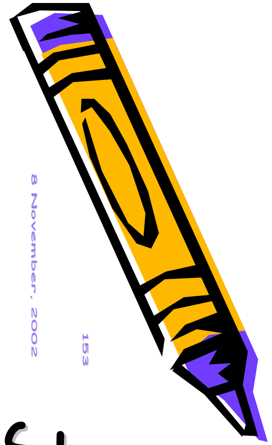
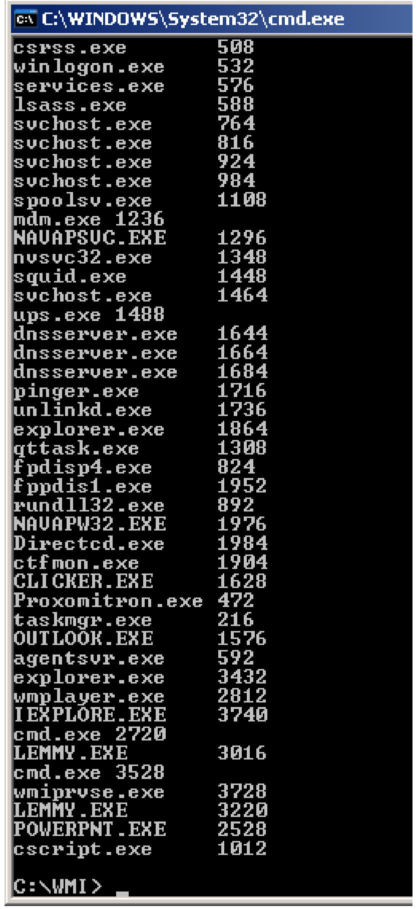
JavaScript Shell Scripting



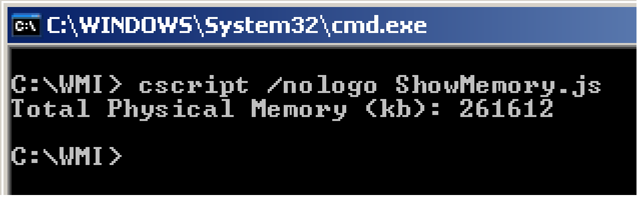
- A Useful facility
  - A feature of the Windows Scripting Host

```
var e= new Enumerator(GetObject("winmgmts:").
                            InstancesOf("Win32_process"))

for (;!e.atEnd();e.moveNext())
{
   var process = e.item();
   WScript.echo (process.Name + "\t" +
                 process.processid)
}
```



C:\WINDOWS\System32\cmd.exe

```
csrss.exe       508
winlogon.exe    532
services.exe    576
lsass.exe       588
svchost.exe     764
svchost.exe     816
svchost.exe     924
svchost.exe     984
spoolsv.exe     1108
mdm.exe 1236
NAVAPSVC.EXE    1296
nvsvc32.exe     1348
squid.exe       1448
svchost.exe     1464
ups.exe 1488
dnsserver.exe   1644
dnsserver.exe   1664
dnsserver.exe   1684
pinger.exe      1716
unlinkd.exe     1736
explorer.exe    1864
qttask.exe      1308
fpdisp4.exe     824
fppdis1.exe     1952
rundll32.exe    892
NAVAPW32.EXE    1976
Directcd.exe    1984
ctfmon.exe      1904
CLICKER.EXE     1628
Proxomitron.exe 472
taskmgr.exe     216
OUTLOOK.EXE     1576
agentsvr.exe    592
explorer.exe    3432
wmplayer.exe    2812
IEXPLORE.EXE    3740
cmd.exe 2720
LEMMY.EXE       3016
cmd.exe 3528
wmiprvse.exe    3728
LEMMY.EXE       3220
POWERPNT.EXE    2528
cscript.exe     1012

C:\WMI>
```

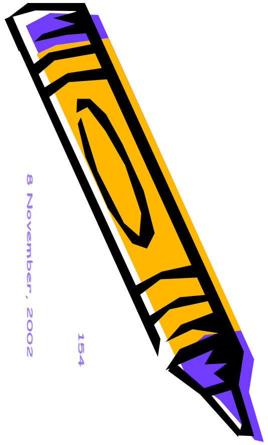


C:\WINDOWS\System32\cmd.exe

```
C:\WMI> cscript /nologo ShowMemory.js
Total Physical Memory (kb): 261612

C:\WMI>
```

