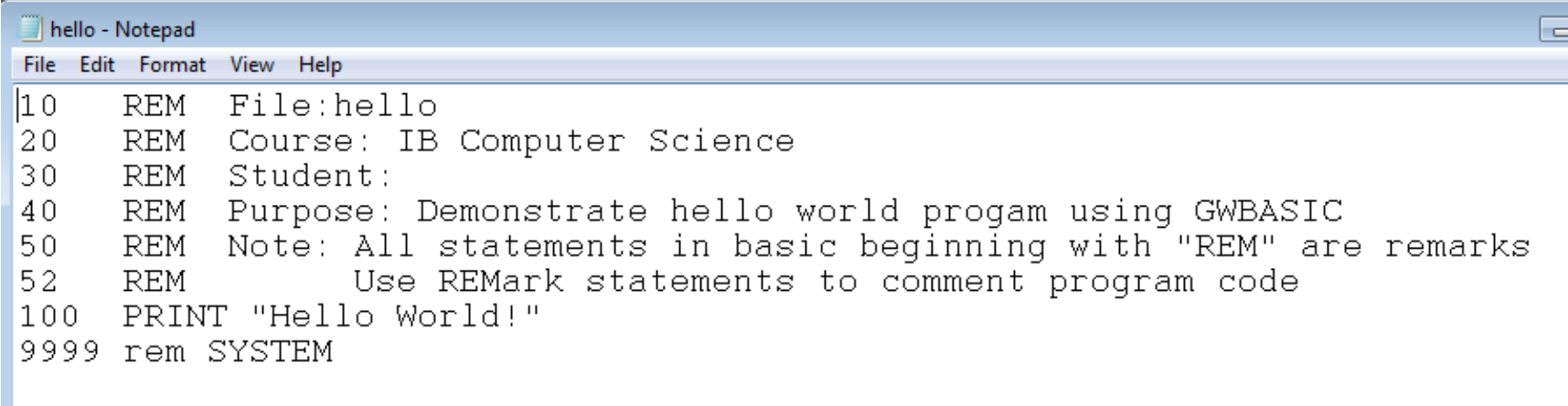
You will now make changes to the program to calculate the roots of a quadratic equation, similar to the one you created on the TI84.

Another way to copy the hello.bas program is to open the programs folder and open the hello.bas program using notepad.

Save the file as quad1.bas in your private work area.



This is the contents of the hello.bas program:



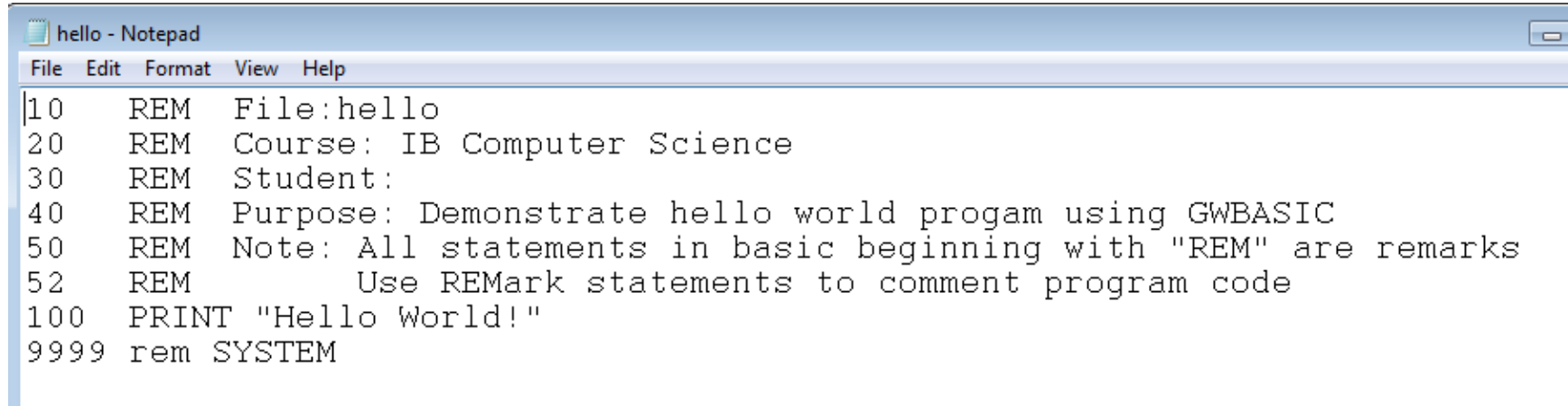
```
hello - Notepad
File Edit Format View Help
10 REM File:hello
20 REM Course: IB Computer Science
30 REM Student:
40 REM Purpose: Demonstrate hello world program using GWBASIC
50 REM Note: All statements in basic beginning with "REM" are remarks
52 REM Use REMark statements to comment program code
100 PRINT "Hello World!"
9999 rem SYSTEM
```

