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| **Sl No** | **Topic** | **Program Assignment** |
| 21 | Math and Random Modules | Using the built in functions on Numbers perform following operations      a) Round of the given floating point number               example :  n=0.543  then round it next decimal number , i.e n=1.0               Use round() function        b) Find out the square root of a given number. ( use sqrt(x) function)        c) Generate random number between 0, and 1 ( use  random() function)          d)  Generate random number between 10 and  500. ( use uniform() function)      e) Explore all Math and Random module functions  on a given number/ List. ( Refer to tutorial  for Math & Random functions list) |
| 22 | Math- Trigonometric functions | Read the value x and y from the user and apply all trigonometric functions on these numbers.      Note : Refer the tutorial Trigonometric operation table. |
| 23 | Math – math.pi application | Find the area of Circle given that radius of a circle. ( Use pi value from Math module) |
| 24 | Strings | Special Characters:        Write  program to explore all Escape characters specified in Tutorial ( Under String chapter) |
| 25 | Strings | Write a program to print the different data types( Numbers, strings characters) using the Format symbols     ( Refer to different format  symbols specified in Tutorial ) |
| 26 | Strings | Receive the encoded string from your friend and decode it  to check the original  message.     PS:  You will receive Encoded string and the Algorithm used for encoding. |
| 27 | Strings | Write a program to check given string is Palindrome or not.        That is reverse the given string and check whether it is same as original string, if so then it is palindrome.        Example : String = "malayalam"  reverse string = "malayalam" hence given string is palindrome.       Use built functions to check given string  is palindrome or  not. |
| 28 | Strings | Write a program to check how many ovals present in the given string.       That is, count the number of " a e i o u" in the given string and print the numbers against each oval.        Example :- "This is Python"           Number of total ovals = 3                                           i = 2                                           o =1 |
| 29 | Strings | Apply all built in functions on Strings in your program.     Note there are 40  string functions. Use Tutorial for the help.     Note: Each program should have 5 string built in functions ( so write 8 programs to cover all string functions) |
| 30 | Strings | Write a program to Sort given N numbers        ( Use only loop structures and Conditions to sort the elements. Use Bubble sort / Selection sort technique to sort the elements of List)        Note : don't use built in functions to sort. |
| 31 | Strings | Write a program to search an element in the list. i.e. Perform the binary search on the sorted list having integers as elements.         If the search is successful print "Success" else print "un successful search". |
| 32 | Strings | Write a program to perform following operations on List.         Create  3 lists List1,List2 and  List3         a. Find the length of each list and print it         b. Find the maximum and  minimum element of each list         c. Compare each list and determine which list is biggest & which list is smallest.         d. Delete first and last element of each list and print list contents. |
| 33 | Strings | Create a list with 7 elements and perform following operations.        Let        List=[10,20,30,40,50,60,70]               a) Append an object 80 to the List               b) insert object 100 at  4th position               c) Sort the list and print all elements               d) Sort the elements of the list in descending order.               e) delete last three elements using pop operation |
| 34 | Strings | Create 3 Lists ( list1,list2,list3) with numbers and perform following operations                  a) Create Maxlist by taking 2 maximum elements from each list.                  b) Find average value from all the elements of Maxlist.                  c) Create a MinlIst by taking 2 minimum elements from each list                   d) Find the average value from all the elements of Minlist |
| 35 | Strings | Create Tuple as specified below           a) Create a Tuple tup1 with days in a week & print the tuple elements           b) Create a Tuple tup2  with months in a year and concatenate it with tup1           c) Create 3 tuples( tup1,tup2,tup3) with numbers and determine which is greater.           d) Try to delete an individual element in tup1 and try deleting complete Tuple -tup1                  Notice the error type you get.           e) Insert new element in to tuple by typecasting it to List |
| 36 | Strings | Create two tuples tup1 & tup2 and apply all built in functions on tuples. ( Refer Tutorial for the Built in functions list) |
| 37 | Dictionary  and Date & Time | Create 3 dictionaries (dict1,dict2,dict3)  with 3 elements each.         Perform following operations                a) Compare dictionaries to determine the biggest.                b) Add new elements in to the dictionaries dict1, dict2                c) print the length of dict1,dict2,dict3.                d) Convert dict1, dict2, and dict3 dictionaries as string and concatenate all strings together. |
| 38 | Dictionary  and Date & Time | Create 2 dictionaries as follows             dict1 ={'Name':'Ramakrishna','Age':25}             dict2={'EmpId':1234,'Salary':5000}         Perform following operations                 a) Create single dictionary by merging dict1 and dict2              b) Update the salary to 10%              c) Update the age to 26              d) Insert the new element with key "grade" and assign value as "B1"              e) Extract and print all values and keys separately.              f) delete the element with key 'Age' and print dictionary elements. |
| 39 | Dictionary  and Date & Time | Using Time and Calendar module ,Print current date and time. Print current month calendar. |
| 40 | Dictionary  and Date & Time | Using time module perform following operations.            a) Print current time for every 5 seconds up to 1 minute time interval.            b) Write a program to find out how much CPU time is taken for the execution of above(32.a)  program. |