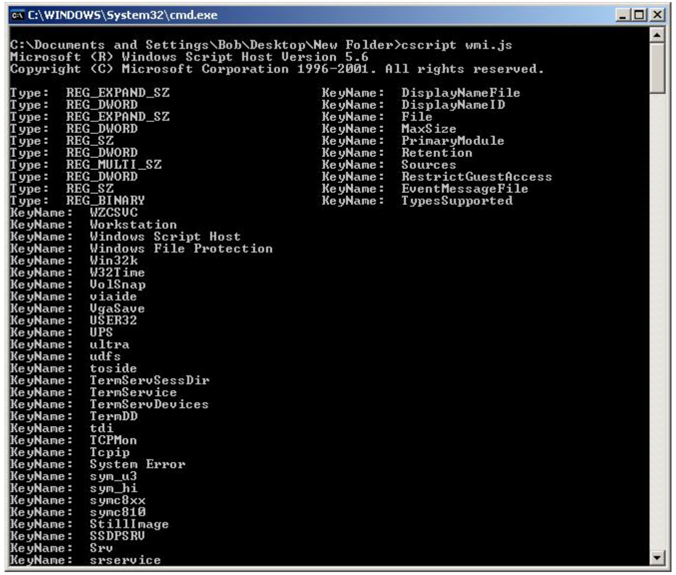
```
var e= new Enumerator(GetObject("winmgmts:").
                        InstancesOf("Win32_LogicalMemoryConfiguration"));
WScript.Echo ("Total Physical Memory (kb): " + e.item().TotalPhysicalMemory);
```

JavaScript Shell Scripting…



```
sRegTypes = new Array(
    "                              ", "REG_SZ                          ",
    "REG_EXPAND_SZ                 ", "REG_BINARY                      ",
    "REG_DWORD                     ", "REG_DWORD_BIG_ENDIAN            ",
    "REG_LINK                      ", "REG_MULTI_SZ                    ",
    "REG_RESOURCE_LIST             ", "REG_FULL_RESOURCE_DESCRIPTOR    ",
    "REG_RESOURCE_REQUIREMENTS_LIST", "REG_QWORD                      ");

HKLM = 0x80000002;
sRegPath = "SYSTEM\\CurrentControlSet\\Services\\Eventlog\\System";

oLoc = new ActiveXObject("WbemScripting.SWbemLocator");
oSvc = oLoc.ConnectServer(null, "root\\default");
oReg = oSvc.Get("StdRegProv");
oMethod = oReg.Methods_.Item("EnumValues");
oInParam = oMethod.InParameters.SpawnInstance_();
oInParam.hDefKey = HKLM;
oInParam.sSubKeyName = sRegPath;
oOutParam = oReg.ExecMethod_(oMethod.Name, oInParam);
aNames = oOutParam.sNames.toArray();
aTypes = oOutParam.Types.toArray();

for (i = 0; i < aNames.length; i++)
    WScript.Echo("Type: ", sRegTypes[aTypes[i]], " KeyName: ", aNames[i]);

oMethod = oReg.Methods_.Item("GetMultiStringValue");
oInParam = oMethod.InParameters.SpawnInstance_();
oInParam.hDefKey = HKLM;
oInParam.sSubKeyName = sRegPath;
oInParam.sValueName = "Sources";
oOutParam = oReg.ExecMethod_(oMethod.Name, oInParam);
aNames = oOutParam.sValue.toArray();

for (i = 0; i < aNames.length; i++)
    WScript.Echo("KeyName: ", aNames[i]);

function hex(nmb) {
    if (nmb > 0)
        return nmb.toString(16);
    else
        return (nmb + 0x100000000).toString(16);
}
```

