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# The while Statement ORANE LABS ORANE LABS

SIIC IIT KANPUR

www.oranelabs.com #!/bin/bash SHC HT KANPUR

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SHC HT KANPUR

www.oranelabs.com

SI while [\$COLOR != "purple"] IC IIT KANPUR

wwdo.oranelabs.com www.oranelabs.com echo "Incorrect. Guess again. \n"

O read \$COLOR ABS

done SII T KANPUR echo "Correct."

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SI\$ cat test10UR

SHC HT KANPUR

SIIC IIT KANPUR

ww#!/bin/bash.com

www.oranelabs.com

www.oranelabs.com

# while command test LABS var1=10

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while [ \$var1 -gt

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echo \$var1 -

1 SIIC IIT KANPUR

SHC HT KANPUR

done www.oranelabs.com

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# ORANE LABS

SIP The condition in the until statement is the opposite of that PUR in the while statement. For example, you could rewrite the www.previous example this way: nelabs.com #!/bin/bash

echo "Guess the secret color: red, blue, yellow, purple, or orange \n"

SHC HT KANPUR until [ \$COLOR = "purple" ]

SHC HT KANPUR

wwdo oranelabs.com echo "Incorrect. Guess again. \n"

www.oranelabs.com www.oranelabs.com

read SCOLOR 5

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done echo "Correct."

SHC HT KANPUR

SHC HT KANPUR

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#### ORANE LABS

### Example

SI#!/bin/bash R SHC HT KANPUR

ww# using the until command com

ovar1=100\BS ORANE LABS

SHuntil [ \$var1 -eq 10 ] HT KANPUR

wwdoranelabs.com www.oranelabs.com

echo \$var1 www.oranelabs.com

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### ORANE LABS ORANE LABS

SIO The bash shell provides the for command to NPUR www.allowyou.to create a loop that iterates ranelabs.com through a series of values.

The basic format of the bash shell for

SHC HT KANPUR command is:

for var in list

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ORANEOLABS commands

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#### Reading values in a list ORANE LABS ORANE LABS

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SHC HT KANPUR

w. Iterating through a list using for nelabs.com

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#### ORANE LABS ORANE LABS

SI#!/bin/bashNPUR

SHC HT KANPUR

ww#vbasic.forbcommandvww.oranelabs.com

SHC HT KANPUR

www.oranelabs.com

for test in Alabama Alaska Arizona Arkansas California

STecho The next state is Stest T KANPUR

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SIIC HT KANPUR

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wwdoneanelabs.com

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# Reading complex values in a

Here's a classic example of what can cause ANPUR www.shell/script programmers problems: www.oranelabs.com

#!/bin/bash ABS

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# another example of how not to use the for command

for test in I don't know if this'll work www.oranelabs.com

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echo "word:\$test"

SHC HT KANPUR

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done SIIC IIT KANPUR

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www.oranelabs.com www.oranelabs.com www.oranelabs.com Two ways to solve ORANE LABS Use the escape character (the backslash) to NPUR www.escapethersinglequotationmark.www.oranelabs.com ○ • Use double quotation marks to define the LABS SHO values that use single quotation marks HT KANPUR #!/bin/bash www.oranelabs.com www.oranelabs.com # another example of how not to use the for command for test in I don\'t know if "this'll" work SIIdO IIT KANPUR SHC HT KANPUR SHC HT KANPUR echo "word:\$test" www.oranelabs.com www.oranelabs.com ORANE LABS www.oranelabs.com www.oranelabs.com www.oranelabs.com SI#!/bin/bashPUR SHC HT KANPUR SHC HT KANPUR www.oranelabs.com ww# using a variable to hold the list list="Alabama Alaska Arizona Arkansas Colorado" LABS STILIST SIIST CONNECTICUT IT KANPUR SHC HT KANPUR for state in \$list www.oranelabs.com www.oranelabs.com do echo "Have you ever visited \$state?" ORANE LABS SIIC HT KANPUR SHC HT KANPUR www.oranelabs.com www.oranelabs.com www.oranelabs.com

