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**InternalAssessmentTest1–December2022**

Sub:	ApplicationDevelopmentusingPython					SubCode:	18CS55	Branch:	CSE	
Date:	3/12/2022	Duration:	90 mins	MaxMarks:	50	Sem/Sec:	5 A,B,C		OBE	
<u>AnsweranyFIVEFULLQuestions</u>								MARKS	CO	RBT
1 (a)	Explain the shallow copy and deep copy with suitable examples.						[6]	CO2	L2	
(b)	Design a suitable data structure using python to display a tic-tac-toe board. Define a function printBoard() to play the game with two players, one player given the option 'O' and the other 'X', the function also accepts the input and displays the status of board for all nine slots						[4]	CO2	L3	
2 (a)	Write python program to generate the histogram of a sentence using Dictionary a. The frequency of the different characters present in a sentence b. The number of words present in the sentence c. The longest and short word in the sentence with the length.						[6]	CO2	L3	
(b)	List the isX() string methods in python and explain any four methods with suitable examples.						[4]	CO2	L2	
3(a)	Define dictionary in python. How is it different from a list. Given a dictionary birth_day={'Virat': '21 Feb', 'Rahul': '12 Jan', 'Dhoni' : '13 April'}. Discuss the various methods to traverse the dictionary with the syntax to display the player's name and birthday as a list.						[5]	CO2	L2	
(b)	Given the input= 'Application Development programming using python' which method can be used to get the following output=['Application', ' Development', 'programming', 'using', 'python']. Explain. Write a python program to swap cases of a given string. Input: JaVa Output: jAvA						[5]	CO2	L3	

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2 (a)	Write python program to generate the histogram of a sentence using Dictionary a. The frequency of the different characters present in a sentence b. The number of words present in the sentence c. The longest and short word in the sentence with the length.						[6]	CO2	L3	
(b)	List the isX() string methods in python and explain any four methods with suitable examples.						[4]	CO2	L2	
3(a)	Define dictionary in python. How is it different from a list. Given a dictionary birth_day={'Virat': '21 Feb', 'Rahul': '12 Jan', 'Dhoni' : '13 April'}. Discuss the various methods to traverse the dictionary with the syntax to display the player's name and birthday as a list.						[5]	CO2	L2	

(b)	Given the input= 'Application Development programming using python' which method can be used to get the following output=['Application', ' Development', 'programming', 'using', 'python']. Explain. Write a python program to swap cases of a given string. Input: JaVa Output: jAvA	[5]	CO2	L3
4(a)	Write a Python program to search for all words using regular expression: A. starting with 'a' followed by one or more 'b' B. start with a and ends with b C. string that starts with 'X' followed by nonwhite space characters and ends with numbers. D. String with lower case joined with an underscore E. Words beginning and ending with a numeric number	[5]	CO3	L3
(b)	With code snippet, explain saving variables using the shelve module and PPrint() &Pformat() functions.	[5]	CO3	L2
5(a)	What are regular expressions? Describe question mark, star, plus-and dot Regex symbols with suitable python code snippet.	[6]	CO3	L2
(b)	Write a python program to extract phone numbers and Email address Using Regular Expressions and the necessary second parameter in the compile() functions	[4]	CO3	L3
6(a)	List the functions available under the os.path module and explain with suitable example.	[6]	CO3	L2
(b)	Write a python program to create a folder PYTHON and create 3 files file1, file2 and file3. Write the contents in file1 as 'VTU' and in file 2 as 'UNIVERSITY' and file 3 content should be opening and merging of file1 and file2. Check out the necessary conditions before writing file3.	[4]	CO3	L3

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4(a)	Write a Python program to search for all words using regular expression: A. starting with 'a' followed by one or more 'b' B. start with a and ends with b C. string that starts with 'X' followed by nonwhite space characters and ends with numbers. D. String with lower case joined with an underscore E. Words beginning and ending with a numeric number	[5]	CO3	L3
(b)	With code snippet, explain saving variables using the shelve module and PPrint() &Pformat() functions.	[5]	CO3	L2
5(a)	What are regular expressions? Describe question mark, star, plus-and dot Regex symbols with suitable python code snippet.	[6]	CO3	L2
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6(a)	List the functions available under the os.path module and explain with suitable example.	[6]	CO3	L2

