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INTERNAL ASSESSMENT TEST – III

Sub:	Python Programming							Code:	21EC643
Date:	31 / 07 / 2024	Duration:	90 mins	Max Marks:	50	Sem:	VI	Branch:	ECE

Answer any 5 full questions

		Marks	CO	RBT
1	<p>Write a short note on HTTP. Write a Python program to implement a simple web browser using HTTP.</p> <ul style="list-style-type: none"> ➤ HTTP is the primary protocol to transmit data across internet. ➤ HTTP provides a mechanism for encoding and transporting information between a client (such as a web browser) and a web server. ➤ HTTP works based on request-response model. ➤ A client sends an HTTP request to a server, which then sends back an HTTP response. ➤ The response contains the requested resource (such as a webpage) or an error message. ➤ HTTP is an application layer protocol and relies on an underlying network layer protocol such as Transmission Control Protocol (TCP) to function. <pre>import socket mysock = socket.socket(socket.AF_INET, socket.SOCK_STREAM) mysock.connect(('data.pr4e.org', 80)) cmd = 'GET http://data.pr4e.org/romeo.txt HTTP/1.0\r\n\r\n'.encode() mysock.send(cmd) while True: data = mysock.recv(512) if len(data) < 1: break print(data.decode(),end='') mysock.close()</pre>	10	CO5	L3
2	<p>With a Python program, explain how we can retrieve a web page using urllib.</p> <ul style="list-style-type: none"> ➤ Using urllib, we can treat a web page much like a file. ➤ We simply indicate which web page we would like to retrieve and urllib handles all of the HTTP protocol and header details. ➤ Once the web page has been opened with urllib.urlopen, we can treat it like a 	10	CO5	L3

	<p>file and read through it using a for loop.</p> <ul style="list-style-type: none"> ➤ When the program runs, we only see the output of the contents of the file. ➤ The headers are still sent, but the urllib code removes the headers and only returns the data to us. <hr/> <pre>import urllib.request fhand =urllib.request.urlopen('http://data.pr4e.org/romeo.txt') for line in fhand: print(line.decode().strip())</pre> <hr/>			
3	<p>With a Python program, explain how we can read an image from a web page using urllib.</p> <pre>import socket import time HOST = 'data.pr4e.org' PORT = 80 mysock = socket.socket(socket.AF_INET, socket.SOCK_STREAM) mysock.connect((HOST, PORT)) mysock.sendall(b'GET http://data.pr4e.org/cover3.jpg HTTP/1.0\r\n\r\n') count = 0 picture = b"" while True: data = mysock.recv(5120) if len(data) < 1: break #time.sleep(0.25) count = count + len(data) print(len(data), count) picture = picture + data mysock.close() # Look for the end of the header (2 CRLF) pos = picture.find(b"\r\n\r\n") print('Header length', pos) print(picture[:pos].decode()) # Skip past the header and save the picture data picture = picture[pos+4:] fhand = open("stuff.jpg", "wb") fhand.write(picture) fhand.close() # Code: http://www.py4e.com/code3/urljpeg.py</pre>	10	CO5	L3

		Ma rks	CO	RBT
4a	Write a note on databases. Explain relational and non-relational databases.	6	CO5	L3

4b	<p>Differentiate between SQL and SQLite. Mention SQLite and their corresponding Python data types.</p> <ul style="list-style-type: none"> ➤ Structured Query Language (SQL) is a language designed to manage relational database. ➤ SQLite is a library built into Python to manage relational database. ➤ The SQLite data types and the corresponding Python data types are shown in the following table. <table border="1" data-bbox="130 488 1136 922"> <thead> <tr> <th>SQLite</th> <th>Python</th> </tr> </thead> <tbody> <tr> <td>INTEGER</td> <td>int</td> </tr> <tr> <td>REAL</td> <td>float</td> </tr> <tr> <td>NULL</td> <td>None</td> </tr> <tr> <td>TEXT</td> <td>Str</td> </tr> <tr> <td>BLOB</td> <td>bytes</td> </tr> </tbody> </table>	SQLite	Python	INTEGER	int	REAL	float	NULL	None	TEXT	Str	BLOB	bytes	4	CO5	L3
SQLite	Python															
INTEGER	int															
REAL	float															
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5	<p>Write a Python program to create a database to store details of students. Include columns to represent fy in number, name, USN and branch. Demonstrate the use of EXECUTE and EXECUTE MANY to store details of students. Also demonstrate how we can update the data of a student.</p> <pre data-bbox="151 1220 1292 1467"> import sqlite3 db1 = sqlite3.connect('database1.db') cursor1=db1.cursor() cursor1.execute('CREATE TABLE IF NOT EXISTS students (serial_number INTEGER, name TEXT, USN TEXT, branch TEXT)) list1=[(1,'Rishabh',1CR21EC300,ECE),(2,'Hardik',1CR21EC301,ECE),(3,'Jadeja',1CR21EC302,ECE)] cursor1.executemany('INSERT INTO students VALUES(?,?,?,?)', list1) cursor1.execute('UPDATE students SET USN='1CR21EC305' WHERE name="Rishabh"') db1.commit() db1.close() </pre>	10	CO5	L3												
6	<p>Explain three kinds of keys used in database modeling.</p> <ul style="list-style-type: none"> ➤ Logical Key ➤ A logical key is a key that the real world users might use to look up a row. ➤ For example, if we built a table to store the details of twitter users, the name field is a logical key. ➤ It is the screen name for the user and we look up a user's row in the program using the name field. ➤ Since the logical key is how we look up a row from the outside world, we cannot allow multiple rows with the same value in the table. ➤ So we usually add UNIQUE constraint to a logical key. ➤ Primary Key ➤ A primary key is usually a number that is assigned automatically by the database. 	10	CO5	L3												

	<ul style="list-style-type: none"> ➤ It generally has no meaning outside the program and is only used to link rows from different tables together. ➤ When we want to look up a row in a table, usually searching for the row using the primary key is the fastest way to find the row. ➤ Since primary keys are integer numbers, they take up very little storage and can be compared or sorted very quickly. ➤ In twitter user’s data model, the id field is an example of a primary key. ➤ Foreign key ➤ When a primary key is used in another table, it is called a “foreign key”. ➤ The connection between the primary and foreign key then creates a “relationship” between records contained across multiple tables. ➤ A foreign key is usually a number that points to the primary key of an associated row in a different table. 			
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