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www.oranelabs.com www.oranelabs.com www.oranelabs.com Reading values from a command SIIC IIT KANPUR SI#!/bin/bashNPUR www.#ceading values from a file an Alabama www.oranelabs.com file="states" Alaska = for state in `cat \$file` ORANE LABS Arizona SIIdo IIT KANPUR SHC HT SHC HT KANPUR wwechoa"Visit beautiful \$state" an Arkansas www.oranelabs.com Colorado done ORANE LABS ORANE ORANE LABS SHC HT KANPUR SHC HT I SHC HT KANPUR Delaware www.oranelabs.com www.oranelabs.com Florida ORANE LABS ORANE LABS www.oranelabs.com www.oranelabs.com www.oranelabs.com Reading a directory using wildcards Finally, you can use the for command to T KANPUR automatically iterate through a directory of abs.com OR files. LABS ORANE LABS ORANE LABS SI To do this, you must use a wildcard character PUR in the file or pathname. labs.com This forces the shell to use **file globbing**. File globbing is the process of producing file or path names that match a specified wildcard character. ORANE LABS

www.oranelabs.com www.oranelabs.com www.oranelabs.com Example ORANE LABS ORANE LABS SHC HT KANPUR SIIC IIT KANPUR SI#!/bin/bashNPUR www.iterate through all the files in a directory www.oranelabs.com for file in /home/ankur/test/\* ORANE LABS Slif [ I-d "\$file"PUR SHC HT KANPUR SHC HT KANPUR wwthen anelabs.com www.oranelabs.com www.oranelabs.com echo "\$file is a directory"
RANE "LABS" ORANE LABS ORANE LABS elif [ -f "\$file" ] SHC HT KANPUR SIIthenIT KANPUR SHC HT KANPUR wwechoa"\$filebis anfile" www.oranelabs.com www.oranelabs.com ORANE ORANE LABS done www.oranelabs.com www.oranelabs.com www.oranelabs.com Changing the field separator SIO By default, the bash shell considers the following PUR

characters as field separators: www.oranelabs.com

A space

ORANA tab ABS

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SIIC TITA newline You can change the IFS environment variable in SHC HT KANPUR

your script to set the field separator. www.oranelabs.com

• For example, if you want to change the IFS value to only recognize the newline character, you need SIIC to do this:UR IIT KANPUR

www.o<del>r</del>alFS≒\$′s\n′m

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#### ORANE LABS

## Example

SIIC #!/bin/bashR

SHC HT KANPUR

www.#reading values from a file com

or Afile="states"

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SIIC IFS=\$'A\n'uR

SHC HT KANPUR

www.oranelabs.com `cat \$file`

echo "Visit beautiful \$state"

SIIC UT KANPUR

SHC HT KANPUR

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#### ORANE LABS

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 When working on long scripts, it's possible to change the IFS value in one place, then forget com or about it and assume the default value NE LABS elsewhere in the script. This technique can be pure coded like this: www.oranelabs.com

IFS.OLD=\$IFS

ORANE JABS

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<use the new

IFS value in code> www.oranelabs.com

WWW. IFS=\$IFS.OLD

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# An Interesting Application of IFS

You can change the value of the IFS variable to

www.anything:om

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ORAHIES#: ABS

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SHO Oriyou can also do the following: SHO HT KANPUR

www.o+alFS≒\$'s\cnm;" www.oranelabs.com

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#### The C-Style for Command ORANE LABS ORANE L

SI#!/bin/bash R

SHC HT KANPUR

# testing the C-style for loop

Ofor (F i=1; F = 10; i+1=)) LABS

SHC HT KANPUR SHOOHT KANPUR

www.cranglabs.com echo The next number is \$i''

Odone LABS

SHC HT KANPUR

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www.oranelabs.com www.oranelabs.com www.oranelabs.com Using multiple variables ORANE LABS ORANE LABS The C-style for command also allows you to ANPUR use multiple variables for the iteration. ranelabs.com ORA#!/bin/bash ORANE LABS ORANE LABS SIIC #multiple\_variables IIT KANPUR SHC HT KANPUR www.for.((a=1, b=10; a <=10; a++, b-- )), w.oranelabs.com NE LABS ORANE LABS echo "\$a - \$b" ORANE LABS SHC HT KANPUR SHC HT KANPUR www.oranelabs.com www.oranelabs.com www.oranelabs.com ORANE LABS ORANE LABS www.oranelabs.com www.oranelabs.com www.oranelabs.com Nesting Loops ORANE LABS ORANE LABS SI • A loop statement can use any other type of command KANPUR within the loop, including other loop commands. This is www.calledanestedloopwww.oranelabs.com www.oranelabs.com #!/bin/bash ORA# nesting for loops ORANE LABS ORANE LABS for (( a = 1; a <= 3; la++ )) T KANPUR SHC HT KANPUR www.oranelabs.com www.oechoel'Starting loopv\$a;".oranelabs.com for  $((b = 1; b \leftarrow 3; b++))$ ORANE LABS ORANE LABS echo " Inside loop: \$b" done SIIC IIT KANPUR SHC HT KANPUR www.odonelabs.com