We will discuss each of these three BASIC statements:

REM
PRINT
SYSTEM

We will discuss each of these Operating System Concepts
Drive, Devices, Directories and Folders
Executable files and file-types

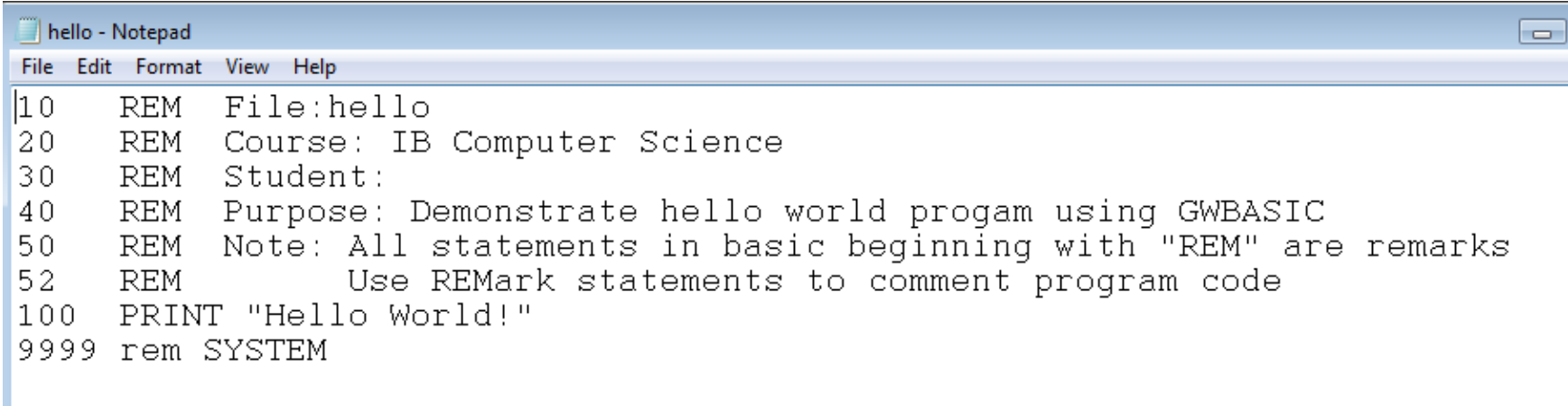
Editing your program: Things to know:



```
hello - Notepad
File Edit Format View Help
10 REM File:hello
20 REM Course: IB Computer Science
30 REM Student:
40 REM Purpose: Demonstrate hello world program using GWBASIC
50 REM Note: All statements in basic beginning with "REM" are remarks
52 REM Use REMark statements to comment program code
100 PRINT "Hello World!"
9999 rem SYSTEM
```

- Line Numbers
- Variable names
- Getting input from the user
- Performing calculations
- Documenting the code
- Adding/deleting lines of code
- Pseudo-code

Add statements that both document the code and outline what is/or will be performed.



```
hello - Notepad
File Edit Format View Help
10 REM File:hello
20 REM Course: IB Computer Science
30 REM Student:
40 REM Purpose: Demonstrate hello world program using GWBASIC
50 REM Note: All statements in basic beginning with "REM" are remarks
52 REM Use REMark statements to comment program code
100 PRINT "Hello World!"
9999 rem SYSTEM
```

```
10 REM File:QUAD1.bas
20 REM Course: IB Computer Science
30 REM Student:
40 REM Purpose: Convert the hello world program using GWBASIC
41 REM into a program to calculate the roots of a quadratic
41 REM equation.
50 REM Note: All statements in basic beginning with "REM" are remarks
52 REM Use REMark statements to comment program code
100 PRINT "Begin program QUAD1.bas"
110 INPUT "Enter values for a, b, c (separate using commas): ", A, B, C
120 PRINT "You entered: ", A, B, C
200 REM Calculate D
210 D = 0
300 REM Calculate E
310 E = 0
400 REM Calculate F
410 F = 0
500 REM Send output to the users
510 PRINT "The roots are : ", E, F
9999 SYSTEM
```

Lines 200, 300, 400, and 500 document the code

Lines 210, 310, and 410 declare variables D, E, and F
and initialize them to 0

Line 110 gets input from the user, what does line 120 do?

When you run this program what do you expect line 510 to
say?

Additional notes:

The exponent operator is ^
which is shift-[6] on the keyboard.

The square root function is SQR

The IF statement looks like this:

IF <condition is true> THEN <line# to goto>

if the condition is not true then the program will continue
on the line after the IF statement.

Example

```
IF D < 0 THEN 765
```

(note: I made that line number up)