| 41 | Dictionary  and Date & Time | Using calendar module perform following operations.            a)print the 2016 calendar with space between months as 10 character.            b) How many leap days between the years 1980 to 2025.            c) Check given year is leap year or not.             d) print calendar of any specified month of the year 2016. |
| 42 | Functions | Write a program to generate a Fibonacci series using a function called fib(n),         a) where  N is user specified argument specifies number of elements in the series. |
| 43 | Functions | Write a program to search given element from the list. Use your own function to search an element from list.        Note: Function should receive variable length arguments and search each of these arguments present  in the  list. |
| 44 | Functions | Write a program with lambda function to perform following.          a) Perform all the operations of basic calculator ( add, sub, multiply, divide, modulus, floor division ) |
| 45 | Functions | Write a program to check given string is Palindrome or not. ( Use function Concepts and Required keyword, Default parameter concepts)        That is reverse the given string and check whether it is same as original string, if so then it is palindrome.        Example : String = "Malayalam"  reverse string = "Malayalam" hence given string is palindrome. |
| 46 | Functions | Write a function to find the  biggest of 4 numbers.        a) All numbers are passed as arguments separately ( Required argument)        b) use default values for arguments  ( Default arguments) |
| 47 | Functions | Write function to extend the tuple with elements of list. Pass list and Tuple as parameter to the function. |
| 48 | Functions | Create a Calculator with the following functions.        a) Addition/subtraction/multiplication and division of two numbers           ( Note: Create separate function for each operation )       b) Find square root of a given number.( Use keyword arguments in your function)       c) Create a list of sub strings from a given string, such that sub strings are created with given character.            That is,                 string = "Pack: My: Box: With: Good: Food"           Create sub strings with the delimiter character ":" such that the following sub strings are created.                   substrlist=[Pack, My, Box, With, Good, Food]            Note : Function should take at least 2 parameters ( Main string and delimiter character)                           return value from function will be list of substring. |
| 49 | File I/O Operations | Write a program to perform  following file operations a) Open the file in read mode and read all its contents on to STDOUT. b) Open the file in write mode and enter 5 new lines of strings in to the new file. c) Open file in Append mode and add 5 lines of text into it. |
| 50 | File I/O Operations | Write a program to open the existing file in read mode and perform following tasks,       a) Rad 10 character at a time and then print its current position of file object. Repeat this operation till the EOF.         b) Reset the file pointer after reading 100 Character from file ( Use Seek function to reset)         c) Open the file in read mode and start printing the contents from 5th line onwards. |
| 51 | File I/O Operations | In a given directory search all text files for the pattern "Treasure".         a) Find how many text file has the pattern.        b) Count how many times pattern repeats in each file    Note : Create at least 4 text file in a directory and keep the pattern in at least 2 files.              Repeat the pattern in the file many times. |
| 52 | File I/O Operations | Open existing text file and reverse its contents. i.e           a) print the last line as first line and first line as last line ( Reverse the lines of the file )           b) print characters of file from last character of file till the first character of the file.(Reverse entire contents of  file ) |
| 53 | File I/O Operations | Open the file is read & write mode and apply following  functions          a) All 13 functions mentioned in Tutorial File object table. |
| 54 | Exception Handling | Write a program to handle the following exceptions in you program.            a) KeyboardInterrupt,            b) NameError             c) ArithmeticError     Note : make use of  Try, except, else: statements. |
| 55 | Exception Handling | Write a program for converting weight from Pound to Kilo grams.        a)  Use assertion for the negative weight.        b) Use assertion to weight more than 100 KG |
| 56 | Exception Handling | Write a program to handle following exceptions using Try block.       a) IO Error while you try writing contents into the file that is opened in read mode only.       b) ValueError |
| 57 | Exception Handling | From the Standard Exception Table of Tutorials: Try implementing all (25 ) exceptions in you program.       Note: Some exceptions might not work on your system. |
| 58 | Modules & Packages | Create file called  "calc.py" which has following functions              i) functions to add 2 numbers              ii)  function to find diff of 2 numbers             iii) function to multiply 2 numbers            iv) all maths operations ( Sqrt, div, floor div, modulus, primnumber)            v) Fibonacci series                  a) Write a new program in file "maths.py" such that you import functions of file "calc.py" to your new program         b) Use From <module> import <function> statement to import only few function  from calc module. |
| 59 | Modules & Packages | Create file called  "stringop.py" which has following functions              i) functions to sort numbers( Use loops for  sorting, do not use built in function)              ii)  function to search given element through binary search method.                  ( Refer to net for the Binary search algorithm)             iii) function to reverse the given string                    Write new program in file strpackage.py such that you import functions of file  "stringop.py" to your new program |
| 60 | Modules & Packages | Create a package of all programs you have done in previous class.         a. All programs related to strings - Stringpackage         b. All programs related to Lists -ListPackage         c. All programs related to tuple  - TuplePackage         d. All programs related to Dictionary -DictionaryPackage         e. All programs related to functions - FunctionPackage         f. All programs related to Files  -- FilePackage |