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### Mixing Loops

SIIC #!/bin/bash UR SHC HT KANPUR # placing a for loop inside a while loop www.ovarlesabs.com www.oranelabs.com

ORAdo [\$var1-ge 0] RANE LABS

echor"Outer loop: \$var1" HT KANPUR for (( var2 = 1; \$var2 < 3; var2++ ))

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var3=\$[ \$var1 \* \$var2 ]

ORAecho "Inner loop: \$var1 \* \$var2 = \$var3" ORANE LABS

var1=\$[ \$var1 1 ] SIIC IIT KANPUR

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Test Your Brains ORANE LABS

#!/bin/bash:pir SHC HT KANPUR # using until and while loops

www.ovar1=3labs.com www.oranelabs.com until [ \$var1 -eq 0 ]

echo "Outer loop: \$var1" RANE LABS

var2=1 SHC SHC HT KANPUR while [ \$var2 -lt 5 ]

var3= echo "scale=4; \$var1 / \$var2" | bc

echo " Inner loop: \$var1 / \$var2 = \$var3" var2=\$[ \$var2 + 1 ] var2=\$[ \$var2 + 1 ]

done SHC HT KANPUR var1=\$[ \$var1 - 1 ] SHC done

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# Looping on File Data ORANE LABS ORANE LABS

Often, you must iterate through items stored www inside a file. This requires combining two of

OR the techniques covered: LABS ORANE LABS

SHC TI Using nested loops HT KANPUR SHC HT KANPUR

www.oraChanging the IFS environment variable woranelabs.com

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#### ORANE LABS

SHC HT KANPUR SHC HT KANPUR

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SIIC #!/bin/bash UR SIIC IIT KANPUR
# changing the IFS value

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IFS=\$'\n' for entry in `cat /etc/passwd'

SIIC dor KANPUR SIIC IIT KANPUR echo "Values in \$entry -"

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for value in \$entry
ORAdoE LABS ORANE LABS

SIIC echo " \$value" SIIC IIT KANPUR

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# Controlling The Loop ORANE LABS ORANE LABS

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The break command LABS

The continue command ANPUR

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### The break command ORANE LABS ORANE LABS

SI#!/bin/bashur SIIC IIT KANPUR

ww# breaking out of vav for loops com

for var1 in 1 2 3 4 5 6 7 8 9 10 do

SHif [H\$var1\Peq 5 ] HC HT KANPUR

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OFFERE LABS ORANE LABS

echo "Iteration number: \$var1"

wwdonenelabs.com www.oranelabs.com

O echo "The for loop is completed"

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www.oranelabs.com www.oranelabs.com www.oranelabs.com Breaking out of an inner loop ST#!/bin/bash\PUR SHC HT KANPUR SHC HT KANPUR # breaking out of an inner loop www.oranelabs.com for ((a = 1; a < 4; a++))ORANE LABS ODONE LABS ORANE LABS echo "Outer loop: \$a" for (( b = 1; b < 100; b++ )) KANPUR SHC HT KANPUR wwdooranelabs.com www.oranelabs.com www.oranelabs.com if [ \$b -eq 5 ] then **E LABS** ORANE LABS ORANE LABS SIIbreak<sub>T KANPUR</sub> SIIC IIT KANPUR SHC HT KANPUR www.oramelabs.com echo Inner Toop: \$b" oranelabs.com www.oranelabs.com Odone E LABS ORANE LABS done www.oranelabs.com www.oranelabs.com www.oranelabs.com Breaking out of an outer loop There may be times when you're in an inner NPUR www.loop but need to stop the outer loop.oranelabs.com O ◆ The break command includes a single △ NE L △ B S SHC command line parameter value: SHC HT KANPUR www.oranelabs.com www.oranelabs.com where n indicates the level of the loop to break out of the current loop. SHC HT KANPUR

