International Institute of Information Technology, Hyderabad

(Deemed to be University)

CS6.201: Introduction to Software Systems
IIIT Hyderabad Question cum Answer Booklet
Mid Semester Examination

Max. Time: 1.5 Hr **Max. Marks:50**

Roll No: _____ Programme: _____Date of Exam:_____

Room no: _____ Seat No: _____ Invigilator's Signature: _____

Special Instructions:

1. If the ROLL NUMBER section is blank, you will be awarded ZERO marks. Only use a PEN (blue/blank) to answer the questions. If you use a pencil, you will be awarded ZERO marks.
2. Answer the Q1 in the same paper, use additional sheets to answer rest of the questions.
3. Please attach this question paper with the additional sheets when you submit your answer script.
4. There is no partial grading. Please ensure that your answers are complete and correct.
5. Unless mentioned, all observations are open to your own interpretation.

Marks Table (To be filled by the Examiner)

Question No	Total Marks	Awarded Marks	Remarks	Evaluator
1	11			
2	20			
3	9			
4 a	5			
4 b	5			

General Instructions to the students

1. Place your Permanent / Temporary Student ID card on the desk during the examination for verification by the Invigilator.
2. Reading material such as books (unless open book exam) are not allowed inside the examination hall.
3. Borrowing writing material or calculators from other students in the examination hall is prohibited.
4. If any student is found indulging in malpractice or copying in the examination hall, the student will be given 'F' grade for the course and may be debarred from writing other examinations.

Best of Luck

Q1: Fill in the blanks (Total: 11 Marks)

a. _____ SQL command removes specific rows from a table, _____ SQL command will completely remove an entire database object and _____ SQL command deletes the data inside a table, but not a table itself.
b. _____ SHELL command returns tomorrow's date.
c. A "Table" in relational database is known as _____ in document database and _____ in relation database is equivalent to "Field" in document database.
d. _____ passes requests from a private network to the internet while the _____ sits between a client and a server to inspect requests and forwards them to the server.
e. _____ IP address is reserved for loopback purposes and used by a computer to refer itself.
f. _____ is an example of an immutable in-built data structure in Python.
g. Consider a collection called 'teacher' in NoSQL database. _____ command will search all values in this collection.

Q2: Please answer the following questions below in less than five sentences. Each Question carries 2 Marks (Total: 20 Marks)

a. Explain Map-Reduce using a collection example in unstructured-document databases.
b. Explain explicit type casting and implicit type casting in Python with examples
c. In the case of Computer Networks, explain Super-netting and Sub-netting with an example
d. Explain ACID Properties in Structured Relation Databases
e. Explain difference between append() and insert() on Lists in Python with one example each.
f. What does GROUP BY and HAVING clause in SQL do? Explain using an example.
g. Provide any two types of NoSQL databases with an example.
h. Explain the difference between BIOS and Bootstrap program/loader?
i. Explain insertion anomalies and deletion anomalies in Structured Relational Databases.
j. Explain two variants of FOR looping structures with correct syntax that are unique to BASH (Ignore the FOR loop that is available in conventional C/C++ language)

Q3: Please answer the following script questions. Each Question carries 3 Marks (9 Marks)

a. Using bash, read a string with length greater than 5 and print the string in reverse.
Sample Input: **Sai** *Sample Output*: **iaS**
b. Using bash, read a 3-digit only number as input and print the square of the number.
Sample Input: **123** *Sample Output*: **15129**
c. Using bash, write a calculator program that reads two input non-negative and non-zero numbers and also read any of the two operations add or subtract as input and return the output.
Sample Input: **15, 10, subtract** *Sample Output:* **5**

Q4: Consider datasets Employee – contains employee information, Department – Departments in each company, Salary – Contains salary information of employees for a given department.

A. Using SQL, write queries to CREATE tables for respective datasets, INSERT data into these tables, PRINT employee-department-salary information using JOINs (5 Marks)

B. Using NOSQL, write queries to CREATE collections for respective datasets, INSERT data into these collections and PRINT employee-department-salary information (5 Marks)