OPERATORS

Arithmetic Operators

Assume variable a holds 10 and variable b holds 20 then −

Operator	Description	Example
+ (Addition)	Adds values on either side of the operator	`expr $a + $b` will give 30
- (Subtraction)	Subtracts right hand operand from left hand operand	`expr $a - $b` will give -10
* (Multiplication)	Multiplies values on either side of the operator	`expr $a \* $b` will give 200
/ (Division)	Divides left hand operand by right hand operand	`expr $b / $a` will give 2
% (Modulus)	Divides left hand operand by right hand operand and returns remainder	`expr $b % $a` will give 0
= (Assignment)	Assigns right operand in left operand	a = $b would assign value of b into a
== (Equality)	Compares two numbers, if both are same then returns true.	[$a == $b] would return false.
!= (Not Equality)	Compares two numbers, if both are different then returns true.	[$a != $b] would return true.

EXAMPLE

```
a=10
b=20

val=`expr $a + $b`

echo "a + b : $val"
```

Q. Similarly do for subtraction, multiplication, division and modulus.

Q. Write Shell scipt to perform conditional operators using if else.

Relational Operators

Assume variable a holds 10 and variable b holds 20 then −

Operator	Description	Example
-eq	Checks if the value of two operands are equal or not; if yes, then the condition becomes true.	[$a -eq $b] is not true.
-ne	Checks if the value of two operands are equal or not; if values are not equal, then the condition becomes true.	[$a -ne $b] is true.
-gt	Checks if the value of left operand is greater than the value of right operand; if yes, then the condition becomes true.	[$a -gt $b] is not true.
-lt	Checks if the value of left operand is less than the value of right operand; if yes, then the condition becomes true.	[$a -lt $b] is true.
-ge	Checks if the value of left operand is greater than or equal to the value of right operand; if yes, then the condition becomes true.	[$a -ge $b] is not true.
-le	Checks if the value of left operand is less than or equal to the value of right operand; if yes, then the condition becomes true.	[$a -le $b] is true.

EXAMPLE

```
a=10
b=20
if [ $a -eq $b ]
then
   echo "$a -eq $b : a is equal to b"
else
   echo "$a -eq $b: a is not equal to b"
fi
```

Q. Similarly do for other relational operators.

Boolean Operators

Assume variable a holds 10 and variable b holds 20 then −

Operator	Description	Example
!	This is logical negation. This inverts a true condition into false and vice versa.	[! false] is true.
-o	This is logical **OR**. If one of the operands is true, then the condition becomes true.	[$a -lt 20 -o $b -gt 100] is true.
-a	This is logical **AND**. If both the operands are true, then the condition becomes true otherwise false.	[$a -lt 20 -a $b -gt 100] is false.

```
a=10
b=20
if [ $a != $b ]
then
   echo "a is not equal to b"
else
   echo "a is equal to b"
fi

if [ $a -lt 100 -a $b -gt 15 ]
then
   echo "returns true"
else
   echo "returns false"
fi
```

```
if [ $a -lt 100 -o $b -gt 100 ]
then
   echo "returns true"
else
   echo "returns false"
fi

if [ $a -lt 5 -o $b -gt 100 ]
then
   echo "returns true"
else
   echo "returns false"
fi
```