RAMAIAH Institute of Technology

## Department of Computer Science & Engineering

**QUESTION BANK FOR IV SEMESTER (Term: Jan-May 2019)**

# UNIX and Python Scripting (CS46-1)

**I.A. Marks: 50** **Exam Hours: 03**
**Credits: 0:1:2:0** **Exam Marks: 50**

## Design the following programs using Python.

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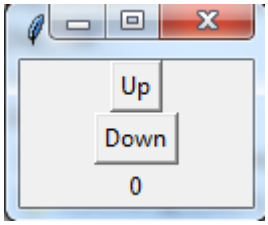
| **1.** | **(a)** Write a python program to create a file and write contents into the file. Open the file created and count the number of words in the file.<br>**(b)** Write a python program to design a GUI application as shown below. On click of an Up button the value should increment by one and on click of down button the value should decrement by one.<br>  |
| **2.** | **(a)** Write a python program to create a class called Point , which represents a point. Overload the + operator to add two points. Write functions to read and display the points.<br>**(b)** Write a python function geometric () that takes a list of integers as input and returns True if the integers in the list form a geometric sequence. A sequence a0, a1, a2, a3, a4, . . . , an is a geometric sequence if the ratios a1/a0, a2/a1, a3/a2, a4/a3, . . . , an-1/an are all equal.<br>>>> geometric([2, 4, 8, 16, 32, 64, 128, 256])<br>True<br>>>> geometric([2, 4, 6, 8])<br>False |
| **3.** | **(a)** Write a python program to implement the following.<br>Vehicle<br>__\|___<br>\| \|<br>Bike Car<br>___\|___<br>\| \|<br>Pedal bikes Motor bikes<br>**(b)** Write a program that creates a Canvas and a Button. When the user presses the Button, it should draw a circle on the canvas. |

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| **4.** | **(a)** Write a python program to demonstrate 'Key Error', 'Value Error', 'Index Error'.<br>**(b)** Write a python class called Mylist that shadows a python list: it should overload + operator to append the data to the list. Also provide constructor for your class that takes an existing list. |
| **5.** | **(a)** Write a python program to simulate saving account processing in a bank using constructors. Create Deposit and Withdraw with other member functions and Check for Validation while withdrawing the amount and depositing the amount by defining appropriate user defined exceptions.<br>**(b)** Write a python program to implement Data structure's Stack and Queue using lists by making use of packages. (Note: Create a separate package for stack and Queue). |
| **6.** | **(a)** Write a python program to create a database Employee with relevant data and display the Employees whose salary > 50000.<br>**(b)** Write a python function exclamation() that takes input as a string and returns it with this modification: Every vowel is replaced by four consecutive copies of itself and an exclamation mark (!) is added at the end.<br>>>> exclamation('argh')<br>'aaaargh!'<br>>>> exclamation('hello')<br>'heeeelloooo! |
| **7.** | **(a)** Create a python dictionary for words and their meanings. Write functions to add a new entry (word:meaning) ,search for a particular word and retrieve meaning, given meaning find words with same meaning , remove an entry, display all words sorted alphabetically. [Program must be menu driven]<br>**(b)** Write a python function subsetSum() that takes as input a list of positive numbers and a positive number target. Your function should return True if there are three numbers in the list that add up to target. For example, if the input list is [5, 4, 10, 20, 15, 19] and target is 38, then True should be returned since 4+15+19 = 38. However, if the input list is the same but the target value is 10, then the returned value should be False because 10 is not the sum of any three numbers in the given list. |
| **8.** | **(a)** Define a python function generate_n_chars() that takes an integer n and a character c and returns a string, n characters long. For example, generate_n_chars(5,"x") should return the string "xxxxx" using keyword only parameters.<br>**(b)** Create a python module named Area which has functions to compute area of circle, rectangle and scalene triangle. Function to compute area of circle takes radius as argument, function to compute area of rectangle takes length and breadth as arguments and function to compute area of triangle takes lengths of three sides as arguments. Write client code (menu driven) which imports module Area, reads the input from user and invoke appropriate functions. |