display all keys under HKLM\SYSTEM\CurrentControlSet\Services\Eventlog\System



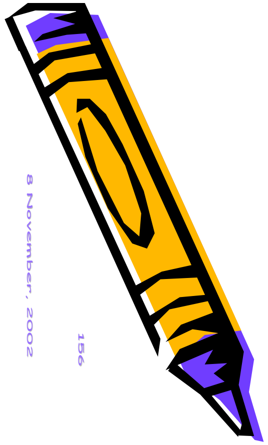
```
C:\Documents and Settings\Bob\Desktop\New Folder>cscript wmi.js
Microsoft (R) Windows Script Host Version 5.6
Copyright (C) Microsoft Corporation 1996-2001. All rights reserved.

Type:  REG_EXPAND_SZ                      KeyName:  DisplayNameFile
Type:  REG_DWORD                          KeyName:  DisplayNameID
Type:  REG_EXPAND_SZ                      KeyName:  File
Type:  REG_DWORD                          KeyName:  MaxSize
Type:  REG_SZ                             KeyName:  PrimaryModule
Type:  REG_DWORD                          KeyName:  Retention
Type:  REG_MULTI_SZ                       KeyName:  Sources
Type:  REG_DWORD                          KeyName:  RestrictGuestAccess
Type:  REG_SZ                             KeyName:  EventMessageFile
Type:  REG_BINARY                         KeyName:  TypesSupported
KeyName:  WZCSVC
KeyName:  Workstation
KeyName:  Windows Script Host
KeyName:  Windows File Protection
KeyName:  Win32k
KeyName:  W32Time
KeyName:  VolSnap
KeyName:  viaide
KeyName:  VgaSave
KeyName:  USER32
KeyName:  UPS
KeyName:  ultra
KeyName:  udfs
KeyName:  toside
KeyName:  TermServSessDir
KeyName:  TermService
KeyName:  TermServDevices
KeyName:  TermDD
KeyName:  tdi
KeyName:  TCPMon
KeyName:  Tcpip
KeyName:  System Error
KeyName:  sym_u3
KeyName:  sym_hi
KeyName:  symc8xx
KeyName:  symc810
KeyName:  StillImage
KeyName:  SSDPSRV
KeyName:  Srv
KeyName:  srservice
```

Rhino

- Open-source implementation of JavaScript written entirely in Java
  - Intended to be embedded into Java applications to provide a scripting facility to end users
  - Rhino 1.5 implements JavaScript 1.5
  - Contains the *jsc* JavaScript compiler

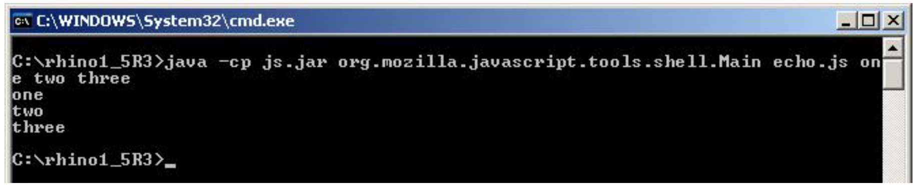
```
public class RunScript {
  public static void main(String [] args)
    throws JavaScriptException
    {
    Context cx = Context.enter();
    try {
      Scriptable scope = cx.initStandardObjects(null);
      String s = "";
      for (int i=0; i < args.length; i++)
          s += args[i] + " ";
      Object result = cx.evaluateString(scope, s, "<cmd>", 1, null);
      System.err.println(cx.toString(result));
      }
    finally {
      Context.exit();
      }
    }
  }
```

Rhino...



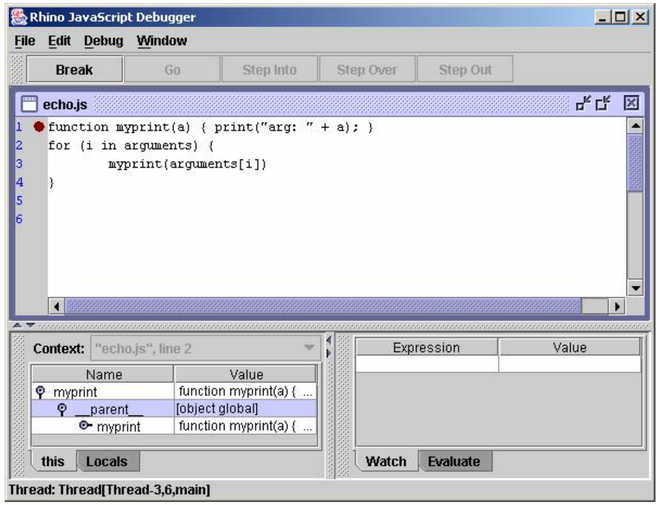
- Interactive mode makes it easy to do interactive program development

```
for (i in arguments) {
        print(arguments[i])
}
```



```
C:\rhino1_5R3>java -cp js.jar org.mozilla.javascript.tools.shell.Main echo.js on
e two three
one
two
three

C:\rhino1_5R3>_
```

- Has a (quite primitive) debugger



```
function myprint(a) { print("arg: " + a); }
for (i in arguments) {
        myprint(arguments[i])
}
```