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Internal Assessment Test 2–December 2022(Scheme)

Sub:	Application Development using Python	SubCode:	18CS55	Branch:	CSE					
Date:	3/12/2022	Duration:	90 mins	MaxMarks:	50	Sem/Sec:	5 A,B,C	OBE		
<u>Answer any FIVE FULL Questions</u>								MARKS	CO	RBT
1 (a)	Explain the shallow copy and deep copy with suitable examples. <ul style="list-style-type: none"> • Shallow Copy – 3M • Deep Copy – 3M 						[6]	CO2	L2	
(b)	Design a suitable data structure using python to display a tic-tac-toe board. Define a function printBoard() to play the game with two players, one player given the option 'O' and the other 'X', the function also accepts the input and displays the status of board for all nine slots <ul style="list-style-type: none"> • Tic- Tac – Toe Board – 2M • Function for Updating the board – 2M 						[4]	CO2	L3	
2 (a)	Write python program to generate the histogram of a sentence using Dictionary <ol style="list-style-type: none"> a. The frequency of the different characters present in a sentence b. The number of words present in the sentence c. The longest and short word in the sentence with the length. <ul style="list-style-type: none"> • Program 1 – 2 M • Program 2 – 2M • Program 3 – 2M 						[6]	CO2	L3	
(b)	List the isX() string methods in python and explain any four methods with suitable examples. <ul style="list-style-type: none"> • Listing the Methods – 1M • Explain with Example – 3M 						[4]	CO2	L2	
3(a)	Define dictionary in python. How is it different from a list. Given a dictionary birth_day={'Virat': '21 Feb', 'Rahul': '12 Jan', 'Dhoni' : '13 April'}. Discuss the various methods to traverse the dictionary with the syntax to display the player's name and birthday as a list. <ul style="list-style-type: none"> • Definition for Dictionary – 2M • 3 methods of Traversing the Dictionary – 1M X 3 = 3M 						[5]	CO2	L2	
(b)	Given the input= 'Application Development programming using python' which method can be used to get the following output= ['Application', ' Development', 'programming', 'using', 'python']. Explain. Write a python program to swap cases of a given string. Input: JaVa Output: jAvA <ul style="list-style-type: none"> • Split and explanation – 2M • Program – 3 M 						[5]	CO2	L3	
4(a)	Write a Python program to search for all words using regular expression: <ol style="list-style-type: none"> A. starting with 'a' followed by one or more 'b' B. start with a and ends with b C. string that starts with 'X' followed by nonwhite space characters and ends with numbers. D. String with lower case joined with an underscore E. Words beginning and ending with a numeric number Each program contains 1 M						[5]	CO3	L3	
(b)	With code snippet, explain saving variables using the shelve module and PPrint() &Pformat() functions. PPrint() – 2.5.M Pformat() – 2.5 M						[5]	CO3	L2	
5(a)	What are regular expressions? Describe question mark, star, plus-and dot Regex symbols with suitable python code snippet. Regular Expression – 2M Other Explanation - 1M X 4 = 4M						[6]	CO3	L2	

(b)	Write a python program to extract phone numbers and Email address Using Regular Expressions and the necessary second parameter in the compile() functions <ul style="list-style-type: none"> • Program – 3M • Explanation – 2M 	[4]	CO3	L3
6(a)	List the functions available under the os.path module and explain with suitable example. <ul style="list-style-type: none"> • Six Methods 1M X 6 = 6M 	[6]	CO3	L2
(b)	Write a python program to create a folder PYTHON and create 3 files file1, file2 and file3. Write the contents in file1 as 'VTU' and in file 2 as 'UNIVERSITY' and file 3 content should be opening and merging of file1 and file2. Check out the necessary conditions before writing file3. <ul style="list-style-type: none"> • Program – 4M 	[4]	CO3	L3

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Internal Assessment Test 2 –December2022 (Solution)

Sub:	Application Development using Python	SubCode:	18CS55	Branch:	CSE
Date:	3/12/2022	Duration:	90 mins	MaxMarks:	50
<u>AnsweranyFIVEFULLQuestions</u>				Sem/Sec:	5 A,B,C
					OBE
					MARKS
					CO
					RBT

