List of Shell Programming Exercises

1. Create a shell program that displayed the salutation 'Good morning' if it's any time after midnight but before noon; the phrase 'Good afternoon' if it's from noon to 6 pm; and the phrase 'Good evening' if it's any time from 6pm to midnight.

   [Note : You can use the *date* command to retrieve time (and date)]

2. Write a simple shell script that takes any number of arguments on the commandline, and prints the arguments with “Hello ” in front. For example, if the name of the script is *hello.sh* , then you should be able to run it like this:

   $ sh hello.sh John

   $ Hello John

   $ sh hello.sh James Smith

   $ Hello James Smith

   [Note : We can pass arguments to a shell program while executing. These arguments are passed followed by the name of the program. In the program we can access these arguments. $1 refers to the first argument, $2 refers to the second argument and so on. $# refers to the number of arguments. $* contains the entire list of arguments passed to the program]

3. Write a simple shell script that takes two numbers as parameters and which prints all the numbers from the first to the second inclusive, each number separated only by a space from the previous number. Example, if the script is called *numbers.sh* then

   $ sh numbers.sh 2 8
   2 3 4 5 6 7 8

4. Write a script which reads a number in units of seconds and converts it to the units hours:minutes:seconds and prints the result to standard output

Enter number of seconds: 12345
Result

12345 seconds in hours:minutes:seconds is 3:25:45

5. Write a script *calculate* which accepts 4 arguments *a, b, c, d* and prints the value of *a * 20 – b* 2 + c / d* to standard output.

   An example of executing the script:

   $ calculate 2 12 5 2
   The value of "2*20 - 12*2 + 5/2" is 18
   [Note: Put * in “ ” to remove its special meaning.]

6. Write a program to display the digits in odd positions of a 5 digit number.
7. Write a program to reverse the digits of a 5 digit number.
8. Write program to find the sum of all digits of a 5 digit number.
9. Write a program to find the largest among 3 integers.
10. Write a program to find the smallest among 3 integers.
11. Write a program to find the average of numbers entered via command line.
    [Use *bc* for floating point arithmetic, the value of *scale* determines the precision of a floating point number.
    Example : *average=$(echo "scale=2; $sum / $#" | bc)*]
12. Write a program to concatenate two strings and find the length of the resultant string.
13. Write a program to find the factorial of a given number.
14. Write a program to generate Fibonacci series.
15. Write a program to find out whether a given year is leap year or not.
16. Write a program to print the given below pattern.

```
1
22
333
4444
55555
```

17. Write a program to reverse the inputted string.
18. Write a program to find whether a string is a palindrome or not.
19. Write a program to find whether an integer is even or odd.
20. Write a program to count the occurrence of a particular digit in a number.

21. Create a data file called employee in the format given below.

EmpCode	Character
EmpName	Character
Grade	Character
Years of Experience	Numeric
Basic Pay	Numeric

Enter the following data into the file, delimited by TAB.

A001	Arjun	E1	01	12000
A006	Anand	E1	01	12450
A010	Rajesh	E2	03	14500
A002	Mohan	E2	02	13000
A005	John	E2	01	14500
A009	Smith	E2	04	17500
A004	Williams	E1	01	12000

Write shell commands to perform the following operations.

a) Sort the file on EmpCode.
b) Sort the file on EmpName.
c) Sort the file on decreasing order of Basic Pay.
d) Sort the file on increasing order of years of experience.
e) Display the number of employees in the file.
f) Display all records with EmpName starting with 'A'.
g) Display the records of employees whose grade is E2 and have work experience of 2 to 5 years.
h) Display records of all employees who are not in grade E2.