**P E S INSTITUTE OF TECHNOLOGY**

**(An Autonomous Institute under VTU, Belgaum)**

**Department of Information Science and Engineering**

**13CS308: Python Application Programming Laboratory**

**LAB ASSIGNMENT LIST**

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| 1 a | Generate the following pattern for a given value of n. (say n = 4)  1 0 0 0  0 1 0 0  0 0 1 0  0 0 0 1 |
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| 1 b | Create a directory PAP with 10 files. Each file should contain different info. Write a program to find biggest file in the directory PAP. |
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| 1 c | Define a procedure, greatest, that takes as input a list of positive numbers, and returns the greatest number in that list. If the input list is empty, the output should be 0. |
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| 2 a | Create a directory PAP with 10 files. Remove all empty files in this directory. |
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| 2 b | Write a program to read the name and date of birth from the keyboard and insert into the table. Display the contents and verify the same at the backend also. |
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| 2 C | Write a program which takes 2 digits, X,Y as input and generates a 2-dimensional array. The element value in the i-th row and j-th column of the array should be i\*j. |
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| 3 a | Walk through this given string and find all tags.  <test>  <sub>PAP</sub>  <date>  <dd>30</dd>  <mm>9</mm>  <yy>2013</yy>  </date>  </test> |
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| 3 b | Create a list of elements. Use a dict to find the frequency of each element in the list. |
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| 3 c | Write a program that accepts a sentence and calculate the number of letters and digits. |
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| 4 a | Validate a given date. Check also for leap year. |
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| 4 b | Write a program to find all numbers which are odd and which are palindromes between a pair of numbers. Use list comprehension. |
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| 4 c | Design a code snippet that takes a list of files on the command line, and lists the contents of each files with lines numbered. |
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| 5 a | Write a function to check whether a given number is prime or not. Use this function to find all prime numbers in a given range |
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| 5 b | Create a module MyMath.py which contains functions to compute  i) area of a sphere given the radius  ii) volume of a sphere given the radius  iii) radius of a sphere given the volume  Test these functions in the module. Write a client program to use these functions by importing. |
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| 5 c | Write a program that accepts a sentence and calculate the number of upper case letters and lower case letters. |
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| 6 a | Write a function which takes two arguments say a and b. Decorate to check whether a is less than b. |
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| 6 b | Write a program whether a given character occurs again in the same string anywhere in the string |
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| 6 c | A website requires the users to input username and password to register. Write a program to check the validity of password input by users.  Following are the criteria for checking the password:  1. At least 1 letter between [a-z]  2. At least 1 number between [0-9]  1. At least 1 letter between [A-Z]  3. At least 1 character from [$#@]  4. Minimum length of transaction password: 6  5. Maximum length of transaction password: 12  Your program should accept a sequence of comma separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma. |
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| 7 a | Write a program to find all persons whose birth day falls in a given month.  hint: use month(dob) to get the month |
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| 7 b | Find the 5 biggest files in the directory /bin. Store the result in a list. Sort the list |
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| 7 C | Write a program that computes the net amount of a bank account based a transaction log from console input. The transaction log format is shown as following:  D 100  W 200  ….  D means deposit while W means withdrawal. |
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| 8 a | Write a program which generates an HTML form which reads two numbers and calls another program (as part of action) which displays the numbers and their sum |
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| 8 b | Write a program to find the # of occurrences of keywords IF DO THEN ENDDO ENDIF in a given sentence / program. |
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| 8 c | Write a program to compute the frequency of the words from the input. The output should output after sorting the key alphanumerically. |
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| 9 a | Create a class called MyStack which supports push and pop operations. |
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| 9 b | Generate all perfect squares which are palindromes and so are their square roots less than or equal to given number n. |
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| 9 c | 1. Write a program which uses map() and filter() to make a list whose elements are square of even number in [1,2,3,4,5,6,7,8,9,10]. 2. Write a program which can filter() to make a list whose elements are even number between 1 and 20 (both included). |
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| 10 a | Write a program to find union and intersection of given lists L1 and L2. |
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| 10 b | Write a program to sum the elements of an array (list) using 4 threads. Let each thread add quarter of the array. Assume that the size of the array is a multiple of 4. |
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| 10 c | Generate the following pattern for a given value of n. (say n = 4)  1 = 1  1 + 2 = 3  1 + 2 + 3 = 6  1 + 2 + 3 + 4 = 10 |
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| 11 a | Write a graphic based program to add two numbers and display the result. |
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| 11 b | Generate Pascal triangle. if n = 4, output should be  1  1 1  1 2 1  1 3 3 1  1 4 6 4 1 |
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| 11 c | Write a program with appropriate rules to tokenize the following as follows:  a --- b => (a, ID) (--, OP) (-, OP) (b, ID)  a << b => (a, ID) (<<, OP) (b, ID)  a < b - c => (a, ID) (< , OP) (b, ID) (-, op) (c, ID) |
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| 12 a | Given a file containing names of the state, create a file for each state. A sample file is content is given below :  karnataka:bangalore  kerala:trivandrum  kerala:munnar  tamilnad:chennai  karnataka:mysore  kerala:tekkadi  tamilnad:madurai  karnataka:hubli  kerala:kochi  tamilnad:salem  karnataka:mangalore  Hint: walk thro the file. create a dict whose key is the state name and value is the file handle. Do close all the files at the end of processing. |
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| 12 b | Write a function which gets number of strings using variable number of arguments and returns a list of strings which are palindromes |
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| 12 c | The Fibonacci Sequence is computed based on the following formula:  f(n)=0 if n=0  f(n)=1 if n=1  f(n)=f(n-1)+f(n-2) if n>1  Please write a program using list comprehension to print the Fibonacci Sequence in comma separated form with a given n input by console. |
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| 13 a | Write a program to sum the elements of an array (list) using 4 processes. Let each thread add quarter of the array. Assume that the size of the array is a multiple of 4. |
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| 13 b | Write a program to display the name and the age of the person. The input to the program must be date of birth and name only.  hint: check datadiff and curdate functions of mysql |
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| 13 c | Write a program using generator to print the even numbers between 0 and n in comma separated form while n is input by console. |