

5.2 JavaScript Keywords, Variables, and Operators

5.2.1 JavaScript Keywords

break	case	continue	default	delete
do	else	export	false	for
function	if	import	in	new
null	return	switch	this	true
typeof	var	void	while	with

Reserved Keywords for future extensions

catch	class	const	debugger
enum	extends	finally	super
throw	try		

5.2.2 Variables and Values

Value Types

<u>Type</u>	<u>Description</u>	<u>Example</u>
Number	Any numeric value	10.145
String	Character inside quotation marks Single quotes or double quotes	"Web Prog" 'testing'
Boolean	True or False	false
NULL	Empty value	
Objects	Compound data types that contains methods and properties	

Examples of Number

10

3.1416

0.003

6.20E3

0377 // Octal number; or 255 in decimal

0xFF // Hex number; or 255 in decimal

Examples of String

'ECET Dept'

"3.14

16"

'Name = "thisform"'

Variable Declaration

var n, m; // uninitialized

var x = 100, message = 'Hello you';

Escape Sequence

\b	Backspace
\f	Form feed
\n	New line
\r	Carriage return
\t	Tab
\'	Apostrophe or single quote
\"	Double quote
\\	Back slash
\ddd	Three octal digits (d: 0,1, through 7)
\xdd	Two hexadecimal digits (d;0, 1,2,...,9, A,B,C,D,E,F)
\udddd	Unicode encoding by four hex degits

Arrays

```
var n = new Array();      // Empty array
var b = new Array(20);    // 20 elements
var k = new Array(1, 2, 3); // Initialized with three elements
JavaScript 1.2
var k = [1, 2, 3];
var anyobject = [1, true, [1,2], {x:1, y:2}, "Hello"];
```

Null and Undefined

null - no value

5.2.3 Operators

Conditional Operator (?:)

Math.abs(x) or

$x < 0 ? -x : x$

typeof operator

Evaluate the type of object: "number", "string", or "boolean"

new operator

Creating new objects

delete operator

Delete existing objects

Arithmetic Operators

+	x + y	Add and assign
+	x + y	String concatenation
-	x - y	Subtraction
*	x * y	Multiplication
/	x / y	Division
%	x%y	Modulus of x and y (remainder operation)
++	x++, ++x	Increment
--	x--, --x	Decrement
-	-x	Negate (change sign)

Bitwise Operators

&	x & y	bitwise AND; both x and y are unsigned integer
	x y	bitwise OR; both x and y are unsigned integer
^	x ^ y	bitwise XOR; both x and y are unsigned integer
~	~x	bitwise NOT
<<	x << 2	Shift left 2 bit (times 4)
>>	x >> 2	Shift right 2 bit (div by 4)
>>	x >> 2	Shift right zero fill (div 4)

Assignment Operators

=	x = y	Assignment, copy value
+=	x += y	Add and assign; x = x +y
-=	x -= y	Sub and assign; x = x -y
*=	x *= y	Multiply and assign; x = x * y
/=	x /= y	Divide and assign; x = x / y
%=	x %= y	Modulus and assign; x = x % y
<<=	a <<= b	a = a << b
>>=	a >>= b	a = a >> b
>>>=	a >>>= b	a >>>= b
&=	a & b	a = a & b
=	a b	a = a b
^=	a ^= b	a = a ^ b

Relational Operators

==	x == y	Equal to; return true if x and y are equal
!=	x != y	Not equal; return true if x and y are not equal
>	x > y	Greater than; return true if x is greater than y
>=	x >= y	Greater than or equal to ; return true if x is greater than or equal to y
<	x < y	Less than; return true if x is less than y
<=	x <= y	Less than or equal to; return true if x is less than or equal to y
&&	x && y	Logical AND; Return true if both x and y are true
	x y	Logical OR; return true if either x or y is true
!	!x	Logical NOT; return true if x is false

Global Constant

Infinity

NaN - not a number

Global Functions

escape(s)

- Encode a string for transmission

unescape(s)

- Decode an escaped string

eval(code)

- Execute JavaScript code from a string

getClass(javaobj)

- Return JavaClass of a JavaObject

isFinite(n)

- Determine if a number is finite

isNaN(x)

- Determine if a number is defined

parseFloat(s)

- Convert a string to a floating point number

parseInt(s, radix)