1 (a)	<p>Explain the shallow copy and deep copy with suitable examples.</p> <p>The copy Module's copy() and deepcopy() Functions</p> <ul style="list-style-type: none"> ➤ If the function modifies the list or dictionary that is passed, we may not want these changes in the original list or dictionary value. ➤ For this, Python provides a module named copy that provides both the copy() and deepcopy() functions. ➤ copy(), can be used to make a duplicate copy of a mutable value like a list or dictionary, not just a copy of a reference. ➤ Now the spam and cheese variables refer to separate lists, which is why only the list in cheese is modified when you assign 42 at index 1. ➤ The reference ID numbers are no longer the same for both variables because the variables refer to independent lists. <pre style="background-color: #f0f0f0; padding: 10px; border: 1px solid #ccc;"> 1 import copy 2 m1=[1,2,3,4] 3 m2=copy.copy(m1) 4 print("ID - 11:",id(m1)) 5 print("ID - 12:",id(m2)) 6 m1.append("hello") 7 print("M1:",m1) 8 print("M2:",m2) 9 </pre> <p>ID - 11: 139760062099360 ID - 12: 139760276665360 M1: [1, 2, 3, 4, 'hello'] M2: [1, 2, 3, 4]</p> <p>Deep Copy Example:</p> <pre style="background-color: #f0f0f0; padding: 10px; border: 1px solid #ccc;"> 1 import copy 2 dem1=[[1,2,3],[4,5,6]] 3 dem2=copy.deepcopy(dem1) 4 dem1[0][1]='Added' 5 dem1.append([21,22,23]) 6 print("DM1:",dem1) 7 print("DM2:",dem2) </pre> <p>DM1: [[1, 'Added', 3], [4, 5, 6], [21, 22, 23]] DM2: [[1, 2, 3], [4, 5, 6]]</p> <pre style="background-color: #f0f0f0; padding: 10px; border: 1px solid #ccc;"> 1 a1=[1,2,3] 2 a2=a1.copy() 3 a2[1]='a' </pre>	[6]	CO2	L2
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(b)	<p>Design a suitable data structure using python to display a tic-tac-toe board. Define a function printBoard() to play the game with two players, one player given the option 'O' and the other 'X', the function also accepts the input and displays the status of board for all nine slots</p> <pre> theBoard = {'top-L': ' ', 'top-M': ' ', 'top-R': ' ', 'mid-L': ' ', 'mid-M': ' ', 'mid-R': ' ', 'low-L': ' ', 'low-M': ' ', 'low-R': ' '} def printBoard(board): print(board['top-L'] + ' ' + board['top-M'] + ' ' + board['top-R']) print('--+') print(board['mid-L'] + ' ' + board['mid-M'] + ' ' + board['mid-R']) print('--+') print(board['low-L'] + ' ' + board['low-M'] + ' ' + board['low-R']) turn = 'X' for i in range(9): printBoard(theBoard) print('Turn for ' + turn + '. Move on which space?') move = input() theBoard[move] = turn if turn == 'X': turn = 'O' else: turn = 'X' printBoard(theBoard) </pre>	[4]	CO2	L3
2 (a)	<p>Write python program to generate the histogram of a sentence using Dictionary</p> <ol style="list-style-type: none"> The frequency of the different characters present in a sentence The number of words present in the sentence The longest and short word in the sentence with the length. <pre> s="My name is Rahul and I am 21" d={'word':1,'digit':0,'upper':0,'lower':0} for i in s: if(i.isspace()): d['word']+=1 if(i.isdigit()): d['digit']+=1 if(i.isupper()): d['upper']+=1 if(i.islower()): d['lower']+=1 for i,j in d.items(): print(i,":",j) </pre>	[6]	CO2	L3
(b)	<p>List the isX() string methods in python and explain any four methods with suitable examples.</p> <p>There are several string methods that have names beginning with the word is. These methods return a Boolean value that describes the nature of the string. □</p> <p>□ Here are some common isX string methods: □</p> <ul style="list-style-type: none"> o isalpha() returns True if the string consists only of letters and is not blank. o isalnum() returns True if the string consists only of letters and numbers and is not blank. o isdecimal() returns True if the string consists only of numeric characters and is not blank. o isspace() returns True if the string consists only of spaces, tabs, and newlines and is not blank. o istitle() returns True if the string consists only of words that begin with an uppercase letter followed by only lowercase letters. 	[4]	CO2	L2

