**P E S University**

**Department** **of** **Computer** **Science** **&** **Engineering**

Session: Aug-Dec 2019

**Introduction** **to** **Computing** **using** **Python** **Laboratory (UE19CS102)**

**Week 4 – Programs on input() & Library Functions**

|  |  |
| --- | --- |
| 1 | **A)Write a program to read 4 characters separately from the user. Convert every character to its next alphabet.**  Example: input: a  b  c  d  output : b c d e  Solution:  c1 = input("Enter 1st characters: ")  c2 = input("Enter 2nd characters: ")  c3 = input("Enter 3rd characters: ")  c4 = input("Enter 4th characters: ")  ch1 = chr(ord(c1)+1)  ch2 = chr(ord(c2)+1)  ch3 = chr(ord(c3)+1)  ch4 = chr(ord(c4)+1)  print(ch1, ch2, ch3, ch4, sep=" ") # use print statements seperately if required.  **B) Program to read 4 characters separately from the user. Print every character of a string along with its ASCII/UTF code.**  Example: input: a  b  c  d  output: a97 b98 c99 d100  Solution:  c1 = input("Enter 1st characters: ")  c2 = input("Enter 2nd characters: ")  c3 = input("Enter 3rd characters: ")  c4 = input("Enter 4th characters: ")  ch1 = ord(c1)  ch2 = ord(c2)  ch3 = ord(c3)  ch4 = ord(c4)  print(c1, ch1," ",c2, ch2," ",c3, ch3," ", c4, ch4,sep="") |
| 2) | **Write a Program to:**  **A) generate random number between 1 and 100, both inclusive, is a multiple of 10.**  Solution:  import random  print("random number generated is",(random.randrange(0,101,10)))  print("random number generated is",(random.randrange(1,11))\*10)  **B) random number between 1 and 100, both inclusive, which is odd.**  Solution:  import random  print("random number generated is",(random.randrange(1,100,2)))  **C)Write a program to pick a random character from a given String.**  Solution:  import random  name = input("enter any string of your choice")  char = random.choice(name)  print("random char is ", char) D) Calculate multiplication of two random float numbers. Solution:  import random  num1 = random.random()  print("First Random float is ", num1)  num2 = random.uniform(9.5, 99.5) **# you could still use random.random()**  print("Second Random float is ", num1)  num3 = num1 \* num2  print("Multiplication is ", num3) E) Roll a dice in such a way that every time you get the same number. ( Students may need to use for loop to work for **every time** . Let them write the program with out using loop. Ask them to run the code may be 2 or 3 times to get the same random number generated.)  Solution:  import random as r  dice = [1, 2, 3, 4, 5, 6]  print("Randomly selecting same number of a dice")  r.seed(25)  print(r.choice(dice))  **F) Write a program to:**  **i)shuffle students in a class. (Assume no of students in a class are 10)**  **ii)to choose one student who would become a Class representative.**  **iii)to create an random sample of size 2 from the available number of population who are the potential candidates to become event coordinators.**  Solution:  no\_of\_students=[1,2,3,4,5,6,7,8,9,10]  import random  random.shuffle(no\_of\_students)  print(list(no\_of\_students))  x=random.choice(no\_of\_students)  print(x)  y=random.sample(no\_of\_students,2)  print(y) |
| 3) | **Given a number,**  **A)round off to the nearest int.**  **B)round off to the first decimal place.**  **C)round off to the second decimal place.**  **Note: Teach them the concept of round() if not done in the theory class.**  Solution:  num=float(input("enter the number"))  print("round off to nearest int",round(num))  print("round off to first decimal place",round(num,1))  print("round off to the second dec place",round(num,2))  Try:  round(2.5,0)&  round(3.5,0)–observe the difference |
| 4) | **Write a program to:**  **A) convert degree to radian.**  Solution:  import math  degree = float(input("Input degrees: "))  radian = degree\*(math.pi/180)  print(radian)    **(OR)**  import math  degree = float(input("Input degrees: "))  radian = math.radians(degree)  **print(radian)**  **B) Write a Python program to get the details of math module.**  Solution:  import math  math\_ls = dir(math)  print(math\_ls)  **C)calculate distance between two points using latitude and longitude.**  **Note: You may give the formula for the problem.**  from math import radians, sin, cos, acos  print("Input coordinates of two points:")  slat = radians(float(input("Starting latitude: ")))  slon = radians(float(input("Ending longitude: ")))  elat = radians(float(input("Starting latitude: ")))  elon = radians(float(input("Ending longitude: ")))  dist = 6371.01 \* acos(sin(slat)\*sin(elat) + cos(slat)\*cos(elat)\*cos(slon - elon))  print("The distance is " dist) |
| 5) | **Imagine that your teacher teaches three classes. These classes have 32, 45, and 51 students. You want to divide the students in these classes into groups with the same number of students in each group but you recognize that there may be some “left over” students. Assume that you would like there to be 5 groups in the first class (of 32 students), 7 groups in the second class (of 45 students), and 6 groups in the third class (of 51 students). Write a program to accomplish the above task.**  Solution:  Class\_a=32  Class\_b=45  Class\_c=51  print("Number of students in each group are")  print("class A:",round(Class\_a /5))  print("class B:",round(Class\_b/7))  print("class C:", round(Class\_c/6))  print("Number of students leftover are")  print("class A:", Class\_a %5)  print("class B:", Class\_b%7)  print("class C:", Class\_c%6) |
| 6 | **A commonly used method to provide a rough estimate of the right length of**  **snowboard for a rider is to calculate 88 percent of their height (the actual ideal length**  **really depends on a large number of other factors). Write a program that will help people estimate the length of snowboard they should buy. Obtain the user’s height in feet and inches (assume these values will be entered as integers) and display the length of snowboard in centimetres to the user.**  Solution:  flength=5  ilength=4  print("convert length in feet to inches")  inch\_length= flength\*12.000  total\_length=inch\_length+ilength  print("total length in inches is",total\_length) |