

BITS Pilani – Hyderabad Campus  
Operating Systems (CS F372)

Shell Programming in bash

1. What is a shell program? What is the primary use?
2. Write a “Hello World” program in bash. How is a shell program run?
3. Write a bash shell program to compute the sum of 5 and 7
4. Write a bash shell program to find if a number is even or odd. Use conditional constructs in bash
5. Write a bash program to print all files in the `pwd`. Use loop constructs in bash
6. Write a bash program to print the first 100 natural numbers in:
  - a) forward order
  - b) reverse order
7. Write a bash program to print all the command line arguments passed to the program
8. Write a C program which takes a positive integer  $n$  as a command line argument and prints Hello World  $n$  times. Write a wrapper bash program which takes  $n$  as an argument and uses it to call the binary of the C program with  $n$  as an argument.
9. **Exercise:** Write a C program which takes a positive integer as a command line argument and calculates the factorial of the integer. Write a wrapper bash script which calls the C program with arguments from 1 to 100, captures the time taken for the run and calculates the average time taken for the 100 runs.

Hint: the command `/usr/bin/time -f "%e" command` gives the real time for running a command.