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### ORANE LABS

## Example

SI#!/bin/bash\PUR SHC HT KANPUR # breaking out of an outer loop for ((a = 1; a < 4; a++))

ODONE LABS ORANE LABS echo "Outer loop: \$a" for (( b = 1; b < 100; b++ )) KANPUR

wwdooranelabs.com www.oranelabs.com

if [ \$b -gt 4 ] then **LABS** 

 $_{\mathrm{SII}}$ break $_{\mathrm{T}}$ 2 $_{\mathrm{KANPUR}}$ SHC HT KANPUR

www.oranelabs.com echo Inner Toop: \$b" oranelabs.com

Odone E LABS done

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#### The continue command ORANE LABS ORANE LABS

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SHC HT KANPUR

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The continue command is a way to RANE LABS SIIC prematurely stop processing commands inside UR www.ofadoop.but not terminate the loopw.oranelabs.com

completely.

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#### ORANE LABS

# Example

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SI#!/bin/bashPUR

SHC HT KANPUR

SIIC IIT KANPUR www.oranelabs.com

ww# using the continue command com

for ((var1 = 1; var1 < 15; var1++=))

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SIIdo IIT KANPUR

SHC HT KANPUR

SHC HT KANPUR

if [ \$var1 -gt 5 ] && [ \$var1 -lt 10 ]

www.oranelabs.com

then
ORANE LABS
continue

ORANE LABS

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SHC HT KANPUR

SHC HT KANPUR

SHC HT KANPUR

wecho "Iteration number: \$var1"

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Odone LABS

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# Processing the Output of a Loop

SHC HT KANPUR

SHC HT KANPUR

SHC HT KANPUR

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 Finally, you can either pipe or redirect the SHC output of a loop within your shell script. T KANPUR www.You do this by adding the processing voranelabs.com or command to the end of the done command. ABS

SHC HT KANPUR

SHC HT KANPUR

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### ORANE LABS

## Example

SHC for fileNinU/home/ankur/\*ANPUR

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SIIC IIT KANPUR SIIC IIT KANPUR echo "\$file is a directory"
www.oelifielabs.com www.oranelabs.com

ORAccho "\$file is a file" NE LABS

SIIC IIT KANPUR SIIC IIT KANPUR done > output.txt www.oranelabs.com www.oranelabs.com

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Example 2

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#### ORANE LABS

SIIO This same technique also works for piping the ANPUR www output of a loop to another command: woranelabs.com

ORANE LABS #!/bin/bash ORANE LABS

ORANE LABS

SIIC IIT# piping a loop to another command

for state in "North Dakota" Connecticut
Tennessee

SIIC IIT KANPUR Illinois Alabama

ORANE LABS echo "\$state is the next place to go"

SHC HTdone Psort SHC HT KANPUR

echo "This completes our travels"

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#### Permanent redirections ORANE LABS ORANE LABS

You can redirect your script output to file KANPUR

www.usingexec.command.nelabs.com

www.oranelabs.com

#!/bin/bash ABS ORANE LABS

ORANE LABS

# redirecting all output to a file

SHC HT KANPUR

exec 1>testout

www.oranelabs.com echo This is a test of redirecting all output www.oranelabs.com

echo "from a script to another file." ORANE LABS echo "without having to redirect every individual line" SIIC IIT KANPUR SIIC IIT KANPUR

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# Command Line Parameters

The most basic method of passing data to KANPUR www.yourshellscriptvis by using command line elabs.com

or parameters.

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### Reading parameters ORANE LABS

The bash shell assigns special variables, called PUR www.positionalparameters, to all of the parameters com

or entered in a command line.

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– \$1 -\$9- Command Line Parameters

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#### ORANE LABS

### Example

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SIIC IIT#!/bin/bash

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www.orar#jusing.one command line parameterwww.oranelabs.com

factorial=1 ORANE

for (( number = 1; number <= \$1 ; number++ ))

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www.oranfactorial=\$[ \$factorialr\*n\$numbern]

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done

echo The factorial of \$1 is \$factorial ORANE

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SHC HT\$ ./test15

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#### You can also pass Strings ORANE LABS ORANE

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www.o#atestingastringaparametersbs.com

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or Aecho Hello \$1, glad to meet you.