	<pre> >>> 'hello'.isalpha() True >>> 'hello123'.isalpha() False >>> 'hello123'.isalnum() True >>> 'hello'.isalnum() True >>> '123'.isdecimal() True >>> ' '.isspace() True >>> 'This Is Title Case'.istitle() True >>> 'This Is Title Case 123'.istitle() True >>> 'This Is not Title Case'.istitle() False >>> 'This Is NOT Title Case Either'.istitle() False </pre>		
3(a)	<p>Define dictionary in python. How is it different from a list. Given a dictionary birth_day={'Virat': '21 Feb', 'Rahul': '12 Jan', 'Dhoni' : '13 April'}. Discuss the various methods to traverse the dictionary with the syntax to display the player's name and birthday as a list.</p> <p>keys(),items(),values() - Traverse the dictionary</p> <pre> 1 d={'Virat':'12 Feb','Rahul':'25 Dec','Sachin':'24 April'} 2 print(list(d.keys())) 3 for i in d.keys(): 4 print(i) </pre> <p>['Virat', 'Rahul', 'Sachin'] Virat Rahul Sachin</p> <pre> 1 d={'Virat':'12 Feb','Rahul':'25 Dec','Sachin':'24 April'} 2 d['Dhoni']='21 Jan' 3 for i,j in d.items(): 4 print("key:",i,"Value:",j) </pre> <p>key: Virat Value: 12 Feb key: Rahul Value: 25 Dec key: Sachin Value: 24 April key: Dhoni Value: 21 Jan</p>		
(b)	<p>Given the input= 'Application Development programming using python' which method can be used to get the following output=['Application', ' Development', 'programming', 'using', 'python']. Explain.</p> <p>Split()</p> <ul style="list-style-type: none"> ➤ The split() method is called on a string value and returns a list of strings. ➤ We can pass a delimiter string to the split() method to specify a different string to split upon. ➤ A common use of split() is to split a multiline string along the newline characters. <p>Write a python program to swap cases of a given string. Input: JaVa Output: jAvA</p> <pre> s="JaVa" swap="" for i in s: </pre>	[5]	CO2 L3

	<pre> if i.isupper(): swap=swap+i.lower() else: swap=swap+i.upper() print(swap) </pre>			
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4(a)	<p>Write a Python program to search for all words using regular expression:</p> <ol style="list-style-type: none"> starting with 'a' followed by one or more 'b' start with a and ends with b string that starts with 'X' followed by nonwhite space characters and ends with numbers. String with lower case joined with an underscore Words beginning and ending with a numeric number <ol style="list-style-type: none"> starting with 'a' followed by one or more 'b' <pre> import re s='dsds abbb abnh ahju abbj' mo=re.search(r'ab+\w*',s) print(mo.group()) </pre> start with a and ends with b: <pre> import re s='dsds aghb ahn' regx=re.compile(r'a\w*b') print(regx.findall(s)) </pre> string that starts with X followed by nonwhite space characters and ends with numbers: <pre> import re s='Xfdg:23 hsj Xgsv:45 Xjhg:y' regx=re.compile(r'X\w+:\d+') print(regx.findall(s)) </pre> String with lower case joined with an underscore: <pre> import re s='TYUJ_TJH Tfdd_Thgsh asaad_hgsf adghga hgdfg_fdjh' regx=re.compile(r'[a-z]+_[a-z]+') print(regx.findall(s)) </pre> Words Beginning and Ending with a numeric number: <pre> import re s='2agsfz4 zxcd 4dfg6 adbcz' regx=re.compile(r'\d\w*\d') print(regx.findall(s)) </pre> 	[5]	CO3	L3
(b)	<p>With code snippet, explain saving variables using the shelve module and pprint() & Pformat() functions.</p> <ul style="list-style-type: none"> import the pprint module into your programs pprint() and pformat() are the functions that will “pretty print” a dictionary’s values. Provides a cleaner display of the items in a dictionary than what print() provides. <pre> import pprint message="I am an Indian" ct ={} for c in message: ct[c]=ct.setdefault(c,0)+1 print("Without Pretty Print:",ct) print("Using Pretty Print:") pprint.pprint(ct) </pre>	[5]	CO3	L2