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| **9.** | **(a)** Write a python program to create a class called time. Its three members all type int should be called hours, minutes and seconds. Your program should prompt the user to enter a time values separately. The Program should then store the time in the object and finally printout the total no of seconds represented by this value. Use appropriate member functions.<br>**(b)** Write a python program to create a database Hospital with the table and attributes as shown below. Execute queries for updating the Bed count of Hospital_Id 1 to 100 and delete the row with the Hospital_Id 3.<br><br>Hospital_Id \| Hospital_Name \| Bed Count<br>1 \| Mayo Clinic \| 200<br>2 \| Cleveland Clinic \| 400<br>3 \| Johns Hopkins \| 1000<br>4 \| UCLA Medical Center \| 1500 |
| **10.** | **(a)** Write a python class to represent city which contains a list of places to see. Provide methods to create the object with just the city name or with city name and places (stored as list) Provide methods to add a place of visit, to remove place of visit, to display all places of visit.<br>**(b)** Write a python function exclamation() that takes input as a string and returns it with this modification: Every vowel is replaced by four consecutive copies of itself and an exclamation mark (!) is added at the end.<br>>>> exclamation('argh')<br>'aaaargh!'<br>>>> exclamation('hello')<br>'heeeelloooo! |
| **11.** | **(a)** Write a python function names() that takes no input and repeatedly asks the user to enter the first name of a student in a class. When the user enters the empty string, the function should print for every name the number of students with that name.<br>>>> names()<br>Enter next name: Valerie<br>Enter next name: Bob<br>Enter next name: Valerie<br>Enter next name: Amelia<br>Enter next name: Bob<br>Enter next name:<br>There is 1 student named Amelia<br>There are 2 students named Bob<br>There are 2 students named Valerie<br>**(b)** Write a python function subsetSum() that takes as input a list of positive numbers and a positive number target. Your function should return True if there are three numbers in the list that add up to target. For example, if the input list is [5, 4, 10, 20, 15, 19] and target is |

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| **12.** | **(a)** | Write a python function partition() that splits a list of soccer players into two groups. More precisely, it takes a list of first names (strings) as input and prints the names of those soccer players whose first name starts with a letter between and including A and M.<br>>>> partition(['Eleanor', 'Evelyn', 'Sammy', 'Owen', 'Gavin'])<br>Eleanor<br>Evelyn<br>Gavin<br>>>> partition(['Xena', 'Sammy', 'Owen']) |
| | **(b)** | Write a python program that creates a GUI with a single button. When the button is pressed it should create a second button. When that button is pressed, it should create a label that says, "Nice job!.. |
| **13.** | **(a)** | Write a python program for , A string with parentheses is well bracketed if all parentheses are matched: every opening bracket has a matching closing bracket and vice versa. Write a Python function wellbracketed(s) that takes a string s containing parentheses and returns True if s is well bracketed and False otherwise. Here are some examples to show how your function should work.<br>>>> wellbracketed("22)")<br>False<br>>>> wellbracketed("(a+b)(a-b)")<br>True<br>>>> wellbracketed("(a(b+c)-d)((e+f)")<br>False |
| | **(b)** | Write a python program to demonstrate, a list rotation consists of taking the last element and moving it to the front. For instance, if we rotate the list [1,2,3,4,5], we get [5,1,2,3,4]. If we rotate it again, we get [4,5,1,2,3].Write a Python function rotatelist(ls,k) that takes a list ls and a positive integer k and returns the list ls after k rotations. If k is not positive, your function should return ls unchanged. Note that your function should not change ls itself, and should return the rotated list.Here are some examples to show how your function should work.<br>>>> rotatelist([1,2,3,4,5],1) #output is [5, 1, 2, 3, 4]<br>>>> rotatelist([1,2,3,4,5],3) #output is [3, 4, 5, 1, 2]<br>>>> rotatelist([1,2,3,4,5],12) #output is [4, 5, 1, 2, 3] |
| **14.** | **(a)** | Write a python program to validate name and phone number using re. It will continue to ask until you put correct data only. (eg.Phone number: (800) 555.1212 #1234. |
| | **(b)** | Write a python program Convert the contents of the file 'graffit.txt' to all uppercase letters. |

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| **15.** | **(a)** | Write a "spelling correction" python function correct() that takes a string and sees to it that two or more occurrences of the space character is compressed into one, and inserts an extra space after a period if the period is directly followed by a letter. (use regular expression) E.g. correct("This is very funny and cool.Indeed!") should return "This is very funny and cool. Indeed!" |
| | **(b)** | Write a python program to create list1 and list2, be two lists of integers.We say that list1 is a sublist of list2 if the elements in list1 appear in list2 in the same order as they appear in list1, but not necessarily consecutively.<br>>>> sublist([15, 1, 100], [20, 15, 30, 50, 1, 100])<br>True<br>>>> sublist([15, 50, 20], [20, 15, 30, 50, 1, 100])<br>False |

**Note:**

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| **UNIX quiz** | **: 15 Marks** |
| **Write up** | **: 08 Marks** |
| **Conduction and Result** | **: 20 Marks (a: 10 Marks, b: 10 Marks)** |
| **Viva** | **: 07 Marks** |
| **For Change of question** | **: -10 Marks** |

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