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\$\_\_/test3\_Ankur\_SIIC\_IIT KANPUR

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## Spaces in Strings

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To handle spaces, include them in single or ANPUR www.doublequotes.www.oranelabs.com www.oranelabs.com

ORA\$1./test3 'Ankur Rathore' LABS ORANE LABS

SIIC Hello Rich Blum, Iglad to meet you. SIIC HT KANPUR www.\$../test3 "Ankur Rathore" abs.com www.oranelabs.com

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### More Than Nine Parameters ORANE LARS

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SHC HT KANPUR

 If your script needs more than nine command OR line parameters, you can continue, but the LABS SIIC variable names change slightly. SHC HT KANPUR

www.After the ninth variable, you must use braces show around the variable number, such as \$ { 10 }

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This returns the whole path of the command.

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Only Name

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SIIC #!/bin/bashR

SHC HT KANPUR

SIIC IIT KANPUR

www.#ausingsbasenamewwithalthe \$0 parameter nelabs.com

ORAname=`basename\_\$0`NE\_LABS ORANE LABS

echo The command entered is: \$name IIT KANPUR

\$ ./test5b

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#### lesting parameters ORANE LABS ORANE LABS

SI • It's a good habit to check whether, parameters ANPUR

www.have been entered or not abs.com

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#!/bin/bash

# testing parameters before use

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www.o**then**labs.com www.oranelabs.com ORANE LABS

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echo Hello \$1, glad to meet you.

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ORANE else ORANE LABS SIIC echo. "Sorry, Ryou didn't identify yourself." IIT KANPUR

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#### Counting parameters ORANE LABS ORANE LABS

SIIO The special \$# variable contains the number of IT KANPUR command line parameters included when the script www was run.s

ORA#!/bin/bash ORANE LABS # testing parameters

SIIC ifIT \$#A-net2R] SIIC IIT KANPUR

www.oranelabs.com www echo Usage: test9 a b www.oranelabs.com

ORACISE LABS ORANE LABS total=\$[ \$1 + \$2 ]

echo The total is \$total IIT KANPUR

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SHC HT KANPUR SIIC #!/bin/bashR

www.#agrabbing the last parameter m

OR Aparams=\$#= ORANE LABS

SIIC echo The last parameter is \$params IIC IIT KANPUR echo The last paramerer is \${!#}

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www.oranelabs.com www.oranelabs.com www.oranelabs.com Grabbing all the data ORANE LABS The \$\* and \$@ variables provide one-stop www.shoppingfor all of your parameters.w.oranelabs.com ORA— The \$\* variable takes all of the parameters | LABS supplied on the command line as a single word. - The \$@ variable on the other hand, takes all of the parameters supplied on the command line as ORANseparate words in the same string. ORANE LABS SHC HT KANPUR SHC HT KANPUR SHC HT KANPUR www.oranelabs.com www.oranelabs.com www.oranelabs.com ORANE LABS ORANE LABS www.oranelabs.com www.oranelabs.com www.oranelabs.com ORANE LABS ORANE LABS #!/bin/bashpur SHC HT KANPUR SHC HT KANPUR # testing \$\* and \$@ www.ocount=1abs.com www.oranelabs.com www.oranelabs.com for param in "\$\*" ORANE LABS ORAME LABS ORANE LABS echo "\\$\* Parameter #\$count = \$param" SIIC count=\$1 \$count + 1 \$IIC IIT KANPUR SHC HT KANPUR done www.oranelabs.com count=1 www.oranelabs.com www.oranelabs.com for param in "\$@" ORANE LABS ORANE LABS echo "\\$@ Parameter #\$count = \$param" count=\$[ \$count + 1 ] SHC HT KANPUR

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#### ORANE LABS

# Being Shifty

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When you use the shift command, it HIT KANPUR www." downgrades" each parameter variable one bs.com or position by default. Thus, the value for NE LABS variable \$3 is moved to \$2, the value for KANPUR variable \$2 is moved to \$1, www.oranelabs.com

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www.c#ademonstrating wthe rshift acommand www.oranelabs.com

# S ORANE LABS

SIIC IIT KANPUR

www.echolalParameter#\$count = \$1"

### ORACOUNT=\$[ \$count + 1NE LABS

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