# GUIDELINES FOR LAB WORK AND PRACTICAL EVALUATION OF COMPUTER SCIENCE

***2014 – 15 Admission onwards***

**(Modified for the academic year 2023 onwards)**

We follow outcome focussed assessment approach in the evaluation process in the Kerala School Curriculum 2013. Term-end Evaluation is an important aspect of assessment. Along with Term-end Evaluation at the end of an academic year, Practical Evaluation (PE) is to be conducted. PE is the term-end assessment of the lab work done in the academic year. Lab work is an integral part of the Continuous and Comprehensive Evaluation (CCE). Hence, it should be considered for the process assessment and portfolio assessment which are the components of Continuous Evaluation (CE) score. In view of Covid-19 pandemic, the syllabus for practical in Computer Science and guidelines for PE have been modified during the period 2020 – 2023. Since the academic activities are turned into its normal mode, the practical curriculum has been reinstated with the following specifications.

## A. Syllabus for Practical

The practical should begin in Class XI itself and it should go on with the respective theoretical aspects. Areas to be covered for the lab work and the minimum number of problems are given below:

1. **Programming in C++** **(10 problems)**
   - if - else statement (1 problem)
   - switch statement (1 problem)
   - Looping statements (3 problems)
   - Array manipulation (2 problems)
   - Functions (1 problem)
   - Structures (1 problem)
   - Pointers (1 problem)
2. **Developing HTML documents** **(6 problems)**
   - Basic tags, <IMG> tag (1 problem)
   - Lists (1 problem)
   - Hyper-linking (1 problem)
   - Table (1 problem)
   - Form (1 problem)
   - Embedding JavaScript (1 problem)
3. **Database queries using MySQL** **(4 problems)**
   - Four tables should be identified and queries should be designed in such a way that all clauses, operators and aggregate functions are covered.

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## B. Lab Work

A minimum of 20 problems, as specified above, are to be solved through the lab work. Sample questions from each area are given below.

**Programming in C++**

1. Input the three coefficients of a quadratic equation and find the roots.
2. Input a digit and display the same in word. (Zero for 0, One for 1, …., Nine for 9)
3. Find the sum of the squares of the first N natural numbers without using formula.
4. Input an integer number and check whether it is palindrome or not.
5. Input an integer number and check whether it is a prime or not.
6. Create an array to store the heights of some students and sort the values.
7. Find the length of a string without using strlen() function.
8. Define a function to find the factorial of a number. Using this function find the value of nCr.
9. Create a structure to represent admission number, name and marks given for CE, PE and TE of a subject. Input the details of a student and display admission number, name and total marks obtained.
10. Input two numbers and swap them by defining a function with pointer arguments.

**Developing HTML documents**

11. Design a simple and attractive web page for Kerala Tourism. It should contain features like background colour/image, headings, text formatting and font tags, images, etc.
12. Design a simple webpage about your school. Create another webpage named address.htm containing the school address. Give links from school page to address.htm and reverse.
13. Design an attractive web page showing the following list.

**Leading Institutions in Kerala for Higher Education**

- Indian Institute of Technology, Palakkad
- National Institute of Technology, Calicut
- Indian Institute of Science Education and Research, Tvpm.
- National University of Advanced Legal Studies, Kochi
- Indian Institute of Space Science and Technology

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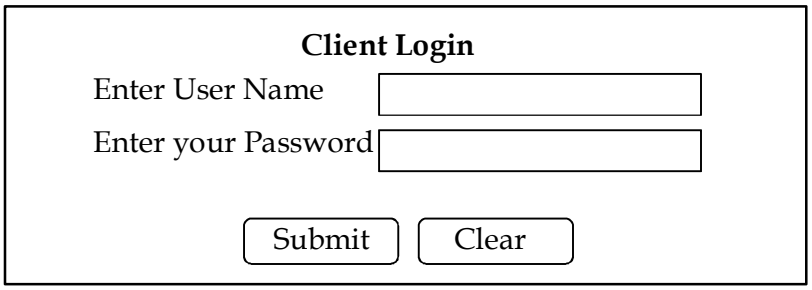
14. Design a web page containing a table as shown below.

**Terrestrial Planets** (Source: NASA)

| Planet | Day Length (In Earth hours) | Year Length (In Earth days) |
|---|---|---|
| Mercury | 1408 | 88 |
| Venus | 5832 | 224.7 |
| Earth | 24 | 365.26 |

15. Design a simple web page as shown below.




16. A web page should contain one text box for entering a text. There should be two buttons labelled "To Upper Case" and "To Lower Case". On clicking each button, the content in the text box should be converted to upper case or lower case accordingly. Write the required JavaScript for these operations.