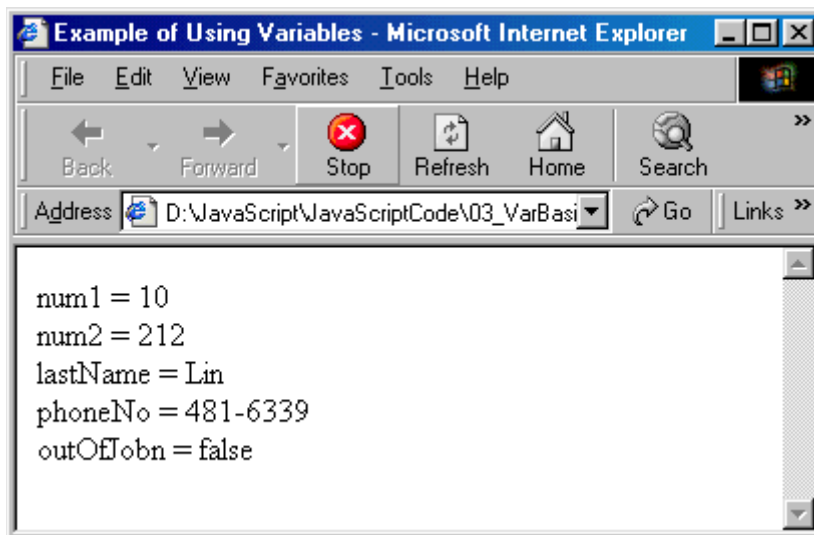
- Convert a string to an integer

Example 5-5: Declare and use JavaScript variables.

```
<HTML>
<!-- variable.htm
-->
<HEAD>
<TITLE>Example of Using Variables</TITLE>
<SCRIPT language=JavaScript>
var num1 = 10;    // a number variable
var num2 = 212.00; // a float number
var lastName = "Lin"; // a string variable
var phoneNo = '481-6339'; // a string variable
var outOfJob = false; // a boolean variable

document.write("num1          = "+ num1 + "<BR>");
document.write("num2          = "+ num2 + "<BR>");
document.write("lastName      = "+ lastName + "<BR>");
document.write("phoneNo       = "+ phoneNo + "<BR>");
document.write("outOfJobn     = "+ outOfJob + "<BR>");
</SCRIPT>

</HEAD>
<BODY>
</BODY>
```



Example 5-6: Enter two numbers and make a comparison.

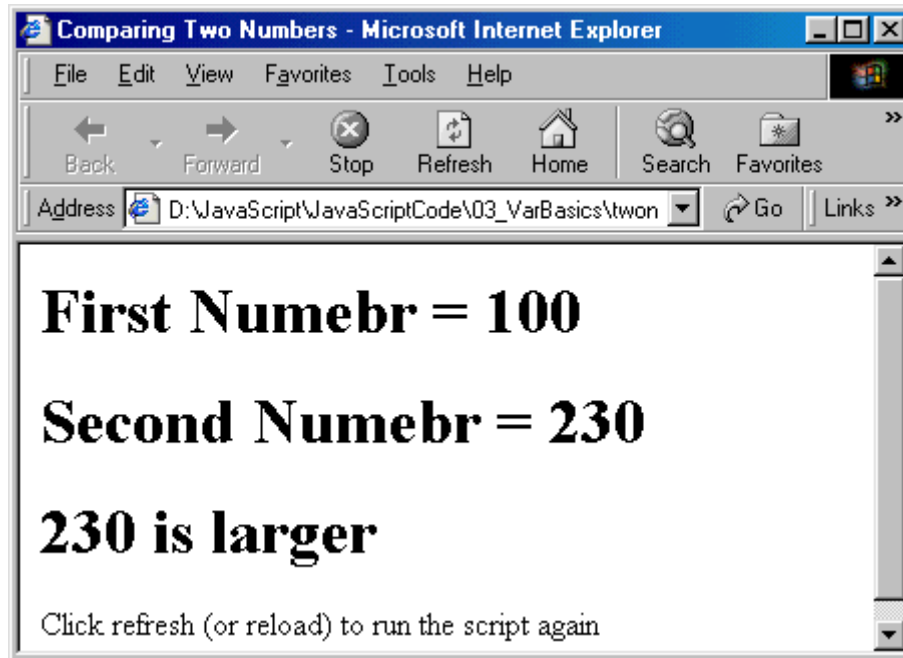
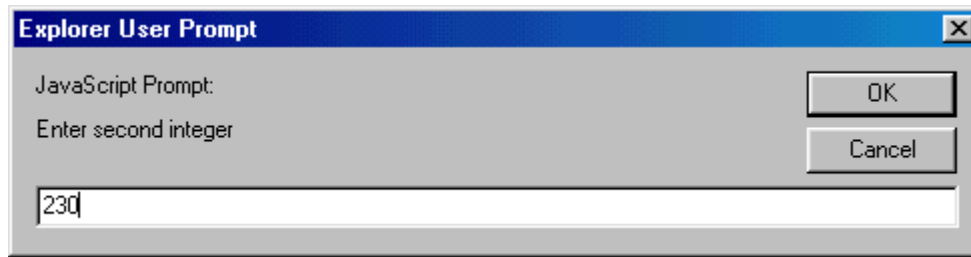
```
<html>
<!-- twonums.htm -->
<Head>
<Title>Comparing Two Numbers</title>
<Script Language="JavaScript">
<!--
var num1Str, num2Str;    // Desine varaibels
var num1Int;    //first integer value
var num2Int;    //second integer value

//read first number from user as string
num1Str = window.prompt ("Enter first integer","0");
num1Int = parseInt(num1Str);    //Convert string to integer

//read second number from user as string
num2Str = window.prompt ("Enter second integer","0");
num2Int = parseInt(num2Str); //Convert string to integer

document.writeln("<H1>" + "First Numebr = " + num1Str + "</H1>");
document.writeln("<H1>" + "Second Numebr = " + num2Str + "</H1>");
// Comparing two numbers
if (num1Int > num2Int)
    document.writeln("<H1>" + num1Str + " is larger</H1>");
if (num1Int < num2Int)
    document.writeln("<H1>" + num2Str + " is larger</H1>");
if (num1Int == num2Int)
document.writeln("<H1>Two numbers are equal</H1>");
//-->
</Script>
</head>
<body>
<p>Click refresh (or reload) to run the script again</p>
</body>
</html>
```

