Crack the Shell - Round 1

<u>Guidelines and Rules:</u>

- Participants should mail in their solutions in a single PDF file on or before "11th Feb. 2011 23:59 Hrs" to **cracktheshell@pragyan.org**.
- The name of the file should be the "team-name".
- Email should be sent from the same id that has been registered at the pragyan website.
- Multiple submissions are allowed, but only the last one would be considered.
- Participants are to note that, the **last question is mandatory**. Failing to answer it would disqualify you for future rounds.
- We are not responsible in any manner for how your machine behaves during execution of the commands.
- Participants are to note that, all solutions would be tested in *bash*. If you come up with solutions in a different shell, you are to mention it clearly.
- In case of a tie in the scores, the team that submits earlier will be ranked higher.
- All decisions made by the Judges are final and binding.

1. What command is used to find out the commands and files associated with a particular keyword ?

2. Change your prompt to read as follows:
[21 March: 13:12pm : cracktheshell@pragyan : /home/cracktheshell/shell_scripting] $

3. Give different examples of a set of shell commands that will give you the number of files in a directory. (the more the merrier !)

4.Write a one-line script that selects all lines in a file "in.txt" (without quotes), except those containing the word "shell" (without quotes) and writes it into "out.txt" (without quotes).

5. Write a one-line script to obtain a pdf copy of the man pages of the "ls" command (without quotes) . The command should produce a "ls.pdf"(without quotes) file as output.

6. (i)Write a one-line script that would take a backup copy of "names.txt" (without quotes) in the "~/cracktheshell/" (without quotes) folder and copy it to "/var/" (without quotes) folder at 08.00 AM on Sunday, 13th February, 2011.
(ii) Write a similar script that performs the same operation, but at 08.00 AM every Sunday.

7.Write a command to display the architecture of your Linux machine (32 bit/64 bit).

8. Newtron Federation Syndicate(NFS) is a data storage company in BASHland. We have received information that someone is planning to break into an unused server of the company and use it for their purpose.The server has an older version of SSH namely SSHv1 . The cracker exploits the CRC 32

bug which grants him root access . A script is to be written on the server which shows sockets that are listening to ports and the associated processes. Help them out and write the script.

9. You used a command, x commands ago in your shell. What would be the fastest way to execute that command once again?

10. What does this shell program exactly do ?
:(){:|:&};:
Explain.

11. Write a one line script that checks whether $b is a substring of $a . The command should output "yes"(without quotes) if $b is a substring of $a and should output nothing if its not a substring. (char limit : 50)

12. How are you supposed to use the "find" (without quotes) command for searching in CD-ROM, MS-DOS filesystems, AFS volume mount points ? Why ?

13. Write a command to empty the contents of a file without deleting it.

14. How do you make changes to .profile and execute it without requiring to log out and log in again ?

15. a) X had been working on his computer using shell commands. X's little brother Y, as inquisitive as ever, wanted to know what commands X had typed. Help Y find out the commands that X had typed earlier.
b) X, on realizing that Y was reading his previous commands list, decided to fool Y by using aliases. Y is now confused over what the commands actually are. Please help Y find out what his brother his upto and find out the commands right away.

16. 'Gown', Tux's friend has trouble with the following. She wants to mirror a website in linux for hosting it on a local server not connected to the internet. All the links should point to the appropriate pages.
As you are his best friend, Tux has approached you for the solution. Suggest a simple and effective way to do the same. We are looking for solutions following the KISS(Keep It Short and Simple) principle.

17. X loves aliases! But it restricts him to only one-line programs, making it very cumbersome. Help out X by suggesting a work-around that would make his life easier.

*18.Last Question:
How good can you get ?
Send us your own shell script puzzle (along with the solution, Duh!!!). Depending on the level of difficulty and the standard of the question, suitable marks will be awarded. Note that the solution must not exceed 30 lines of code.