**Database queries using MySQL**

17. Create a table Student with the following fields and insert at least 5 records into the table except for the column Total.

| | | |
|---|---|---|
| Roll_Number | Integer | Primary key |
| Name | Varchar (25) | |
| Batch | Varchar (15) | |
| Mark1 | Integer | |
| Mark2 | Integer | |
| Mark3 | Integer | |
| Total | Integer | |

a. Update the column Total with the sum of Mark1, Mark2 and Mark3.
b. List the details of students in Commerce batch.
c. Display the name and total marks of students who are failed (Total < 90).
d. Display the name of students in alphabetical order and in batch based.

18. Create a table Employee with the following fields and insert at least 5 records into the table except the column Gross_pay and DA.

| | | |
|---|---|---|
| Emp_code | Integer | Primary key |
| Emp_name | Varchar (20) | |
| Designation | Varchar (25) | |
| Department | Varchar (25) | |
| Basic | Decimal (10,2) | |
| DA | Decimal (10,2) | |
| Gross_pay | Decimal (10,2) | |

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a. Update DA with 75% of Basic.
b. Display the details of employees in Purchase, Sales and HR departments.
c. Update the Gross_pay with the sum of Basic and DA.
d. Display the details of employee with gross pay below 10000.

19. Create a table *Stock*, which stores daily sales of items in a shop, with the following fields and insert at least 5 records into the table.

| | | |
|---|---|---|
| Item_code | Integer | Primary key |
| Item_name | Varchar (20) | |
| Manufacturer_Code | Varchar (5) | |
| Qty | Integer | |
| Unit_Price | Decimal (10,2) | |

a. Display the item names with stock zero.
b. Display the number of items manufactured by the same manufacturer.
c. Display the highest price and lowest quantity in the stock.
d. Increase the unit price of all items by 10%.

20. Create a table Book with the following fields and insert at least 5 records into the table.

| | | |
|---|---|---|
| Book_ID | Integer | Primary key |
| Book_Name | Varchar (20) | |
| Author_Name | Varchar (25) | |
| Pub_Name | Varchar (25) | |
| Price | Decimal (10,2) | |

a. Display the details of books with price 100 or more.
b. Display the Name of all books published by SCERT.
c. Increase the price of the books by 10% which are published by SCERT.
d. List the details of books with the title containing the word "Programming" at the end.

## C. Practical Evaluation (PE)

The following are the guidelines to be followed while conducting PE.

- The questions should strictly be from the prescribed syllabus.
- Examination will be of 3 hours duration and maximum score will be 40.
- Practical evaluation will be conducted in batches. The maximum number of students in each batch is limited to 20.
- Students must attend the PE with Practical Log Book. It should contain a minimum of 20 programs covering the practical syllabus as described earlier. Practical Log Book should be certified at the end of Class XI as well as Class XII by the teacher-in-charge. The same should be verified and signed by the external examiner.
- The question paper for PE will be provided by the DHSE.
- There will be three parts in the question paper. Part A contains questions from Programming in C++. Part B contains questions for web applications from the

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respective syllabus and Part C includes questions for database queries. A candidate has to attend two questions – one from Part A and the other from either Part B or C whichever is assigned.

- One question paper will be selected by the student at random from a set of 20 Question papers. Appropriate strategy may be adopted by the examiner to ensure the fair conduct of examination.

***The score distribution for each question in C++ should be as follows:***

- Logic of the solution (Program coding) – 10 score
- Debugging skills (Error correction and execution) – 6 score

***The score distribution for each question in web application should be as follows:***

- Proper tags and attributes – 10 score
- Debugging skills (Error correction and execution) – 6 score

***The score distribution for each question in SQL should be as follows:***

- Proper commands, clauses, operators, etc. – 10 score
- Debugging skills (Error correction and execution) – 6 score

| | | |
|---|---|---|
| **Total score for 2 questions** | **–** | **32 score** |
| **Practical Log Book** | **–** | **4 score** |
| **Viva voce** | **–** | **4 score** |
| **Total** | **–** | **40 score** |

- Viva voce should not create sense of fear among the students. It should be a casual interaction with the students during the evaluation to check whether he/she has conceptual/process clarity in the given two questions only. The examiner may ask 4 to 6 questions to award the scores for viva voce.

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