Topic	Desciption	Command	Remark
SHELL BASICS	How to check in which shell you are /	echo $0	
	How to see all the available shells	cat /etc/shells	
	Another way to check your shell is	cat /etc/passwd	
	How to start your bash file?	#!/bin/bash	
Variables	How to define and store variable	var_name=value	
	How to store the linux command in a variable?	var_name=$(hostname)	
Echo	How to use defined variable in use?	echo $var_name	
	How to use defined variable in use with string?	echo my name is $name	
		echo "my name is ${name} and age is ${agevar}"	
	How to get result of a command witin a string	echo "my hostname is $(hostname)"	will print hostname
	How to display the last typed command in terminal	#!/bin/bash *#To display the user typed in terminal* echo "User typed: ${0}" Output: When user run this script using ./script_name o/p will be: **User typed: ./script_name** (which will be last typed)	
	How to Write multiple lines	cat << EOF ..... lines ..... EOF	

String Operations	To perform some operations on strings
	
	Like finding strength of a string
	convert the string into Upper or Lower Case
	
	replace a string with something else
	cut a portion of string
		x=Hello
		y="New World"
		
		xLength=${#x}
		xUpper=${x^^}
		xLower=${y,,}
		
		newString=${y/World/Life}
		sliceString=${y:start_position:length}
			If you print these
			
			echo $xLength
			echo $xUpper
			echo $xLower
			echo $newString
			
			Output
			Hello
			5
			HELLO
			new world
			New Life

User Interaction	How to take input from user	read var_name_to_store_value or read -p "Your name" var_name_to_store_value To store the values in an array from a user **read -a myarray**. (user need to provide space separated values)	If in a same line you want to display a text and get the user input
Block of Code	If we need to execute multiple commands, we can use block of code	{ls; pwd; hostname} condition1 && {ls; pwd; hostname}	
Arrays	We can define multipel values in array	myArray=(1 2 Hello "Hey Buddy") echo "${myArray[0/1/2]}" To get length of an array "${#myArray[*]}" "${myArray[*]:1}" from index 1 to all values "${myArray[*]:1:2}" 2 values from index 1 To update an array with new values myArray+=(5 6 8)	values are space separated
	Array with key-value pairs	declare -A myArray myArray=([name]=Prashant [age]=28) myArray[name]=Prashant	
TEST Condition	How to check the conditions	test 8>5 (1 means true, 0 means false) [8 -eq 5] (<,> are not working in single []) [[8 -eq 5]]	recommed to use double [[]] which is the enhanced version of single [] and provide more functionalities

	How to write if-else condition	if [$age -eq 18]
		then
		   echo "You are eligible to vote"
		else
		   echo "Sorry you are not eligible to vote"
		fi
			Keep the spacing in mind

	What are the different conditional opertaions we can use with if-else	-eq / == -ge -le -ne / != -gt -lt	

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IF-ELSE	If you wanna check the existence of file or folder using IF condition	if [-d folder_name] If folder exists if [! -d folder_name] If folder not exists if [-f file_name] If file exists if [! -f file_name] If file not exists if [-z $str] If string is empty if [-e /path] If path exists for not if [-r/w/x /file_path] If path is readable/writable/executable or not	

	For multiple If-Else condition	if [$country = "India"]
		then
		        echo "You are Indian"
		elif [$country = "Nepal"]
		then
		        echo "You are from Nepal"
		else
		        echo "You are from Earth"
		fi	

FOR LOOP	How to write a for loop	for i in 1 2 3 4 5 do echo Number is $i done	
	Different options to write for loop	for j in eat poop sleep for p in {1..20} for ((i=0;i<=10;i++))	
	To iterate through all the argument passed while running script	for i in $@	
	Infinite loop using foor	for ((;;))	
	How to iterate the values from a file	hosts="/home/pparadkar/scripts/items" for item in $(cat $items) do echo $item done	

WHILE LOOP	How to write a while loop	count=0
		num=10
		
		while [$count -le $num]
		do
		    echo Numbers are $count
		    let count++
		done	

	While loop to get the line by line content from a file	while read myvar do echo $myvar done < file_path	

	While loop to get the values from file which are not separated by space?	while read IFS="," f1 f2 f3 f4 f5
		do
		    echo $f2
		    echo $f3
		done < file_path
			IFS is internal field separator
			
			space is default so in case values are separated by space so no need to specify IFS

	Getting the values from csv file (as first row is column name)	cat filename	awk '!NR=1 {print}'	while IFS="," read f1 f2 f3	
UNTIL LOOP	How to write until loop	a=0 until [! $a -lt 10] do echo $a a=`expr $a + 1` done	
EXPRESSIONS	How to perform airthmetic operation in script	using let command let a++ let a=5*10 we can use ((sum=x+y)) or echo "((x+y))" To perform the decimal operations like bc<<<"$x+$y" bc<<<"scale=2;$x/$y"	