Output:

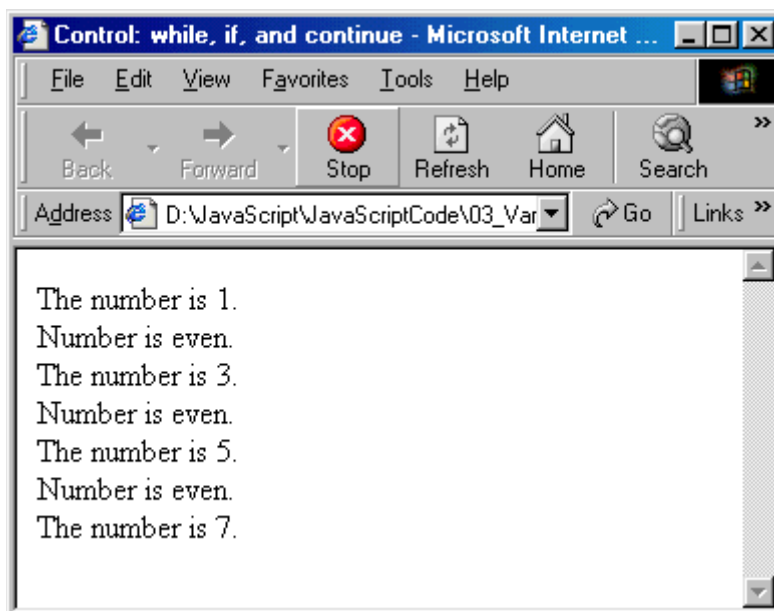


Example 5-7: Use while loop to generate a series of numbers and determine the even or odd number properties using decision making statement - if.

```
<HTML>
<!-- while_if.htm
-->
<HEAD>
<TITLE>Control: while, if, and continue</TITLE>
</HEAD>
<BODY>
<SCRIPT LANGUAGE="JavaScript">
<!--
var numVar = 0;

while (numVar < 7)
{
    numVar = numVar + 1;
    if ((numVar % 2) == 0 )
    {
        document.write("Number is even.<BR>");
        continue;
    }
    document.write("The number is " + numVar + ".<BR>");
}
-->
</SCRIPT>
</BODY>
</HTML>
```

Output:

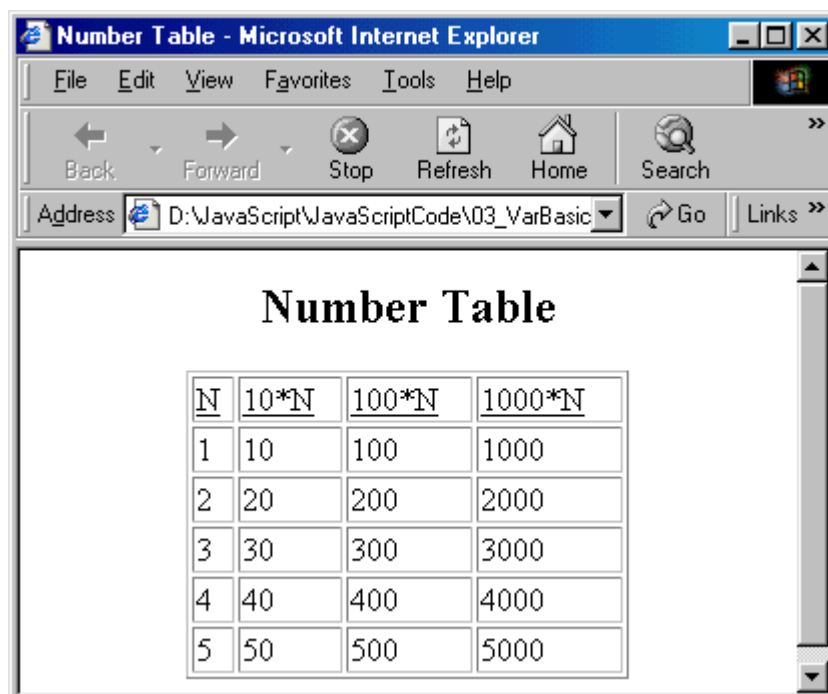


Example 5-8: Create a number table with four columns and 5 rows.

```

<html> <Head>
<!-- numtable.htm -->
<Title>Number Table</title>
<Script Language="JavaScript">
// Define variables
var num = 0;           //num variable
var num10 = 0;         //10* num
var num100 = 0;        //100* num
var num1000 = 0;       //1000*num
//create a table and print headings
document.writeln("<H2 ALIGN = 'center'>Number Table</H2>");
document.writeln("<Table border='1' ALIGN = 'center' width='60%'>");
document.writeln("<TR><TD><U>N</U></TD><TD><U>10*N</U></TD><TD><U>100*N</U></TD><TD><U>1000*N</U></TD></TR>");
num =1;               //initialize number to its first value in the
while (num <=5)
{
    num10    = 10 * num;
    num100   = 100 * num;
    num1000  = 1000 * num;
    document.writeln("<TR><TD>" + num + "</TD><TD>" + num10 + "
</TD><TD>" + num100 + " </TD><TD>" + num1000 + "</TD></TR>");
//print entries
    num++;
}
document.writeln("</TABLE>");
</Script> </head>
<body></body>
</html>

```



Example 5-9: Customer account and credit evaluation example.

```
<html>
<!-- account.htm -->
<head>

<title>Customer Account Info</title>

<Script Language="JavaScript">
// Define string variables
var acctNumber;      //customer's account number
var balance;
var charge;          // total of all items charged by this customer
                      // for this month
var credit;          //total of all credits applied to this customer
var creditLimit;

//Define variables for holding numerical value
var valBalance;      // balance as a Number
var valCharge;
var valCredit;
var valCreditLimit;

// Read inputs
acctNumber=window.prompt("Enter customers account number","0");
balance=window.prompt("Enter begining balance","0");
valBalance=parseInt(balance);
charge=window.prompt("Enter total charge amount for this
customer","0");
valCharge=parseInt(charge);
credit=window.prompt("Enter total credit amount for this
customer","0");
valCredit=parseInt(credit);
creditLimit=window.prompt("Enter total credit limit for this
customer","0");
valCreditLimit=parseInt(creditLimit);
valBalance += (valCharge - valCredit);

document.writeln("<H1>New balance for customer # " + acctNumber+ " =
$"
               + valBalance + "</H1>");

if (valBalance > valCreditLimit)
    document.writeln("<H1>Credit Limit Exceeded</H1>");
</script>
</head>
<body>
<p>Click Refresh (or Reload) to run the script again</p>
</body>
</html>
```

Explorer User Prompt [X]

JavaScript Prompt:
Enter customers account number

12345

OK
Cancel

Explorer User Prompt [X]

JavaScript Prompt:
Enter begining balance

100

OK
Cancel

Explorer User Prompt [X]

JavaScript Prompt:
Enter total charge amount for this customer

125

OK
Cancel

Explorer User Prompt [X]

JavaScript Prompt:
Enter total credit amount for this customer

25

OK
Cancel

Explorer User Prompt [X]

JavaScript Prompt:
Enter total credit limit for this customer

15000

OK
Cancel