Context: "echo.js", line 2

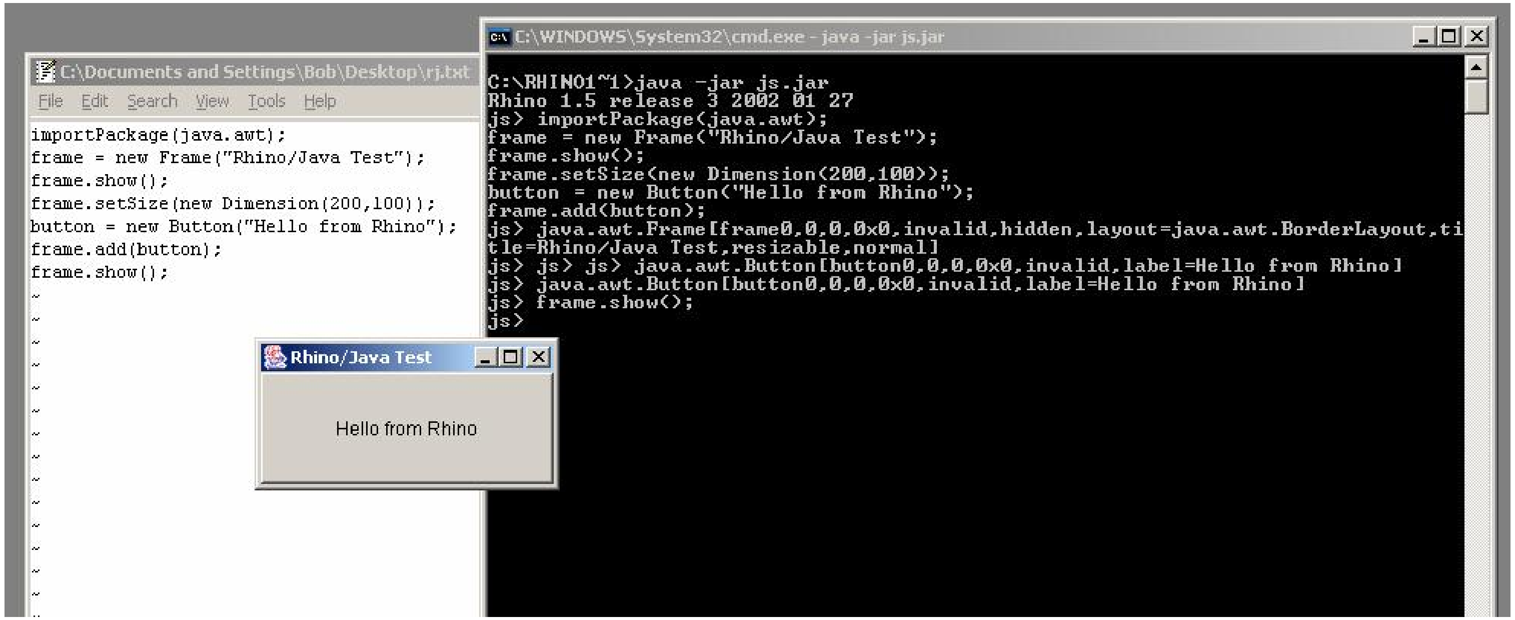
Name	Value
myprint	function myprint(a) { ...
__parent__	[object global]
myprint	function myprint(a) { ...

Expression	Value

Thread: Thread[Thread-3,6,main]

Rhino...

- Interacts very well with Java
  - Illustrates Netscape's LiveConnect idea
    - Also found in the Netscape Browser
  - *Almost* a Java interpreter…(?)


C:\Documents and Settings\Bob\Desktop\rj.txt
File Edit Search View Tools Help
C:\WINDOWS\System32\cmd.exe - java -jar js.jar
Rhino/Java Test
Hello from Rhino

```
importPackage(java.awt);
frame = new Frame("Rhino/Java Test");
frame.show();
frame.setSize(new Dimension(200,100));
button = new Button("Hello from Rhino");
frame.add(button);
frame.show();
```

```
C:\RHINO1~1>java -jar js.jar
Rhino 1.5 release 3 2002 01 27
js> importPackage(java.awt);
frame = new Frame("Rhino/Java Test");
frame.show();
frame.setSize(new Dimension(200,100));
button = new Button("Hello from Rhino");
frame.add(button);
js> java.awt.Frame[frame0,0,0,0x0,invalid,hidden,layout=java.awt.BorderLayout,ti
tle=Rhino/Java Test,resizable,normal]
js> js> js> java.awt.Button[button0,0,0,0x0,invalid,label=Hello from Rhino]
js> java.awt.Button[button0,0,0,0x0,invalid,label=Hello from Rhino]
js> frame.show();
js>
```