	<p>Without Pretty Print: {'I': 2, ' ': 3, 'a': 3, 'm': 1, 'n': 3, 'd': 1, 'i': 1}</p> <p>Using Pretty Print: {' ': 3, 'I': 2, 'a': 3, 'd': 1, 'i': 1, 'm': 1, 'n': 3}</p>			
5(a)	<p>What are regular expressions? Describe question mark, star, plus-and dot Regex symbols with suitable python code snippet.</p> <p>Steps for using regular expressions in Python</p> <ol style="list-style-type: none"> 1. Import the regex module with import re. 2. Create a Regex object with the re.compile() function. (Remember to use a raw string.) – Pattern 3. Pass the string you want to search into the Regex object's search() method. This returns a Match object. - Text 4. Call the Match object's group() method to return a string of the actual matched text. <p>?</p> <pre>>>> batRegex = re.compile(r'Bat(wo)?man') >>> mo1 = batRegex.search("The Adventures of Batman") >>> mo1.group() 'Batman' >>> mo2 = batRegex.search("The Adventures of Batwoman") >>> mo2.group() 'Batwoman'</pre> <ul style="list-style-type: none"> • * (or asterisks) means “match one or more.” • <p>The . (or dot) character in a regular expression is called a wildcard and will match any character except for a newline. dot character will match just one character</p> <pre>import re regex=re.compile(r'.at') print(regex.findall('cat sat on the mat'))</pre> <p>output: ['cat', 'sat', 'mat']</p>	[6]	CO3	L2
(b)	<p>Write a python program to extract phone numbers and Email address Using Regular Expressions and the necessary second parameter in the compile() functions</p> <pre>import re regx=re.compile(r"[a-z0-9_]+ #userid @ # @ of Symbol \w+ #domain \. # dot that comes before domain \w{3} # Top level domain .com ",re.VERBOSE re.IGNORECASE) regx1=re.compile(r'\d{10}') s='My mail id is rahul20@cmrit.com my phone number is 9876655454' print(regx.findall(s)) print(regx1.findall(s))</pre>	[4]	CO3	L3
6(a)	<p>List the functions available under the os.path module and explain with suitable example.</p> <ul style="list-style-type: none"> • os.path.abspath(path) - will return a string of the absolute path of the argument. This is an easy way to convert a relative path into an absolute one. • os.path.isabs(path) will return True if the argument is an absolute path and False if it is a relative path. • os.path.relpath(path, start) will return a string of a relative path from the start path to path • os.path.dirname(path) will return a string of everything that comes before the last slash in the path argument. • os.path.basename(path) will return a string of everything that comes after the last slash in the path argument. • os.path.split() to get a tuple value of a path's dir name and base name • os.path.getsize(path) will return the size in bytes of the file in the path argument. • os.listdir(path) will return a list of filename strings for each file in the path argument. • os.path.exists(path) will return True if the file or folder referred to in the argument exists 	[6]	CO3	L2

	<p>else False</p> <ul style="list-style-type: none"> • os.path.isfile(path) will return True if the path argument exists and is a file and will return False otherwise. • os.path.isdir(path) will return True if the path argument exists and is a folder and will return False otherwise. 			
(b)	<p>Write a python program to create a folder PYTHON and create 3 files file1, file2 and file3. Write the contents in file1 as 'VTU' and in file 2 as 'UNIVERSITY' and file 3 content should be opening and merging of file1 and file2. Check out the necessary conditions before writing file3.</p> <pre> import os try: os.makedirs('Python') except: print("Folder already exist") try: f1= open('Python\\file1.txt','w+') f1.write("VTU") f2=open('Python\\file2.txt','w+') f2.write("University") f1.close() f2.close() except: print("File not found") # Concatenating try: f1 = open('Python\\file1.txt', 'r+') f2 = open('Python\\file2.txt', 'r+') f3=open('Python\\file3.txt','w+') f3.write(f1.read()+f2.read()) f1.close() f2.close() f3.close() except: print("File not found") </pre>	[4]	CO3	L3