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CASES	How to write a cases-switch	#!/bin/bash
		
		echo Welcome to the CASE study
		echo
		
		echo Hey choose an option
		echo
		echo a = To see the current date
		echo b = list all the files in current dir
		echo c = TO see all the users logged in
		echo d = TO check the system uptime
		
		read choice
		
		case $choice in
		   a) date;;
		   b)ls;;
		   c)who;;
		   d)uptime;;
		   *) echo "Non a valid input"
		esac
			* is anything else expect the given pattern in cases
			
			it's like default in the switch-case
			
			-- 	
			
			If want to use the multiple parameters in same case then we can use | sign
			
			ex: a) param1 | param2 | param3 ;;

Connection Check	How to check the connectivity with the remote server	ping hostname	

Connection Check	How to check the connectivity with the remote server for multiple hosts defined in a separate file named hosts	#!/bin/bash
		host="192.168.29.21"
		host1="www.google.com"
		
		hosts="/home/pparadkar/scripts/hosts"
		
		for ip in $(cat $hosts)
		do
		   ping -c1 $ip &> /dev/null
		   if [$? -eq 0]
		   then
		      echo OK
		   else
		      echo NOT OK
		   fi
		done
			The $? variable represents the exit status of the previous command. ... As a rule, most commands return an exit status of 0 if they were successful, and 1 if they were unsuccessful.

Alias	How to create an alias for a command	alias d="ls -ltr | awk '{print \$9}'"	It make our life easy by creating a shortcut of the most used commands
	How to create alias for a specific user	echo alias hh="hostname" >> /home/<user>/.bashrc	
	How to create alias for all the user globally	echo alias hh="hostname" >> /etc/bashrc	
ARGUMENTS	How to get the no. of **arguments** passed to a script	echo "you have passed ${#} arguments"	
	How to display the argument passed with script	echo $@	
	How to display a specific argument, ex arg1, arg2, arg3 I want to print arg1	echo $1	
SLEEP	We can use **sleep** command to create a delay between two task	sleep 1s sleep 1m	
NULL DEVICE	If you dont wanna print the output of a command in script	hostname > /dev/null	it is called as null device
READONLY	If you want to make any gloabal variable inside a script as constant	readonly var_name = 123	now this varaible is constant and con't be change
shift	Suppose we have three argument 1-A, 2-B, 3-C if we just use **shift** command in our script so arguents will shift like below then 1-B, 2-C	shift	Could be useful if out of multiple arguments, we need first argument and then remaining all togther 1-A and (2-B 3-C)
RANDOM	To generate a random no. can be used to generate random passwords etc NOTE: It is a bash variable	echo $RANDOM	you can find its detail under **man bash**

Functions	In order to avoid the repetative code in the script, you can use the function	There are two ways
		---------------------------------- 	
		
		function myfun {}
		
		myfun() {
		   local var = "hello"
		}
		
		---------------------------------- 	
		
		To call the function, just use the name of the function like
		myfun
			local variable is only accessible inside the function

	How to use the arguments/parameters in function	myfun() {
		   local num1 = $1
		   local num2 = $2
		   sum = num1 + num2
		}
		
		myfun 12 13	

LOGGER	If you want to log your content or messages of script into /var/log/messages file	logger "hello"	

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GETOPTS	Use to parse optional paramters from command line
	getopts optstring name [args]
	
	optsting contains the option characters to be recognized
	
	If character is followed by colon : then it will be expecting an argument separated by white space
	When there is an argment passed, it will be stored in **OPTARG** variable
		while getopts vl:s OPTION
		do
		  case ${OPTION} in
		   v)
		     VERBOSE='true'
		     log 'Verbose mode on.'
		     ;;
		   l)
		     LENGTH="${OPTARG}"
		     ;;
		   s)
		     USE_SPECIAL_CHARACTER='true'
		     ;;
		   ?)
		     usage
		     ;;
		  esac
		done	

	Ways to perform mathematic operations	NUM$((1+2)) DICEA='3' DICEB='6' TOTAL=$((DICEA + DICEB)) ((NUM++))	
INFINITE LOOP	How to make an infinite loop?	while true	
LOGICAL OPERATORS	How to use logical operators !, &&, ||	We can use the below conditions with double [[]] condition1 && condtion2 condition1 || condtion2 !condtion (opposite of result) With single [], we can only use the below condition1 -a condition2 condition1 -o condition2 [[$x=yes && $y=y]] [[$x=~y|yes]]	
	Ternary Operator	condition1 && condition2 || condition3 If 1 is true then execute2 else execute 3	
realpath basename dirname	string operations on path	**realpath**: convert each filename argument to an absolute pathname but it don't validate path **basename**: strip directory info, strips suffixes from filename **dirname**: if you provide the path with filename, it remove the filename and provide the directory path	
Debugging Properties	to enable the debugging we can set some properties in the beginning of script	set -x (print command before executing it in script) set -n (syntax check) set -e (exit script if any command fails) while executing also you can provide these bash -x script.sh bash -e script.sh	
REMOTE ACCESS	Different options to write for loop	ssh -t -o StrictKeyHostChecking=No user@<hostname> "date;hostname"	
	We can provide the password while doing remote operations	sshpass -p "<password>" ssh -t -o StrictKeyHostChecking=No user@<hostname> "date;hostname" or set SSHPASS variable SSHPASS="<pass>" sshpass -e ssh -t -o StrictKeyHostChecking=No user@<hostname> "date; hostname" or from file sshpass -f <file_path>	