

## Advanced Machine Learning – Assignment 1

**Last date of submission: 10.08.2017**

**Total Marks: 2**

1. A team of coding enthusiasts were playing with the python operators. They were on a planet called magic-python. Operators were made of wood and as they play, similar things will play out on their screen and coding. So, whatever they will throw on the screen, same will be automatically converted into expressions and statements. As per the rules of the game they should throw the blocks such that it makes the syntactic sense as per the Python syntax. First person started the play with a wooden block marked as 10, other one throws \*, next one throws 9, next one throws +, next one throws 8, next one throws -, next one throws 7, next one throws //, next one throws 6, next one throws %, next one throws 5, next one throws \*\*, next one throws 4, next one throws &, next one throws 3, next one throws |, next one throws 2, next one throws << and the last player throws 1. What will be the Output on the screen as a result of this sequence of literals and operators?
2. Write a program to perform XOR using AND, OR, NOT
3. Write a program in Python to find the count the numbers of zeroes, positive and negative numbers entered by the user. The user should enter -1000 when he/she wants to stop entering the numbers.
4. Write a program in Python to check whether a number entered by the users is an Armstrong number or not. 153 is an Armstrong number as  $153 = 1^3 + 5^3 + 3^3$  while 125 is not an Armstrong number because  $125 \neq 1^3 + 2^3 + 5^3$ . The program should allow the user to input any 5 numbers for testing.
5. WAP in Python which reads a string from a user and print the frequency of occurrence of first character.
6. Write a program in Python that inputs a list from user and print a new list with unique elements of the input list. For example, for list [1,2,2,3,1,3,3] the output should be [1,2,3].
7. Write a program that asks the user to enter a positive integer n. Assuming that this integer is in seconds, your program should convert the number of seconds into days, hours, minutes, and seconds and prints them exactly in the format specified below. Here are a few sample runs of what your program is supposed to do: when user enters

369121517 your program should print: 4272 days 5 hours 45 minutes 17 seconds when user enters 24680 your program should print: 0 days 6 hours 51 minutes 20 seconds

8. Write a function that accepts a list and returns a new list such that the new list contains all the items of the old list in reverse order. Note that this is NOT a sorting problem. Do NOT use the built in reverse() method for this problem. For example if: `input_list = ['apples', 'eat', "don't", 'I', 'but', 'Grapes', 'Love', 'I']` then your function should return a list such as: `['I', 'Love', 'Grapes', 'but', 'I', "don't", 'eat', 'apples']`
  
9. Write a function named `test_for_anagrams` that receives two strings as parameters, both of which consist of alphabetic characters and returns True if the two strings are anagrams, False otherwise. Two strings are anagrams if one string can be constructed by rearranging the characters in the other string using all the characters in the original string exactly once. For example, the strings "Orchestra" and "Carthorse" are anagrams because each one can be constructed by rearranging the characters in the other one using all the characters in one of them exactly once. Note that capitalization does not matter here i.e. a lower case character can be considered the same as an upper case character
  
10. Write a program in Python which opens a text file and writes some text in it. Then the program should read the contents of the text file and print the total number of characters in the file. For example, the output should be 12 if text entered is: **Hello world!**

## Guidelines

- File name of each program should be with name and registration number. Ex. `Pgm1_Sridhar_phd101.py`, `Pgm2_Sridhar_phd101.py`
- Program file types should be `.py`
- Zip the programs in single file with name and registration number. Ex. `Assingment1_Sridhar_phd101.zip`
- All programs should be documented properly
- All assignments will be subjected to plagiarism checking